Also, petition of G. A. Peacock, minister, and Thobour and Central Methodist Episcopal Churches, of Bay City, Mich., favoring national prohibition; to the Committee on the Judiciary.

By Mr. McDERMOTT: Petition of Messrs. Lewis James, William P. Shinnock, Thomas Gilmartin, James Carr, G. W. Jones, and others, all of Chicago, Ill., favoring the passage of the Lobeck classification bill; to the Committee on Agriculture.

By Mr. MAPES: Petitions of 80 citizens of Mendon, 30 citizens of Howard City, 47 citizens of Ottawa County, and 36 citizens of Fremont and Hesperia, all in the State of Michigan, not to pass House bill 6468, to amend the postal laws, and also House bill 491, with the same title, or any like measure; to the Committee on the Post Office and Post Roads.

Also, petitions of 29 citizens of Mendon, Mich., not to pass the compulsory Sunday observance bill, House bill 652, to provide for the closing of barber shops in the District of Columbia on Sunday, or any other like religious measure; to the Committee on the District of Columbia.

By Mr. MAYS: Memorial of sundry citizens of Salt Lake City, Utah, relative to woman suffrage; to the Committee on the Judiciary.

By Mr. OGLESBY: Petition of Otto C. Schraeder and others, on maintenance of treaties and conventions; to the Committee on Foreign Affairs.

By Mr. OVERMYER: Petition of Erie County (Ohio) Sunday School Association and Young Peoples Alliance, Flat Rock, Ohio, favoring national prohibition; to the Committee on the Judiciary.

By Mr. RANDALL: Petition of 94 people of Pasadena, Cal., for national prohibition; to the Committee on the Judiciary.

By Mr. ROBERTS of Nevada: Memorial of Reno Women's Civic League, Elko Civic League, and Leisure Hour Club of Carson City, all of Nevada, favoring woman suffrage; to the Committee on the Judiciary.

By Mr. STINESS: Papers to accompany House bill 15149 granting an increase of pension to Waldo F. Raynsporel; to the Committee on Invalid Pensions.

Also, petition of Frank A. Sayles, of Pawtucket, R. I., against the passage of House bill 8665, relating to the so-called Taylor system; to the Committee on Labor.

By Mr. SMITH of Michigan: Petition of Truxton Talbot and 23 citizens of Kalamazoo, Mich., favoring House bill 8665, to prohibit stop-watch system in Government departments; to the Committee on Labor.

Also, resolution of James M. Billig, of Kalamazoo, Mich., favoring House bill 8828, civilian employees, Panama Canal; to the Committee on Appropriations.

By Mr. TAYLOR of Arkansas: Memorial of W. T. Gay and others, of Pine Bluff, Ark., favoring investigation of creameries and dairies; to the Committee on Agriculture.

By Mr. WARD: Petition of Monticello (N. Y.) Grange, No. 1357, favoring national prohibition; to the Committee on the Judiciary.

SENATE.

WEDNESDAY, *May 17, 1916.*

(Legislative day of Tuesday, May 16, 1916.)

The Senate reassembled at 11 o'clock a. m., on the expiration of the recess.

Mr. SMOOT. Mr. President, I suggest the absence of a quorum.

The VICE PRESIDENT. The Secretary will call the roll.

The Secretary called the roll, and the following Senators answered to their names:

Bankhead	Hitchcock	Norris	Smith, S. C.
Borah	Hollis	O'Gorman	Smoot
Brady	Johnson, S. Dak.	Owen	Sterling
Catron	Jones	Page	Stone
Chamberlain	Kenyon	Pittman	Swanson
Clapp	Kern	Pomerene	Thomas
Clarke, Ark.	La Follette	Ransdell	Underwood
Curtis	Lane	Saulsbury	Vardaman
Gallinger	Lee, Md.	Shafroth	Wadsworth
Gore	Lodge	Sheppard	Weeks
Gronna	Martin, Va.	Sherman	Williams
Harding	Martine, N. J.	Simmons	
Hardwick	Myers	Smith, Ga.	

Mr. JOHNSON of South Dakota. I desire to announce that the Senator from Wisconsin [Mr. HUSTING] is unavoidably detained on account of private business.

The VICE PRESIDENT. Fifty Senators have answered to the roll call. There is a quorum present.

NATIONAL DEFENSE.

Mr. CHAMBERLAIN. Mr. President, I understand that it is perfectly agreeable to the Senator who has in charge the river and harbor bill that we shall proceed with the consideration of the report of the committee of conference on the Army reorganization bill. In view of that fact I ask that the report be now read, if it is necessary to have it read.

Mr. CLARKE of Arkansas. It is not.

Mr. CHAMBERLAIN. Then I ask that the formal reading of the report may be dispensed with.

Mr. CLARKE of Arkansas. I wish to say that I trust the conference report will be considered without prejudicing the right of the river and harbor bill as the unfinished business. I do not want to have that bill laid aside unconditionally.

Mr. CHAMBERLAIN. I am in hopes that we may be able to finish the conference report in a short while. I know only one or two Senators who now intend to address themselves to it. I believe the Senator from Georgia [Mr. HARDWICK] is going to speak upon it.

The VICE PRESIDENT. If there is no objection, the river and harbor bill will be temporarily laid aside and the conference report on the Army reorganization bill taken up. The Chair hears none.

The Senate proceeded to consider the report of the committee of conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H. R. 12766) to increase the efficiency of the Military Establishment of the United States.

The VICE PRESIDENT. The Senator from Oregon asks that the formal reading of the conference report be dispensed with. The Chair hears no objection, and it is so ordered.

Mr. HARDWICK. Mr. President, I do not intend to oppose the adoption of this report, nor is it my intention to delay the consideration of the question for any considerable length of time. Yet there are one or two observations that I wish to make in reference to this report. I think I can do so in a very few minutes.

Section 124 of the bill as reported by the conferees contains the agreement on what is known as the nitrate proposition. It reads as follows:

SEC. 124. Nitrate supply: The President of the United States is hereby authorized and empowered to make, or cause to be made, such investigation as in his judgment is necessary to determine the best, cheapest, and most available means for the production of nitrates and other products for munitions of war and useful in the manufacture of fertilizers and other useful products by water power or any other power as in his judgment is the best and cheapest to use; and is also hereby authorized and empowered to designate for the exclusive use of the United States, if in his judgment such means is best and cheapest, such site or sites, upon any navigable or nonnavigable river or rivers or upon the public lands, as in his opinion will be necessary for carrying out the purposes of this act; and is further authorized to construct, maintain, and operate, at or on any site or sites so designated, dams, locks, improvements to navigation, power houses, and other plants and equipment or other means than water power as in his judgment is the best and cheapest, necessary or convenient for the generation of electrical or other power and for the production of nitrates or other products needed for munitions of war and useful in the manufacture of fertilizers and other useful products.

The President is authorized to lease, purchase, or acquire, by condemnation, gift, grant, or devise, such lands and rights of way as may be necessary for the construction and operation of such plants, and to take from any lands of the United States, or to purchase or acquire by condemnation materials, minerals, and processes, patented or otherwise, necessary for the construction and operation of such plants and for the manufacture of such products.

The products of such plants shall be used by the President for military and naval purposes to the extent that he may deem necessary, and any surplus which he shall determine is not required shall be sold and disposed of by him under such regulations as he may prescribe.

The President is hereby authorized and empowered to employ such officers, agents, or agencies as may in his discretion be necessary to enable him to carry out the purposes herein specified, and to authorize and require such officers, agents, or agencies to perform any and all of the duties imposed upon him by the provisions hereof.

Mr. President, I will not read the balance of the section. It merely provides the means, by an appropriation, for carrying out the provisions I have read.

The construction which may be given to this section is a matter of some doubt to my mind. If it be given the narrowest possible construction and if it be operative in the narrowest possible way, then no one could object to the provision as a matter of principle. The right of the Government, not only the constitutional right under the express and delegated powers of the Federal Constitution but the right inherent in every Government, to provide itself with munitions of war in whatever manner may seem best and most expedient to it, can neither be questioned nor denied by any student of the science of Government. Nor does it trench upon any idea of the strictest constructionist or as tending toward either a socialistic or a paternalistic program.

Likewise it may be said, indeed it may be conceded, that if that right and power, the war power, to provide only such things

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as may be needed for the use of the Government, its Army and its Navy, is used solely and properly for that purpose, then there can be no fault to be found with this section, even if in connection with such a proposition it might be necessary to sell and dispose of any surplus product that was necessarily on hand because of the execution of the war power.

If section 124 that I have read means that, and no more, then I have no objection to its adoption, because it is undoubtedly not only within the constitutional power, but within the proper and desirable exercise of that power for this Government to provide itself with munitions of war to such an amount as may be deemed necessary, and if in carrying out that power in that way a surplus product is made that can be used for war purposes, the Government has a perfect right to sell it and dispose of it in any way on earth that it can to the advantage of the Government, getting the best price possible for it.

If, however, Mr. President, this section goes further than that, and if it means more than that—and I am afraid that it does—there are serious objections, on principles which are fundamental, to the provisions of this section. I am afraid that the only reasonable construction that can be given to it, when its provisions are taken together and construed together, is that it is in substance and in effect practically and substantially the same proposition as that submitted on this floor by the distinguished Senator from South Carolina [Mr. SMITH] and adopted by an overwhelming vote of this body. If so, I must confess my unalterable and unchanged opposition to that feature of it.

If it means that the President of the United States is authorized not only to provide the nitrates that we need for making powder for governmental purposes, but he is also authorized, while he is doing that, to produce all the nitrates that he may wish to produce which are useful in the manufacture of fertilizer and other products—because you will remember that the Senator from Connecticut [Mr. BRANDEGEE] broadened the proposition until it is not confined to the fertilizer proposition now, but it applies to anything—then it will mean that the Congress of the United States, so far as its power goes and so far as its action goes, has authorized the President of this Republic not only to exercise the governmental power, and a clear and undisputed governmental power, to produce such nitrates as we need to make munitions of war, and also to dispose of any necessary surplus that may result from the exercise of that power, but has also gone further and authorized the President of the United States, if he desires to do so, to engage generally in that manufacturing enterprise for the purpose of producing nitrates, to be used either in the manufacture of fertilizer or in the manufacture of any other product whatsoever. If that is what it means—and I think it does—I must say that it is the most radical step toward paternalism and socialism that I have seen in the 15 years that I have been in Washington, a Member of one House or the other of the Congress.

It may be that we are bound in that direction inevitably and unalterably; it may be that year after year the Government is to participate more and more in private business enterprises and is to engage more and more in the business of furnishing products of various sorts to its citizens and in competition with its citizens. I hope not. I have expressed my views at length in the Senate on that question. I believe it will be a sad day for this country when the Government of the United States deserts the policy handed down to us by our fathers and pretty well adhered to through every administration, Democratic and Republican, that this Government shall confine itself to the governing business and shall not engage in all sorts of business enterprises.

It seems, Mr. President, that the Congress of the United States is determined, on account of conditions that exist, on account of the fact that the demand is insistent that we ought to produce these nitrates in this country to make this country self-sufficient for the national defense, to use this occasion and this pretext to embark it upon a course of utterly unjustified and utterly unjustifiable paternalism. If so, I can not but submit. I can only cast one vote against it. I have cast it once, and I am willing to cast it ten thousand times against embarking in an enterprise of this sort. No matter how great the local pressure were upon me from people who imagine that they would be benefited by the Government going into these sorts of enterprises, I can not yield and maintain my intellectual integrity.

It might be said that I am standing against a proposition for the benefit of the farmers. In the first place, I deny it. So far as the cotton farmers are concerned, they can not possibly be benefited by this proposition at all. The nitrates are simply the raw materials of our fertilizer factories, and have to be mixed with other ingredients, such as soda and potash, before they can be used by the cotton farmer; so that, so far as the southern cotton farmer is concerned, you are giving him a gold brick when you do this thing; you are simply giving the fertilizer factories their raw materials from the Government. Whether or not the fertilizer factories, out of their beneficence, will give the farmer a cheaper price, I do not know and can not tell.

But, Mr. President, I am not dodging the issue. If we were giving to the farmer himself fertilizer at a cheaper price than he could otherwise buy it, I confess I could not support such a proposition. It is utterly irreconcilable with the political principles which I have always been taught and which I have always entertained. I find it impossible to make any such concession as that, and I warn my brethren in this Chamber that when they make it it will not be long before every other class of people in this country will make similar demands on them. You can not use the Government of the United States to manufacture material for farmers and furnish it to them at a cheaper price than they could otherwise obtain it without having every other class of our citizens and every other business in which they are engaged making similar and usually successful demands upon you. The result of it will be before you have finished that you will not be able to turn a deaf ear to the demands of the farmers, of the laboring men, of the business men, or of any other class of our citizens who come with a proposition like this, and the Government of the United States will be hopelessly and helplessly involved and embarked upon a series of undertakings like this, and will have become a vast state of socialism, with little left of the individuality and independence of the citizen.

So it seems to me, Mr. President, that the only safe plan, the only reasonable plan, the only sensible plan, is to stand by our principles, and not depart from them in this matter or in any other.

I do not know; I may be wrong. If so, I am willing to pay any political price to find it out; but I have always been taught to believe, and I do believe with all my heart and with all my soul, that the farmers of Georgia and the farmers of the South generally, do not ask any special privilege whatsoever at the hands of this Government. All they ask is an even showing and a fair deal. I believe that they believe in the philosophy of Thomas Jefferson unto this very day and up to this good hour of equal rights for all men and special privileges to none. If there had been any general demand from them that we should embark on a course of legislation, upon a series of legislative undertakings like this, because they believe that they will be or might be even indirectly benefited thereby, I have not heard it, although I admit, Mr. President, that if I did hear it it would be impossible for me to yield to it.

For that reason, although I have no objection on earth to providing that the Government shall manufacture such nitrates as it needs or may need for the purpose of furnishing gunpowder, and, further, that the Government may dispose in any way it can and under the best terms it can of any necessary surplus product that may result from that transaction—while I am willing to concede all that, I say it is impossible for me to look with any degree of complacency upon the inclusion of a much broader project than that in this bill.

Mr. SHAFROTH. Mr. President, will the Senator yield for a question?

Mr. HARDWICK. I yield.

Mr. SHAFROTH. Will the Senator explain to the Senate the difference between the provision with relation to this subject as passed by the House and the provision as it passed the Senate?

Mr. HARDWICK. I will say to the Senator that I have given a close study to that question, and I am unable to find any substantial difference from the standpoint from which I am discussing it. I think it is agreed—the conferees so stated to me, and I think I can state it without any violation of confidence, and the Senator from South Carolina, who was the author of this proposition, as I understood him, also stated the same thing—that this is substantially the same proposition that was offered by the Senator from South Carolina. Probably there is a difference in the provision that is made about water power.

Mr. SMITH of South Carolina. Mr. President——

Mr. HARDWICK. I yield to the Senator from South Carolina.

Mr. SMITH of South Carolina. There is no difference between this provision and the amendment to the Army bill which I offered, save that there has been substituted the word "President" for the words "Secretary of War."

Mr. HARDWICK. There are some other differences, but the Senator means there are no substantial differences.

Mr. SMITH of South Carolina. No substantial differences.

Mr. HARDWICK. I take it that is about the fact. I do not believe there is very much difference.

Mr. SHAFROTH. What change has been made with regard to the provision concerning water power?

Mr. HARDWICK. My recollection is that the proposition of the Senator from South Carolina did not say anything about the President leasing out water power. Am I right about that, I will ask the Senator from South Carolina?

Mr. SMITH of South Carolina. That is correct.

Mr HARDWICK. And that this provision of the House does.

So much for that, Mr. President. I have almost finished what I wanted to say. I do not want to be misunderstood. I have not the slightest objection on earth to the production in this country, in whatever way is cheapest and best, of nitrates which we may need for governmental purposes, and I have not the slightest objection on earth to the sale of any surplus products which necessarily result from that transaction; but I warn my brethren, with all deference to their superior wisdom and longer service, that anything further than that is both doubtful and dangerous. They, however, and not I, must take that responsibility.

Mr. POMERENE. Mr. President——

Mr. HARDWICK. I yield to the Senator from Ohio.

Mr. POMERENE. Under section 124 it is perfectly clear that there is a limitation placed upon this plant in this: That there shall not be expended to exceed $20,000,000 for this particular purpose. Of course, the primary object is to provide the nitrates necessary for war and governmental purposes.

Mr. HARDWICK. Undoubtedly.

Mr. POMERENE. The second thought that the conferees had in mind evidently was to dispose of the surplus.

Mr. HARDWICK. Well, does the Senator think that that is all it means?

Mr. POMERENE. I certainly think so.

Mr. HARDWICK. I certainly hope the Senator is right. We will have no debate on that.

Mr. POMERENE. If I am not right, is the Senator able to tell the Senate what further limitation he would place upon the amount of this expenditure, if it is deemed wise to place any limitation upon it?

Mr. HARDWICK. Mr. President, the Senator from Ohio has suggested one thought that is comforting to me about this matter. I hope that $20,000,000 will not enable us to supply much more than will be necessary for governmental purposes. My own information on that subject is so inadequate, so incomplete, that I can not even venture an opinion. It may be that a plant that might be secured by the expenditure of $20,000,000 will not be larger than is necessary to supply governmental needs. The Senator from Ohio, I can tell by his question, is not in a very different frame of mind from what I am about this matter. If that be true, if this proposition means only that we are to establish a plant of that size and character and for that purpose, then there will be no serious harm done and there will be no important principles violated.

Mr. VARDAMAN and Mr. POMERENE addressed the Chair.

Mr. HARDWICK. I yield to the Senator from Mississippi.

Mr. VARDAMAN. Mr. President, I was going to suggest to the Senator that if this plant would not yield more than would be needed for the manufacture of munitions of war in time of peace it would be utterly useless in time of war. If it is adequate to yield enough nitrate to meet the demands of the Government in time of war, then it must necessarily have an enormous surplus, which could be used in time of peace.

Mr. HARDWICK. Now the Senator from Ohio is very readily able to see the other side.

Mr. VARDAMAN. I really think that that is the one mitigating virtue of the whole bill.

Mr. HARDWICK. I understand the Senator does; but he does not entertain the same views that I do on certain fundamental questions.

Mr. POMERENE. Mr. President, I realize the necessity for a nitrate plant.

Mr. HARDWICK. I have not disputed that, if the Senator will pardon me.

Mr. POMERENE. I believe that at this particular juncture it is wise on the part of the Government to provide a plant of this character. Up to date private capital has not provided anything of the kind.

Mr. HARDWICK. That is all true enough.

Mr. POMERENE. And now, that being so, is it not the part of wisdom to provide for the disposal of the surplus, if there be a surplus?

Mr. HARDWICK. Undoubtedly; and the only trouble about this proposition is this: The Senator asks me how I would limit it or what language I would employ if I were drafting this provision. I would provide for the establishment of this sort of a plant: A nitrate plate adequate and suitable to supply all the needs of this Government for governmental purposes. I would not say anything more than that in providing for it, and then I would provide in simple language for the disposal of the surplus product, if any. Then there could be no objection from any source or from any standpoint to this proposition. Going further than that simply embarks the Government on various business enterprises. The Senator knows it, I think. It has been voiced on this floor with absolute frankness and candor. I know that many Senators have supported the proposition who do not believe that that would be done under the language employed and the amount of money appropriated. I can only say that I hope they are right; but my proposition is, Mr. President, that I am sorry that the Congress of the United States, in doing this, finds it necessary or desirable to employ language which clearly, undoubtedly, and necessarily authorizes the President of the United States to do far more than supply the governmental necessities.

Mr. President, just a few words more, and I will have concluded the observations that I desire to make on this report.

In the Senate, when the Army appropriation bill was under consideration, this body adopted by an overwhelming vote—58 to 24, my recollection is—after an extended and elaborate debate, provisions establishing military training in each one of the schools and colleges of the United States where there were as many as 100 boys 14 years of age or over who wanted to take such training, with the consent of their parents and with the consent of the school authorities. It was provided in the amendment to which I refer, and which went to conference as section 57 of the bill, that under those circumstances the Government of the United States should furnish instruction, arms, equipment, tents, and so forth, for these military students; and it was provided further that they should be organized into a part of the reserve forces of the United States, not subject, however, to be called out for active military service, except in case of actual or threatened war, not to be used for any other purpose whatever, upon call of the President of the United States, and then none of them were to be subject to such call, except those who were 18 years of age or over. It was purely an optional system; it was not compulsory; it was carefully hedged about so as not to make any parent put his boy into it unless he wanted him to go into it and unless the boy wanted to go and unless the school authorities wanted him to go. Mr. President, in my honest judgment, that sort of a system would have been, indeed will be, necessarily and inevitably the backbone of the reserve military forces of this Republic. I venture to state in this presence and on this floor, without fear of successful contradiction, that it is a historic fact that no nation ever became great from a military standpoint unless its young were trained to arms in their schools and at the early periods of life.

Mr. BORAH. Mr. President——

Mr. HARDWICK. I yield to the Senator from Idaho.

Mr. BORAH. Do I understand that the amendment which the Senator from Georgia was instrumental in having inserted in this bill has been eliminated?

Mr. HARDWICK. I was going to come to that in just a moment.

In the statement made in the other body of Congress, the gentleman reporting there made the statement that this amendment had been eliminated. He is correct in a way, and yet incorrect. If he were entirely correct, my judgment about the importance of this matter is such that it would be impossible for me to agree to this conference report without submitting it to a vote of the Senate at least and transferring the responsibility from my shoulders to those of all the Members of this body. But, as a matter of fact, that statement is not entirely correct.

Senators will remember that when that amendment was before this body, the Senator from Washington [Mr. POINDEXTER] moved to amend it by striking out all provision that these boys in the schools and colleges should be a part of the reserve forces; and after a considerable debate and a considerable division in the Senate that amendment was defeated, and the original amendment, substantially in the form in which it was drafted, was adopted. What the conferees have done is to retain in section 56 the substance of this idea of military training in the schools, and to knock out the boys as a part of the reserve forces.

I am sorry they did that. I believe, as I have said in the Senate before, that it would have been far wiser, if we are going to spend all this money for arms and equipment and instruction of these boys, to put them under some sort of obligation to act as part of the reserve forces of this country in case

of actual war, and to be in a position to avail ourselves of their services. The provisions that the conferees adopted on this subject are contained in section 56 of the bill they report. Section 56 of the bill when we acted upon it before, you will remember, contained the provision for a volunteer army. That has been stricken out, and in its place there has been inserted the following:

SEC. 56. Military equipment and instructors at other schools and colleges: Such arms, tentage, and equipment as the Secretary of War shall deem necessary for proper military training shall be supplied by the Government to schools and colleges, other than those provided for in section 47 of this act.

By the way, section 47 was the provision for a reserve officers' corps in the schools—

having a course of military training prescribed by the Secretary of War and having not less than 100 physically fit male students above the age of 14 years, under such rules and regulations as he may prescribe; and the Secretary of War is hereby authorized to detail such commissioned and noncommissioned officers of the Army to said schools and colleges, other than those provided for in sections 45 and 46 of this act, detailing not less than one such officer or noncommissioned officer to each 500 students under military instruction.

This provision as reported by the conferees is not all that I had hoped it would be. I think it is imperfect in more than one particular. I think it was a mistake not to organize these boys, when we spend all this money on them for arms, equipment, and instruction, into reserve companies, battalions, regiments, and brigades. But I am not much worried about that, because if the boys of this country take advantage of this system to the extent that I hope and believe they will, we will spend so much money on them before we get through that the War Department and all of the gentlemen who now oppose having them as a part of the reserves will be eager to bring about that result.

I do not think they have provided for enough officers for these schools; but I apprehend that probably they were afraid to make more liberal provision because they did not know whether they could supply the officers or not.

As I say, while the amendment, in the form the conferees have reported it, is not entirely satisfactory to me; while it does not accomplish all I hoped and believed that the other amendment would accomplish, yet, nevertheless, it contains the germ of this idea—the essentials of this idea of military instruction in all the schools having over 100 male pupils 14 years of age and over, and furnishing not only instruction but arms and equipment to these students. It is the real beginning point, in my honest judgment, of any real military preparedness for this country. Since the germ of the idea and its essentials are contained in the bill, it is my purpose to accept the report of the conferees, and to agree to early action, as far as I am concerned, on that report.

Of course, Mr. President, I realize that in legislating on this great question none of us can get exactly what we want. The history of legislation is a history of compromises. I realize that probably nothing that any one Senator wants is completely as he wants it in this bill. It may be equally true of any Member of the other House. But, after all, we are sometimes obliged to be content with less than we would like to have. Believing as I do that the substance of this idea, the germ of it, is contained and incorporated in section 56 as it is reported, I shall support the report of the conferees.

Mr. UNDERWOOD. Mr. President, I have listened with much interest to the statement which has been made by the Senator from Georgia [Mr. HARDWICK] with reference to the nitrate plant. I do not differ with the Senator from Georgia on the broad principles he advocates with reference to the Government of the United States involving itself in private business; but I think he entirely misconceives the question involved in the bill for the establishment of a nitrate plant now before the Senate.

I do not suppose there is a Senator present who will dispute the fact that under the war power of the Federal Constitution the Government of the United States has the option of buying munitions of war from private contractors or of manufacturing munitions of war itself. That is of necessity the case, because the occasion might arise and often does arise when this Government or any other government would be unable to procure its supply of war munitions from private contractors, and of necessity, for the preservation of the life of the government itself, would be compelled to resort to the manufacture of war supplies by a government plant.

The question as to whether Government supplies should be manufactured by private contractors or by the Government does not involve a principle. It involves merely a policy—a policy that may be wise at times on one side of the question and wise at times on the other side of the question. There may be certain munitions of war that it is advisable that the Government should obtain from private contractors. There may be other munitions of war that it may be very necessary for the Government to manufacture itself. So that I see no question involved here on that subject. The only question whereon I can see that the Senator from Georgia can maintain his argument is the question as to whether the Government of the United States is going further in this bill than the manufacture of war supplies.

I see nothing in the bill that will lead to that conclusion. I admit that some of the language in this paragraph is loosely drawn, and may be subject to different constructions; but the clear intent of this bill is that the Government should itself establish a plant for the manufacture of nitric acid, in order that it may be assured of an adequate supply of powder and explosives in times of war. It is manifest that it is necessary for the Government itself to build this plant. There is no occasion for our building a nitrate plant to supply the Government with its explosives in times of peace, because in times of peace we can get all the nitrates we desire from the Chilean saltpeter beds. The purpose of building a plant, and the only purpose of building a plant, is to supply the Government's needs in time of war.

The Secretary of War has determined that it will be necessary to have a supply of 180,000 tons of concentrated nitric acid per annum to take care of the Government's needs in the event that we become involved in war with a first-class nation. The peace needs of the Government will not equal 20,000 tons of concentrated nitric acid. Therefore there is a difference of at least, if not more than, 160,000 tons of nitric acid per annum between the supposed war needs of the Government and the peace needs of the Government.

It is not possible to conceive the idea that any private contractor would invest his money in a plant that would be adequate to supply the Government with its war needs and let it lie idle perhaps for 50 years.

Mr. HARDWICK. Mr. President——

Mr. UNDERWOOD. I yield to the Senator from Georgia.

Mr. HARDWICK. I should like to ask the Senator a question. The Senator has portrayed the condition in peace and war very accurately, and he has given figures that I am glad to get. It seems that we need nine times as much nitric acid in times of war—and that is what we are providing for—as we would need in times of peace.

Mr. UNDERWOOD. Undoubtedly.

Mr. HARDWICK. And that really, in times of peace, there would be no trouble anyhow about getting nitric acid from Chile probably as cheaply—because Government production is never very cheap, as the Senator knows—as we could get it by manufacture. Why would not the correct plan be, then, to provide for such a plant, and to lease it out for commercial uses in time of peace, reserving the right to take it over and operate it whenever conditions changed?

Mr. UNDERWOOD. I am coming to that very question. I think I can answer the Senator, and I think this bill answers him.

I think we all concede, then, that if we are going to have an adequate supply of nitric acid for war conditions, the plant must be built by the United States Government; and for that reason this paragraph has been put in this preparedness bill, looking to the Government building a plant that will supply its war needs of explosives.

If this plant is built, and it is built on the line that is contemplated by the Congress of furnishing the Government with an adequate war supply of explosives—to wit, 180,000 tons of concentrated nitric acid per annum—of necessity, in times of peace, a large proportion of this plant in its entire construction must lie idle. The Senator from Georgia [Mr. HARDWICK] has suggested that the difference between our war supply and our peace supply of nitric acid would be as one is to nine. If that is the case, then the difference between our war needs for electric power and our peace needs for electric power will be as one is to nine. In the event that this plant is built on the lines contemplated by this bill and to the extent contemplated by this bill, there would probably be something like 100,000 primary hydroelectric horsepower that it would not be necessary for the Government to use in times of peace and probably a great deal more secondary power.

If that power is allowed to go to waste, it will accomplish no result for the Government; it will accomplish no result for the country or the people of the country. I can see no constitutional objection whatever to the Government disposing of that hydroelectric power or the surplus product of its plant in time of peace when it is not required for war purposes. That is all this bill does. It provides that—

The products of such plants shall be used by the President for military and naval purposes to the extent that he may deem necessary—

Necessary for what? For military and naval purposes—

and any surplus which he shall determine is not required shall be sold and disposed of by him under such regulations as he may prescribe.

Mr. HARDWICK. Mr. President——

Mr. UNDERWOOD. I will yield in just one minute. Any surplus. Surplus of what? Surplus of product. What does product mean? It means the entire output of that plant. What is the definition of a product? It is something that is produced by labor, work, generation of chemical process. That is the dictionary definition. Is not that broad enough—by labor, work, generation of chemical process—to allow him to dispose of his surplus power—hydroelectric power—of his surplus products of any kind?

What objection can there be? How can it possibly be construed that it is unconstitutional or in violation of the principles of the Democratic Party that when it is necessary to erect a plant for strictly a governmental purpose, and when the product of that plant is lying idle, the Government can dispose of it for the benefit of the Government Treasury? Now I yield to the Senator from Georgia.

Mr. HARDWICK. I want to get the Senator's construction. He contends, then, that what is authorized by this provision is that the President shall lease out eight-ninths, we will say, of the electric power? Is not that what it means?

Mr. UNDERWOOD. I suppose that it is.

Mr. HARDWICK. That is one thing he can do under this bill?

Mr. UNDERWOOD. He can.

Mr. HARDWICK. But he is not compelled to do that. He can go on with the manufacture of the product.

Mr. UNDERWOOD. I will read the Senator the language again. Here is the governing part of this proposition in the question raised by the Senator from Georgia:

The products of such plans shall be used by the President for military and naval purposes to the extent that he may deem necessary, and any surplus which he shall determine is not required—

"Not required." For what? For military and naval purposes—

shall—

Not may, but shall—

be sold and disposed of by him under such regulations as he may prescribe.

Any surplus shall be sold. The surplus is the product of that factory.

Mr. HARDWICK. I understand, but that is the power to generate this product.

Mr. UNDERWOOD. It may be the power; it may be some other product.

Mr. HARDWICK. The surplus of this plant is eight-ninths of the whole business.

Mr. UNDERWOOD. Yes; I think so. I think it must be conceded of necessity to be about eight-ninths or nine-tenths. Probably in all human probability it is nine-tenths. The difference between the peace requirements of the Government and the war requirements of the Government is about as 9 is to 1, and of necessity so. We would not be building this plant if it was not so.

Mr. HARDWICK. If the Senator will pardon me just one moment, I think when you come right down squarely to the bottom of this thing, when we are at peace, eight-ninths or nine-tenths, as the Senator concedes of all this business, of all these products, is to be sold by the President for consumption as fertilizers without any other business purpose. So it is one-ninth a Government proposition and eight-ninths a manufacturing proposition.

Mr. UNDERWOOD. No; I do not concede the proposition as the Senator from Georgia states it. The President can shut the plant down and not use it under this bill. It would be folly for him to do so. We are building a plant to provide for the war needs of the Government just exactly as we are raising an Army to provide for the war needs of the Government. Is there any Senator who will contend for a moment that we need three-fourths of a million of men in our Regular Army or our reserves to take care of our peace necessities? Not at all. In times of peace we are going to pay millions of dollars to maintain an Army to protect us against a war necessity. In times of peace we are going to build a great nitrate plant that we do not need in times of peace or we need to a very slight extent in times of peace, but we are building it to protect us against our war necessities.

Now, when we know that nine-tenths of this plant can not be used in times of peace to supply the Government because the Government will not require it, why should not the surplus product be disposed of? Why should not the surplus be disposed of in the line that is indicated in this bill; that is, for the manufacture of fertilizers? There is no better place to dispose of it. It goes into a new field where it does not interfere with other men's business. It goes into a field for the development of the great agricultural interests of this country. I can conceive no reason whatever, in my own mind, for a statement that because the President of the United States is given the right to sell the surplus products of this plant it is either unconstitutional or in violation of any position that the party I have ever belonged to has ever taken in reference to these matters.

Mr. SMITH of Arizona. Will the Senator permit a suggestion?

Mr. UNDERWOOD. Certainly.

Mr. SMITH of Arizona. I suggest to the Senator also as a pure war measure the fertilization of the land would itself be a provision that the Government might well make for the greater production of the things necessary for consumption in times of war.

Mr. UNDERWOOD. Yes; I agree with the Senator. I think one of the great difficulties the German Government is confronting to-day is a question of supplying its own people with food during the conditions of this war——

Mr. REED. Mr. President——

Mr. UNDERWOOD. And if it had not been for the fact that Germany has used more fertilizers than any other country in the world the people of Germany would probably be starving to-day, and instead of its having victorious armies in the field it would be facing a point where it would have to make terms with its enemies.

The VICE PRESIDENT. Does the Senator from Alabama yield to the Senator from Missouri?

Mr. UNDERWOOD. I yield.

Mr. REED. It is of course conceded that the Government has the constitutional right to build a plant to make war supplies, The question then resolves itself into this, viz: The Government having the right to build a plant to make war supplies, can it sell the surplus which the plant produces, or must it allow the plant to lie idle a great part of the time and the Government stand the loss?

I desire to ask the Senator whether there is in his opinion any difference between the right to dispose of that surplus and the right of the Government to sell a surplus of Cavalry horses which it may have on hand, or the right of the Government to sell a surplus of cannon or rifles or other war materials which in the progress of events it wants to get rid of in order that it may buy others? Is there any difference in principle?

Mr. UNDERWOOD. I see none whatever, as a matter of fact. It was only a year or two ago that the Government sold to the Government of Greece two battleships for something like $12,000,000 because we wanted to get rid of them and Greece wanted them, and I did not hear anywhere in the Halls of Congress the question raised that it was either unconstitutional or in violation of fundamental principles, and that we did not have the right to sell those two battleships when we did not need them. I can see no question to be raised here.

Mr. President, I might have broadened this paragraph to some extent if I had written it myself, but I recognize that the work of the conference committee in agreeing to this paragraph has accomplished a great result for the American people, both in time of war and in time of peace. If the committee had failed to bring legislation before Congress that would have guaranteed an adequate supply of nitric acid with which to make explosives in time of war the whole purpose of the passage of this bill would have failed; there would have been no good to be accomplished by enlarging the Army that would have been cut off from its supply of explosives in time of war. On the other hand, I believe that the surplus products of this plant in times of peace will be used by the President of the United States to devolop the production of fertilizers in this country.

Mr. CLAPP. Mr. President, will the Senator yield?

Mr. UNDERWOOD. I yield.

Mr. CLAPP. My inquiry is not based upon any spirit of hostility to this section, for I think it is one of the most vital in the bill; but I want to ask the Senator, putting the proposition in the other form and admitting a nation-wide necessity for fertilizers, would there be any question under the Constitution but what the Federal Government could build a plant to create nitrates primarily for fertilizers and incidentally to be possessed of facilities in time of war to make the requisite amount to meet the demands of war? It does seem to me if we put this thing plainly it would appeal more strongly to everybody.

Mr. UNDERWOOD. I think that under the powers that are granted in this bill there could be no doubt about the constitutionality, as far as it goes. As to the position of the Senator, I am not prepared at this time to take the position he suggests. I

certainly would not do so without giving the matter far greater thought and consideration than I have the opportunity to do now. But I have no doubt whatever about the constitutional right and power of the President to dispose of the surplus products, and that is all that is needed. If he disposes of the surplus products, the peace products, of this plant when they are not needed in times of war, he will bring about the condition that we desire. He will produce in our own markets the power and the nitrate that are necessary to make an adequate supply of fertilizers for our farming interests, and thus at least, if not an adequate supply, greatly enlarge the field of production and encourage others to enter the same field. So I feel that the men who think about this question as I do can congratulate the committees of the two Houses having this bill in charge on the fact that they have brought into Congress a measure that will protect our country against danger in time of war and will lead to inestimable benefit to the American people in time of peace.

Mr. BORAH. I wish to ask the Senator a question. Without intending or desiring to controvert the argument which the Senator has made, nevertheless the present war has demonstrated that almost all articles of use in modern life are in some way necessary to a thorough preparedness upon the part of the nation that proposes to engage in war.

If the Senator be correct as to the war power in this instance there is scarcely any article that the Government could not manufacture or prepare to manufacture in order that it might have that which is necessary for war, and the surplus it could dispose of in time of peace. So, the result would be that the Government could practically enter into and upon the business of manufacturing most of the articles of manufacture.

Mr. UNDERWOOD. I will say to the Senator I do not think anyone can question the war power of the Government, the necessity to exercise the war power of the Government to preserve a nation's life, and if the necessity arose that the Government needed supplies it could not get elsewhere I do not think anybody would question the right of the Government to manufacture supplies if needed in times of war. To protect the life of the Nation is the war power of the Government. But, as I said some time ago, how far you will exercise this war power, in what field you will exercise it, is not a question of principle; it is a question of policy and necessity, as my friend the Senator from Mississippi [Mr. WILLIAMS] suggests to me.

The question that is to guide us in these matters is a question of policy and necessity. I think we would all agree on the policy that where the Government, within reasonable terms, can purchase its supplies from private contractors on a fair and reasonable basis we prefer to pursue that policy rather than the one of the Government engaging in the field itself. But where we find it is impossible for the Government to get an adequate and a fair supply at a reasonable price from private contractors, I do not think any of us doubt the power or the right or the advisability of the Government entering the field itself and supplying itself with its war needs.

Mr. BORAH. Of course, as a matter of policy, we would not be likely to enter upon the manufacture of any particular article unless it was necessary to do so. But, as a matter of power, we would have the same right to enter upon the manufacture of shoes and rifles and powder and those things as we have with reference to the manufacture of the article which we are now discussing.

Mr. UNDERWOOD. I concede that undoubtedly, if it is for war purposes.

Mr. CLAPP. Mr. President, before the Senator from Alabama takes his seat, I should like to ask him another question. The Senator contends that under this language, which is found in a measure called a major preparation for war, the Federal Government can build a plant admittedly where a very small proportion of the product will be used in war, if at all.

Mr. UNDERWOOD. No. I beg the Senator's pardon. I said a very small proportion of the product would be used in times of peace, but all would be required in time of war.

Mr. CLAPP. Well, put it the other way, in times of peace; and in those times a very large percentage of the product is to be used for fertilizers, with the certainty that fertilizers must be used, and with the uncertainty and the hope that the product will not be used in war. If I were to state the proposition, I would state it that the Government has a right to build this plant for nitrate products—the question of policy would be one for those controlling affairs to determine—and including in the end that incidentally the Government could use so much of it in time of peace as it needed and could use it all in time of war. Does the Senator from Alabama feel that the determination of whether that fell within our constitutional rights would depend upon the expression and purpose and desire of those who advocate this measure?

Mr. UNDERWOOD. I think it is clear that the constitutional right of this measure depends upon two things: Primarily, upon the war power of the Government; secondarily, the power of the Government to make a river navigable. On either proposition, at least, this plant could be built within constitutional limits. The Government having exercised a constitutional power, I think it can carry on that power to the extent that the necessities and exigencies of the Government require. One of those exigencies and necessities is that it shall dispose of its surplus product in order to protect its own Treasury against loss. I do not think it is necessary for us to go further than that—I mean in the argument—because it is clear that we have that power, and I do not care to go so far as to assume that it is necessary for the Government to go beyond the exercise of a war power for the accomplishment of this result, because, so far as we desire, it can be accomplished under the war power of the Government.

Mr. CLAPP. There is no doubt about that, except that it subjects Congress to the criticism that we invoke a war power here when the thing that we are really seeking is a benefaction in peace. It does seem to me that it is better in all legislation to boldly and plainly state a proposition than to submit ourselves to the suggestion that we have taken a roundabout way to develop this nitrate production for the benefit of the entire country.

Mr. UNDERWOOD. I am not ready to concede the suggestion of the Senator from Minnesota. One of the things at which we are driving is to make fertilizer. I think that is a most important thing, and a thing that is close to my heart and close to my people; a thing that I want to see accomplished if we can accomplish it in a right and constitutional way; but, in my judgment, the primary purpose of this bill now and in the future—the real purpose of the bill—is to supply the nitrates that are necessary to protect this Government in time of war. If it were not for plants of this kind to-day in operation in Germany, it would have been necessary to have pulled down the German flag, because the allied forces of Europe control the seas and Germany could have gotten no nitrates with which to make her explosives; she would have had to surrender because she did not have powder and the other supplies with which to carry on the war. Therefore I think it is clear that the primary object of this bill is and ought to be, first, to supply the Government of the United States with necessary explosives in time of war.

Mr. CLAPP. Mr. President, for one I shall most heartily support this proposition; but I want to put my support upon a ground that can not be questioned. While this provision is in this military bill, I feel, for one, that this is the time and the occasion under which we can secure the establishment of this nitrate plant. It is true, Germany has found strength in the fact that she is prepared to furnish her armies with the necessities of war, and yet she has found strength in this great struggle in the fact that she built up those instrumentalities that support a nation not only in time of war but in time of peace. I think the sooner we reach the plain proposition in this matter, that this Government can do those things essential to the development and welfare of all without doing them in a roundabout way, the better it will be for all concerned.

Mr. BORAH. Mr. President, do I understand the Senator from Minnesota to take the position that, regardless of the proposition that part of this product is essential and necessary for war and for the needs of war, the Government could enter upon the business of manufacturing nitrates for the sole purpose of fertilizing the lands of the country?

Mr. CLAPP. There is no more question in my mind of the right and power of the American people, under the Federal Constitution, to develop a fertilizing product, if it is wise—and that is another question, of course, to be considered—than it is to do any other of the thousand and one things which we are doing to-day under Government control, regulation, and through the Government itself.

Mr. BORAH. Under what provision of the Constitution would the Senator from Minnesota assume to do that?

Mr. CLAPP. Under the broad proposition that——

Mr. TILLMAN. The general-welfare clause of the Constitution is broad enough for me, and it is deep enough, too.

Mr. CLAPP. I will repeat that again, without interruption, I trust. Under the broad proposition that there is no warrant for the burdens of government to be assumed by a people unless those forming that association called "government" can develop their moral and material welfare under the instrumentality of that association.

Mr. BORAH. I agree with that; but that goes back to the proposition of an amendment to the Constitution. If we should find that we desire to do this, and that the people should desire to engage in that kind of enterprise, we would undoubtedly as a people have a right to amend our Constitution to provide for that power; but the question which I submit to the Senator from Minnesota, in entire sincerity, is, whether or not now, under the present provisions of the Constitution, the Government of the United States could enter upon that kind of an enterprise solely for the purpose of fertilizing the private lands of the country?

Mr. CLAPP. There is no question in my mind that we have that power, the same as we have the power to do other things; the power to develop irrigation; the power to develop conservation; the power to enact legislation calculated for the upbuilding of the morals of the people. If the Federal Constitution is a prohibition against the best service in the association called government along the lines of material and moral development of the people, then I think the time has come when we had better stop other matters and consider the necessity for an amendment to the Constitution.

Mr. BORAH. Well, I think the Senator and I would not disagree upon the proposition that, if the people wanted to make that kind of a Constitution, of course, they have the power to make it. But until the people choose to change the Constitution the only power we have is such as it now grants. All power rests at last in the people, but all power does not rest in the Congress. The power of the people and the power of Congress are two different propositions. The people have all power. We have only such as the people through the Constitution give us.

Mr. OWEN. Mr. President, I shall favor the conference report, and I should like especially to express my approval of section 124. The necessity for a great nitrate plant is perfectly obvious and confessedly constitutional because of the need of preparing this country against the contingencies of war. I would go, however, much further in recognizing the rights of the Government than some of my colleagues. The Government of the United States has some rights that belong to government under what might be called the common law of all Governments—the right of existence, the right to do the things which are essential to preserve the powers vested in the Government, to make them effective, to make them useful for purposes for which the Government itself was erected.

The United States now owns large properties—hundreds and thousands of millions of dollars' worth of property, lands, forests, mines, water powers, easements in rights of way over streams, railways, steamships, and so forth, and so forth, and so forth. It exercises the power to administer those properties, to administer forests, and to administer them in such a way as to reforest lands, the timber on which might be destroyed by fire. The Government owns water powers of vast extent and can develop and use them for the benefit of its Treasury and of its citizens. It owns minerals of all kinds. It can develop and use them for the benefit of the people of the United States quite as well as give them away to private citizens or to corporations. The United States runs steamboat lines successfully for the general welfare. It has many steamships engaged in many different enterprises connected with the affairs of government. It conducts railroads and builds railroads for the general welfare. Why not? It owns the Panama Railroad and operates it successfully. Why not? It is building a railroad in Alaska. Why not? It is building reclamation dams, irrigation works for the West, and improving rivers and harbors, fighting Texas fever, foot-and-mouth disease, and boll weevil. Why not? It is teaching every vocation to its citizens and is in charge of the public health. Why not? It carries the mails and parcel post and has extended rural delivery from Maine to California. Why not? It is manufacturing powder and cannon and its own war munitions, and also manufacturing many other things needed in peace. Why not? It made the cement for reclamation dams. Why not? It is a good beginning. Let us proceed until no man willing to work is idle in this land. Let the Government open enterprises needed to give employment to all those out of employment and willing to labor. It is exercising many functions of government which in the beginning of our Republic would have been regarded as perhaps unauthorized or even undemocratic.

Let us have cheap nitrates for our people made by Government. One boy last year raised 216 bushels of corn on 1 acre of poor sandy land in the piney woods of Mississippi by using fertilizers and labor and intelligence. We can multiply our corn supply by 10,000,000,000 bushels annually in the United States if we have enough fertilizer furnished by Government, intelligently applied under the instruction under the farm-extension act, under the Smith-Lever Act. We have been progressing. We have been progressing along the lines of modern democracy, along lines which have seized the imagination and the hearts of the people of all the world. Even Governments like Germany, which are regarded as monarchies and claiming the governing power by "Divine right," have been forced to develop in the highest degree this spirit of democracy, a spirit which has been born out of modern necessity.

In the days of our dear old beloved Thomas Jefferson, who never saw a railroad, modern steamboat, a telephone, or electric light, or Ford motor car, every man knit his own socks or had it done at home and made his own trousers, perhaps out of skins, or had them woven by the women or servants belonging to the farm, and the woman made the soap and the candles, spun thread, wove cloth, put up meat, preserved fruits and vegetables, and performed other duties necessary to the domestic life of an early and undeveloped community. In those good old days every man raised his own vegetables, his own food, built his own house, and was measurably independent of his neighbors. Since that time we have been slowly drifting, until we have reached the point where a man has every need and every necessity in food, shelter, and attire made for him in some factory, which employs men, women, and children on a large scale; and great corporate powers have sprung into existence and spread themselves over the whole world with their magnificent, admirable enterprises. We have gone through a gigantic, radical change. Every man is now utterly dependent and requires the protection of the Government to safeguard his life, liberty, property, pursuit of happiness as never before in the history of the earth.

In Germany this use of the governing power of the people for the benefit of the people has not stopped with the delivery of letters from one to another through the post-office service. It has gone further than that; it has taken over the telephones and the telegraphs, just as the people of the United States will soon do in this country, and as we have taken over the parcel post.

Mr. HARDWICK. Mr. President, does the Senator also favor taking over the railroads?

Mr. OWEN. I am now describing the conditions in Germany, and I will soon discuss the question of the railroads. The people in that country, exercising their combined powers, have taken over the express companies and they themselves conduct the express business of the German Empire. They have taken over the railways, including the freight and passenger service; and in a country like Switzerland you can ride for a week all over the land for a negligible sum. One is given a railroad pass good for a week or for a month for a very small amount, so that the activity of those people has been tremendously enlarged and they have been justified in the exercise of social democracy, which means the rule of the people for the benefit of the people.

Mr. HARDWICK. Mr. President——

Mr. OWEN. I yield to the Senator.

Mr. HARDWICK. I wish the Senator would not call "State socialism" democracy. As I view it, that is an entirely different situation.

Mr. OWEN. I do not wish to wound the feelings of the Senator from Georgia, but I am merely describing some efficient forms of modern democracy by describing his views of democracy.

Mr. HARDWICK. I will also suggest to the Senator that I will be very glad if he will give us the benefit of any investigations he may have made as to the rates charged on the Government-owned railroads in Europe generally, as compared with those charged on our own railroads.

Mr. OWEN. I will tell the Senator one thing they do, and that is they give such special rates to their own manufacturers that they may get a rate to the sea which enables them to compete with all of the world successfully.

Mr. HARDWICK. In this country I thought we had abolished that practice.

Mr. OWEN. I am describing conditions in Germany, and I am describing them because in a large measure they meet my personal approval. Germany has gone much further. They have used the powers of the people democratically in their municipalities, so that the people own the gas companies; they own the electric-light companies, city street-car lines, city buses; the people furnish water to their own cities. They have gone further than that; and, even in a town like Munich, they have municipal schools, hospitals, museums, art galleries, municipal slaughterhouses, municipal bakeries, milk depots, and municipal breweries, which will appeal to any unregenerated Democrat.

Mr. HARDWICK. Does the Senator want them over here?

Mr. OWEN. I have not made any pronouncement to that effect. I am simply describing a condition which exists in a

so-called monarchy, where the spirit of democracy has made itself felt by taking over the combined powers of the people and using them for the benefit of the individual citizen.

Mr. STONE. Mr. President, if the Senator will permit me, he did not answer the Senator from Georgia correctly. The Senator from Oklahoma said they had municipal breweries in Germany, and he was describing that part of the German economy which appealed to him and which had his approval. Moreover, he said that municipal breweries were a thing that would appeal to any Democrat.

Mr. OWEN. Which caused the Senator from Missouri to rise at once. [Laughter.]

Mr. STONE. Yes; and it causes me to rise to insist upon the accuracy of the Senator's answer. He being a Democrat, it must therefore appeal to him.

Mr. OWEN. Mr. President, I made the observation that it appealed to unregenerated Democrats.

Mr. STONE. The Senator ought not to make a statement and then rather run away from it and leave some of us embarrassed. I suggest that he stand by his guns.

Mr. OWEN. Mr. President, I would stand by my guns if the guns that the Senator wants me to stand by were really my guns. They are his guns.

Mr. SIMMONS. Does the Senator mean that it appeals to their appetites or to their political faith?

Mr. OWEN. When I speak for myself I waive my appetite and speak on this subject for prohibition as a matter of preferable National and State policy. But I was describing a condition in Germany where, in spite of monarchy, the spirit of democracy has made itself felt along these lines; and it accounts in large measure for the tremendous efficiency of the people in Germany in the present great contest, where they are self-sufficient and self-supporting on the inside of their own lines.

Mr. HARDWICK. Will the Senator insist on calling that the spirit of democracy? It seems to me that that is a profanation of the term.

Mr. OWEN. Oh, yes; I insist upon it. Democracy means the rule of the people for the people—for all of the people, for their happiness, health, and efficiency. Thomas Jefferson's heart was right. He demanded light, education—the common school to educate all the people whom he desired to govern themselves—but he had no conception of modern times; and the ideas which Thomas Jefferson entertained in the days of the tallow candle—when he approved the independence and liberty of the citizen and the means by which to protect that independence—no longer apply to modern democracy. They are only valuable historically. Now, no citizen is independent. He relies on others for his food, his clothing, his shelter, his transportation, his employment, his compensation, his health, his liberty, his happiness, and except for his Government, organized by the many for the adequate defense of every unit of our citizenship that goes to make the many, he would be made an abject slave by the natural operation of the greed of unrestrained power, organized under laws that have erected gigantic corporations that never die and whose power can only be restrained by the Government itself.

I stand for men and their happiness first; second to this I glory in the accomplishments of corporate power. Its triumphs are magnificent and in spite of criticism is helping to lead men into higher forms of intelligence and life.

Mr. President, I make these observations because I do not wish to be silent when this matter is being considered and seem to acquiesce in the idea that we would be transgressing the doctrine of fundamental democracy if we dared to establish a plant where the powers of the people were possibly to be used for the benefit of the people in time of peace. If it were true that we could not do that under the Constitution of the United States, then the Constitution would be indeed an iron band around the expanding life of the modern man. It was intended to be an iron band when it was drawn to protect property rights against human rights. I have heretofore pointed out that the great Civil War was due to the undemocratic character of the Constitution of the United States, which was made practically unamendable, and which put in the hands of certain gentlemen of the United States Supreme Court the power to hand down a Dred Scott decision, nationalizing slavery in this country, with no right to recall the judges who made the error, and no way to amend the Constitution by peaceful process, which unhappily left no available remedy except the cannon's mouth.

I believe in a liberal interpretation of the Constitution. I believe the Constitution ought to be construed in the light of being intended as a servant of the people in their organized capacity. My only regret is that we could not go further along these lines; but certainly, even for a strict constructionist, this proposal in the conference report could not meet with any sound objection.

Mr. WORKS. Mr. President, I expressed, in a brief way, my views upon the proposition that is now before the Senate when the bill was up for discussion. I am not going to take up the time of the Senate now in repeating what I then said; but I do desire to make some suggestions, in view of what has been said here this morning, respecting the constitutional question involved.

I have no doubt that the Government has the constitutional power to construct a plant and manufacture nitrate for governmental purposes. I am equally clear in my own mind that the Government has no such power to construct a plant and operate it for the purpose of manufacturing and selling to private individuals the commodity manufactured in that way.

It is suggested that if the Government has the power to manufacture nitrate, the surplus fertilizer that results from that constitutional act on the part of the Government may be sold to private individuals. I am not so sure about that. Possibly that might be justified if the plant were in good faith being operated for governmental purposes. But, Mr. President, we all know that it is not the prime object of this legislation to manufacture nitrates for governmental purposes. The Senator from Alabama [Mr. UNDERWOOD] has been quite frank about it. He says to the Senate that the principal object, the important object, is to supply fertilizers to the farmers of the country. Therefore, we are simply trying to evade the Constitution. That is what it amounts to.

If I had not known the liberal views of my good friend the Senator from Minnesota [Mr. CLAPP], I should have been amazed at the propositions of law laid down by the Senator. I think he must have been speaking as a farmer and not as a lawyer. I have had occassion to say more than once that we are rapidly moving toward paternal and centralized government, as the people of this country are represented here in Congress. That is perfectly evident to anybody who has kept account of the trend of legislation. But the Senator from Minnesota is not only tending in that direction; he has arrived; because if the Government can establish a manufacturing plant and manufacture fertilizers for the purpose of selling them to private individuals, then the Government can do anything in that direction. There is, if that be true, no limit, under the Constitution, to its exercise of power for private purposes.

Mr. President, I am opposed to that tendency, as the Senate very well knows. I have been contending against it here from time to time as these questions arose. The temptation occurs to do this thing and that thing that amount either to a violation or to an evasion of the Constitution because it seems to some Senator or some body of Senators to be a necessary thing to be done by the Government, because it can not be done by anybody else. That is an exceedingly dangerous tendency. Congress ought not to give way to temptations of that sort if it has the effect that I have stated.

Of course it is useless to discuss this question before the Senate now. We are wasting time, except that one sometimes feels like expressing his own convictions upon a question so that he may be understood. I think this legislation ought not to be enacted. I think we are not going to enact it in good faith. I am morally certain that if it is made a part of the statute that is about to be enacted, it will be not because it is thought by Senators that it is necessary for governmental purposes, but that it will be done for the benefit of the farmers, which, to my way of looking at it, is a plain violation of the Constitution.

Mr. LODGE. Mr. President, in what I am about to say I wish it to be distinctly understood that I am not criticizing our conferees for the result of this conference. I am certain that they did everything in their power to get the best bill they could. I am entirely conscious of the obstacles which they met in the action of the other House, and that in view of the action of the other House they got everything that perseverance and skill could give them. But I can not let this conference report pass—and pass it must—without at least making it known that there are some of us who are under no illusions as to its character, as to what we have received under the heading of "preparedness for national defense," and as to what we have not received.

I shall spend very little time on the nitrate factory, which has occupied, and very well occupied, some of our hours this morning. I certainly shall not discuss it on constitutional grounds, where I am in full agreement with the Senator from California [Mr. WORKS] and the Senator from Georgia [Mr. HARDWICK], I think. It would be idle to do so. The fact that it is unconstitutional, if it be a fact, would be to many minds an added attraction in passing the bill. But to my mind there

are great practical objections to it. We are proposing to spend twenty millions to build a plant nominally for the production of nitrates for use in war, theoretically to furnish nitrates cheaply for fertilizers, and actually to develop a water power.

Mr. President, before that building is roofed in chemical processes now being developed not only in Germany but in this country will have made nitrates so much cheaper that the use of expensive water powers in their production will be out of the question. Of course that makes no difference to the Government. The Government is not controlled by business considerations, and it might as well give its fertilizers to the farmers as sell them, for all the business proposition there is in it. The great German chemical company known as the Baedischer Co., which is the greatest in Germany, has sold its interest in the Norwegian water powers, which was obtained particularly for the purpose of producing nitric acid, because it can do it better with its own chemical processes. The Senator from Rhode Island [Mr. LIPPITT], whom I regret not to see in his seat, can inform the Senate about the new processes which are being developed here by some of our great chemical companies, in which, from waste products, they can secure nitrates—and are securing them at this moment and selling them commercially—for such a price as to put the Chilean nitrates out of the market and make the production by water power too expensive.

I think it is a waste of Government money to spend it in that way, when what we need can be secured so much more cheaply; but, of course, the Government has two great advantages. The Government system interferes with any possibility of private profit or private enterprise, and it can, as I have said, give the nitrates for nothing to a particular class of the population. That has been agreed to by both Houses, and it is needless to say more about it.

Now, as to the bill, of course nitrates have nothing to do really with the preparedness question. They are an excuse for other things. Now, to come to the real question to which the bill is supposed to be devoted. The House sent over to us what I regard and what I stated on the floor of the Senate was a wholly worthless bill. All it did was to provide for a further development of the National Guard, which may or may not be useful, which I think may be useful for national defense, but on which I do not think the national defense can be based. Otherwise it left things substantially as they were. It was no advance in the preparation of our defense by the Army and by military means on land. The Senate committee brought out a very much better bill. It did not go as far as many members of that committee desired. I know it did not go as far in many directions as the Senator from Oregon [Mr. CHAMBERLAIN], who spent so much time and thought and intelligent care upon it, desired. I fancy no one was more alive to its defects or so alive as he or has a juster idea of what ideally ought to be done. But it came out a wonderfully improved bill, a wonderfully better bill than the House passed.

In the first place, it provided an organization for the Army. It created new units. It made an expansible force which was of the greatest possible merit.

I am happy to say, and I think I am not mistaken in the fact, that that has been in substance retained in the conference report, and that is very valuable indeed.

The Senate committee also increased the Regular Army, and they put in the bill section 56, which converted the volunteer act now on the statute books from a dead statute to a living and effective law. Under section 56 they could include both the general volunteers of the United States and what are known as the Plattsburg camps. They did much toward developing the education of boys and young men in our schools, academies, and colleges.

Then the bill came to the Senate, and the Senate, I think, still further improved it, barring the nitrates. We raised the numbers of the Regular Army to 250,000. We voted down overwhelmingly the proposition to make the Army only 150,000; we voted down decisively the proposition to make it 230,000; and we carried it at 250,000, which, to my mind, is the very least we need, and need now. The amendment of the Senator from Connecticut [Mr. BRANDEGEE] was placed on the bill, fixing the number at 250,000.

By two close votes we sustained the committee on section 56. Now, the bill comes back to us with the Regular Army brought down to 175,000. By the fortunate retention of the Senate organization and the increase of units that Army can be enlarged to 216,000, which, I think, including the Philippine Scouts, would make a total of 221,000. It is far better than what was brought to us from the House originally.

But I have looked on, Mr. President, with amazement at the votes of the American House of Representatives on that Army bill in the present condition of the country. We are having difficulties with Mexico. A small expedition of 4,000 or 5,000 men has been sent over our border to try to punish the author of the outrages at Columbus and to prevent further outrages of the same kind. In order to support that little expedition and to protect our frontier the whole Atlantic coast, from Maine to Fortress Monroe at least, has been stripped of troops, and to-day they are taking away, I am informed, even the Coast Artillery. They have left all that great tier of States with those immense seaports through which the entire trade of the United States to the eastward pours out with no defense except the State militias; and as to the militia of New York, Pennsylvania, and Massachusetts, which happen to be, I think, the largest in numbers, and New Jersey or Connecticut, they do not dare to take those troops for service on the border in order that they may relieve the Regular troops now engaged on the border and allow them to be used for the support of the punitive expedition. That is the condition which is before us to-day. The western coast has been stripped in the same manner, if I am not misinformed, and we find the fact staring us in the face that we have not enough men to carry on those small operations in Mexico and at the same time protect our coast. We have not enough men in the National Guard and the Regular Army combined.

The American House of Representatives deliberately cut down the Regular Army from the very moderate figure suggested by the Senate. It seems to me perfectly incredible that either branch of the American Congress in such a situation as that should be willing to put $20,000,000 into this bill for developing a power plant at Muscle Shoals, or somewhere else, for the manufacture of nitrate, and not be willing to give the country the soldiers it needs for its immediate defense at this moment against troubles so trival compared to the wealth and power of the United States as those which have arisen on our Mexican border.

I do not believe, Mr. President, that under the circumstances our conferees could have gotten more. When I look at the action of the House of Representatives I confess I am thankful they got as much as they did. But I do not want anyone to suppose that there are not many Senators in this body who will allow that report to go through, if it must go through, under any illusions as to what we are getting.

Mr. NEWLANDS. Mr. President——

The PRESIDING OFFICER (Mr. LEA of Tennessee in the chair). Does the Senator from Massachusetts yield to the Senator from Nevada?

Mr. LODGE. I yield.

Mr. NEWLANDS. I ask the Senator from Massachusetts whether he thinks a favorable effect would be produced on the action of the House if we should reject this report? I should like to state that I share the Senator's views regarding the subject.

Mr. LODGE. Mr. President, the House took direct votes on the question to which I am referring and their majorities were decisive. I do not believe they will change their position. As a friend of proper national defense for my country I do not want to run the risk of destroying even this bill, poor as it is. I think the original plan of those responsible in the House was to do absolutely nothing. I think that is where they meant to leave us.

Mr. LEE of Maryland. I will ask the Senator, with his permission, if there was not a decided majority of about 100 in the House, a nonpartisan majority, made up largely——

Mr. LODGE. I have not uttered a word that is partisan. I am not discussing this question from a Democratic or Republican standpoint. I am discussing it from the American standpoint, although it may be difficult for the Senator from Maryland to comprehend it. I have not said one word about party. I am not blaming any party. I blame the men of my party who voted against it just as much as I blame the men of your party. The national defense is not a party question, to my mind.

Mr. STONE. Mr. President, I should like, for my information, to ask the distinguished Senator what he thinks the total strength of the Regular Army should be.

Mr. LODGE. I think the strength ought to be at least 250,000, I should be glad to see it more, but I think that——

Mr. STONE. That is the minimum.

Mr. LODGE. That seems to me the minimum.

Mr. STONE. Is that in a measure due to the Senator's apprehension of greater trouble than we have with Mexico?

Mr. LODGE. No, Mr. President, it is not due to that, still less to any apprehension of war with any first-class power. I believe we need a Regular Army of 250,000 men for the proper and ordinary protection of the country and to meet just such difficulties as have occurred on the Mexican border, which hardly can be dignified by the name of war. I think that the Mexican

difficulty in which the President has been obliged to employ the Regular Army has shown the utter inadequacy of the force; that if trouble occurs on one of our frontiers like that we ought not to have such a small force that we have to strip every post and fortification on both coasts in order that the President may be allowed to have a reasonably defensive line on the border. There is no saving of money in it, as the Senator from Wyoming [Mr. WARREN] suggests to me. The transportation alone would be an immense cost. In other words, I believe we should have a larger mobile army for time of peace for all time. Troubles may occur to the south of us which will need just such a force.

Mr. STONE. If my friend has, it seems, therefore, no reason for apprehending any serious trouble with Mexico or, as he said, with any great and important power, to what use would we put that Army of 250,000 or 300,000 men in actual necessary activity?

Mr. LODGE. Mr. President, the Mexican situation is what the Senator knows it to be. I think the President ought to have had enough troops at his command under the conditions which arose and the expeditions he thought ought to be sent to send a proper force of men into Mexico and at the same time have defended the border without finding it necessary to strip all the other posts in the country, which ought not to be stripped, of the Regular troops. You can not call out the National Guard to relieve them on the border, because they are needed for the protection of the States, which are exposed by the removal of the regulars.

Mr. BORAH. Mr. President——

Mr. LODGE. I yield to the Senator.

Mr. BORAH. In this connection I will state that the President said in his speech at Kansas City that he did not have a sufficient force now to protect the border between Mexico and the United States.

Mr. FALL. Mr. President, will the Senator yield to me?

Mr. LODGE. I yield to the Senator from New Mexico.

Mr. FALL. Has the Senator any knowledge as to whether the calling out of the National Guard from the States of Texas, New Mexico, and Arizona has, in the opinion of Gen. Funston, provided the additional number of troops that he needs there now or has the Senator any knowledge as to whether Gen. Funston did call for more troops?

Mr. LODGE. I have no knowledge of what Gen. Funston has demanded or asked for.

Mr. FALL. Does the Senator——

Mr. LODGE. One moment. The Organized Militia of New Mexico and the Organized Militia of Arizona are less than 1,000 men. The Organized Militia of Texas, in round numbers, is 3,300 men. I say this without having seen Gen. Funston's statement. I believe it is totally inadequate to relieve the Regular troops which he ought to have at his disposition as a mobile force.

Mr. LEWIS. Mr. President——

The PRESIDING OFFICER. Does the Senator from Massachusetts yield to the Senator from Illinois?

Mr. LODGE. I am yielding to the Senator from New Mexico.

Mr. LEWIS. I apologize to the Senator from New Mexico. I thought he had yielded the floor.

Mr. FALL. Then, again, I notice in the papers this morning a telegram published addressed to one of the Senators from Arizona stating that there are no troops west of Nogales or east of Yuma along the national boundary line, and there are 2,500 American citizens living along this line who are subject to attack at any time by marauding bands.

I can say to the Senator, further, from my personal knowledge, that at the time of the attack on Columbus, N. Mex., there were no troops between the city of El Paso and Columbus, 73 miles, except those immediately patrolling the border within 3 miles above El Paso; that there were no troops west of Columbus for thirty-odd miles on the Mexican border, with the exception of a portion of the Columbus garrison stationed 9 miles west; and that there were no troops from Huachita for 40 or 50 miles or 60 miles west to Douglas; that there were no troops from Douglas west except five or six men at Osborne Station; that there were no troops at Hereford ranch, and marauders had crossed at that station and ranch 27 miles west; that marauding bands had come across there and had been chased back both before and subsequent to the attack upon Columbus; that there were not sufficient troops to comprise any patrol whatever along the border; that the border has not been patrolled; that there were no troops from Douglas to Fort Huachuca 50 or 60 miles; that there were no troops from Fort Huachuca to Nogales; that there were no troops west of Nogales to Yuma.

Mr. SMITH of Arizona. If the Senator from Massachusetts will pardon me, I will state that I was at the War Department this morning, as I have been on a good many mornings, and I find that there was a dispatch received there this morning from the station at Yuma. I am waiting for information from the department about the situation at Nogales.

Mr. FALL. Undoubtedly.

Mr. SMITH of Arizona. I was at the department for the purpose of attempting to get a greater force along the line between Nogales and Yuma. There are settlements along there. I have no doubt the department appreciates the condition, and they promised to do what they could.

But I will not take my seat without saying, with the Senator's further permission, that there has been from the start and is yet a condition along that border that should have been met with a sufficient force. They have not had it. The people have not been protected as they deserve to be protected. I have done whatever I could, and from the reports received by the department I have learned the disposition of the forces there under the direction of the military authorities having immediate control of the position. I am saying this not in justification of the conditions there but in the line rather of the argument the Senator from Massachusetts is making, that there has not been the protection that ought to have been accorded to the border. I had hoped to see not only those homes but every home on that border protected so that the wives of the settlers can go back to their homes.

Mr. FALL. I think the Senator and myself do not disagree at all. We are in thorough accord. I have named some of the places that he has named at which troops are stationed. I will ask the Senator from Arizona how far it is from Yuma to Nogales?

Mr. SMITH of Arizona. I should guess it is about 250 miles.

Mr. FALL. There are no troops along the border between those places?

Mr. SMITH of Arizona. No; and there are few settlers. There are none toward the extreme western end, but there are settlements in the south Pima country.

Mr. FALL. I am asking about troops. There are no troops between Yuma and Nogales?

Mr. SMITH of Arizona. There are no troops—that is, there were not this morning—between Yuma and Nogales.

Mr. FALL. My information was obtained from a recent trip of 450 miles by automobile made by myself from the points I have named to the points I have named directly along the border. I could give the number of troops who were at that time stationed in different places. There are not enough troops to patrol the border.

Mr. SMITH of Michigan. If the Senator from Massachusetts will permit me, I should like to ask the Senator from New Mexico if he has heard, either officially or otherwise, that just prior to the attack on Columbus the officers of our Government were warned of that attack; that the department had information several days before the attack?

Mr. FALL. I do not intend to enter fully into any matters of that kind now. I interrupted the Senator from Massachusetts only to draw out facts and to add the additional information. I will reply to the Senator's question at some other time—not in the time of the Senator from Massachusetts.

Mr. SMITH of Michigan. I think I will say this in the Senator's time, if he will permit me: I understand that to be the fact. I think it ought to be inquired into. I think the War Department ought to be interrogated as to whether or not they had that information in advance of the attack on Columbus.

Mr. FALL. I think that is a perfectly proper subject of investigation.

Mr. President, one more suggestion to the Senator from Massachusetts. In the southern portion of New Mexico is the Mesilla Valley, which contains an agricultural population of about 15,000 people. It is on the Rio Grande, running toward the border. One-half of the population possibly are native Mexicans, loyal citizens, but among them recently have been fugitives from Mexico, from every faction. Gen. Mercado, Gen. Castro, and Gen. Avila, of Villa's army, have recently settled there and acquired property in that valley. Each of them has followers who have been brought from old Mexico. Gen. Avila, just recently from Villa's command, has 90 men of Villa's ex-soldiers within a few miles of Las Cruces, as prosperous a town as can be found in the Southwest, and since the calling out of the National Guard four to seven companies of home guards have been organized, who, under their own officers and at their own expense and at the expense of the people of the Mesilla Valley and the immediate vicinity, night and day are protecting their own people.

Mr. LODGE. Mr. President, the statements of the Senator from New Mexico and the Senator from Arizona have vividly illustrated the point I have been trying to make. If the President had had ample troops, sufficient men, and had failed to protect the border he would have been much to blame. But he

has not had the troops. Our total mobile army is 25,000 men, in round numbers, and he had to protect that great border and send an expedition over. He has been taking away even the Coast Artillery, and that ought not to be done. It ought to be possible for us to have a mobile army of reasonable size that we can move to any point where there is trouble of any kind without taking our soldiers out of our great coast defenses, which ought never to have their garrisons diminished in that way.

The point I wish to make is that it was in the presence of facts like these which have been described here this morning that the House of Representatives, without regard to party lines, I will say, if Senators are sensitive about it, voted down the proposition to make the Army what it ought to be in time of peace. We are lucky to have gotten what we did.

Mr. President, to my mind the best feature of the bill as it left the Senate and the best feature of the bill as it came out of the committee, for we owe the clause to the committee, was section 56. Through that clause and through that clause alone, in my judgment, were we able to get a sufficient reserve of United States volunteers, allowing everything that can be done in the direction of the National Guard, and I am not disposed to underrate it at all. We still needed some source from which we could draw trained men in an emergency to call them to the colors in support of the Regular Army. It was the best thing, in my judgment, in the bill.

Mr. LEE of Maryland. Mr. President——

The PRESIDING OFFICER. Does the Senator from Massachusetts yield to the Senator from Maryland?

Mr. LODGE. I yield.

Mr. LEE of Maryland. I should like to ask the Senator what reason there can be why any patriotic American citizen desiring to qualify himself as a soldier for the defense of his country can not qualify as a member of the National Guard under the provisions and regulations that the bill provides?

Mr. LODGE. I will tell the Senator of one especial class. Now, I am not saying whether it is a just view or an unjust view that they take. Organized labor, union labor, with great bodies of men belonging to them, are not willing and do not join the National Guard. They would contribute their proportion to United States volunteers. I think that all classes ought to share in the defense of the country. That is one class which could be obtained that would not be obtained from the National Guard, in my opinion. But why can they not both go together? Because I want to make as strong a reserve as I can to put behind our Regular Army, one that can be quickly mobilized in its support, I do not find it necessary to destroy the National Guard, and why should the National Guard, or those who represent a portion of it, find it necessary to destroy other methods for providing for the defense of the country?

I am happy to say that some of the National Guard in a number of States, and in my own State, declined to have anything to do with that sort of business, and would themselves prefer to be United States Volunteers; but I do not want to attack or to injure any method of strengthening our defenses.

Of course, when section 56 went out of the bill the Plattsburg camp went, too. I am happy to say that our conferees succeeded in agreeing on a clause which enlarges, as did the amendment I proposed, the scope of section 82 of the original House bill. Under that section the United States is now to take these camps, known as the Plattsburg camps, to give them recognition, to take them into their own hands, and to give transportation, subsistence, and equipment free.

I had a clause in my amendment to pay for the month's service the rate paid to an enlisted man, but that the conferees dropped out. It is not the most important feature, but I think it is very important not to have these camps depend exclusively on men who can pay their own expenses. This enlarges it and democratizes it, and will bring in a great many more men than went in before.

I am told that there are already 200 men a day signing the agreements in New York to go to camp. It is stated that, if this bill becomes a law with that clause in it the number will rise to 400 a day, and that employers generally are making arrangements so that their young men, without loss of pay or loss of place, can go to the camps.

Mr. President, if I thought that we could get a better bill by sending this report back to conference, I should vote against the report. I believe, however, that doing so might result in the defeat of the bill. I do not think that anyone who is in favor of preparedness—I dislike the word—who is in favor of proper national defense, can afford to defeat this bill, inadequate as it is. It does make some great improvements, and, therefore, the report will pass without opposition from me.

I desired, however—and I have taken more time than I had intended—to point out as clearly as I could that as now framed the bill is insufficient and inadequate, and that if this country is to be properly defended on land we must make up our minds to take further steps to greatly enlarge our military resources.

Mr. LEWIS. Mr. President, any Senator with the influence of the Senator from Massachusetts [Mr. LODGE], whose standing is such as that of the Senator from Massachusetts, rising on this floor and giving expression to any views, is taken as speaking—and I should like the Senator from Massachusetts to remain on the floor for a moment, if he finds it agreeable——

Mr. LODGE. I have been called from the Chamber by a matter which I allowed to wait for some time, though I should regret not to hear what the Senator is going to say. Of course, I will remain, however, and let my engagement wait.

Mr. LEWIS. I was proceeding to say, Mr. President, that Senators occupying positions such as the Senator from Massachusetts occupies can utter nothing on this floor that will not be taken by the country as meaningful in all its expression, and wherever capable of a construction against the administration or against the President, such will be adopted by those agencies which legitimately have a right to assail the administration because of their different point of view.

There is before the country at this time, and uppermost, the question of national defense. The construction and size of the Army is one that engages the attention of the country, and all the accomplishments of this administration in matters of civil affairs are subordinated to the single matter of Army and Navy. All the achievements of the administration in behalf of the people on one side of the political contest are purposely lost sight of, that they may be dwarfed and hidden from their effect, and the effect upon the people lost to their consideration. The matter of national defense is brought uppermost always.

Then, in connection with this, is the attack made upon the Democratic administration alleging that it has failed, and is now failing, to provide this national defense; and our honorable opponents will be found in the convention that is soon to assemble in Chicago making an assault upon the Democracy on the ground that it has failed to provide national defense. There will be discovered from that assembly of gentlemen such astute, clear (?), and defined (?) party platforms as follows:

First. We condemn the Democracy for having failed to provide adequate national defense for the country at a time of its extremity.

Saying nothing as to what they would regard to be adequate defense or wherein the Democracy has failed.

Second. We condemn the administration of President Wilson for the confusing and uncertain and vacillating international policy, whereby it has failed to maintain the dignity of the country, yet unnecessarily insulting where it has not courage to assail, and so forth.

Something similar, in that definite (?), perfect, clear (?), and well-understandable set of doctrines, we will get from which any kind of construction by any voter can be drawn, any kind of meaning can be had by any man, particularly in those quarters where political support will be sought; any construction that may be at that particular time profitable will be urged as the meaning of the provision.

Therefore the statements of the Senator from Massachusetts that the President has not surrounded the border of Mexico with efficient defense will be taken as an indictment of the administration by the able Senator, charging it with a failure to perform the duty it owed to America in providing this defense.

Mr. LODGE. Mr. President——

The PRESIDING OFFICER. Does the Senator from Illinois yield to the Senator from Massachusetts?

Mr. LEWIS. Does the Senator from Massachusetts rise to interrupt me?

Mr. LODGE. I do.

The PRESIDING OFFICER. Does the Senator from Illinois yield to the Senator from Massachusetts?

Mr. LEWIS. I yield if the Senator rises for that purpose.

Mr. LODGE. Mr. President, I am sure the Senator from Illinois does not wish to misstate my position. I never blamed the President by a single word for his action in that matter. On the contrary, I said that if he had had sufficient men to give the border proper defense and had failed to do so he would have been to blame, but that he did not have sufficient men to do it, and, therefore, he was not to blame, but that Congress was.

Mr. LEWIS. Therefore I ask the Senator if he does not by that leave the impression upon the country that the failure of the President to supply those troops was due to the failure of the Democratic Congress—as it is in power—to provide him with force? I will ask the Senator if his charge in that respect is not susceptible of the accusation which is hereafter to go forth, that had the Democratic Congress supported a policy that gave adequate defense, or had there been soldiers provided by the Demo-

cratic Congress, the President of the United States could have given sufficient support to the border? I now ask the Senator if he will not say from his place that when the President of the United States came into power he found the Army in the exact deficient condition which the Senator has pointed out this morning?

Mr. LODGE. Why, Mr. President, a year ago, as everyone knows, the President was opposed to any increase in our national defenses, and he referred to all who suggested an enlargement of our national defenses as nervous and excited. Since then, I am glad to say, he has changed his mind, and he has been advocating national defense. I in no way brought any political suggestion into the remarks I made about the pending conference report; but if the Senator from Illinois thinks because I criticized the lack of sufficient forces now, that that is a criticism of the President, it is because he chooses to fit that charge on. I never had any such intention; but

Suspicion always haunts the guilty mind.

Mr. LEWIS. Yes; Mr. President, not only does "suspicion haunt this guilty mind," but this mind was guilty of suspecting the Senator of the real purpose which now he confesses, and that was that, by insinuation, he would leave the impression from which the press opposed to us could draw the inference of the accusation, and there, covering it by the artful manner of speech, could leave it open to the charge of being confessed by silence on this side. I purpose unmasking the Senator's mystery of words and revealing his real purpose—which is to aid his campaign in Massachusetts and draw upon the President a wrong judgment from the people.

Now, Mr. President, I then say that when this administration came into power it found the Army in the bedraggled and unprepared condition for national defense that the Senator from Massachusetts indicts; and this was after his party had been in power for 16 years, with the clouds of war hovering in the horizon of the world, warning our honorable opponents of just such conditions as have fallen upon this country from Europe and elsewhere; and during the administration of the party of the able Senator from Massachusetts the troubles to which the Senator from Arizona and the Senator from New Mexico have alluded from Mexico had broken out and continuously existed in Mexico and were constantly in process in Mexico. All this admonished those who were in power under preceding administrations of the necessity of increasing the national defense to meet the very conditions that have arisen in Mexico. If, sir, the failure to meet them is due to want of proper Army, it can not be justly charged by the Senator from Massachusetts, as he adroitly made the charge, to the failure of the President to send all these forces because they had not been provided by a Democratic Congress. It is perfectly apparent that the Senator intended to leave that impression, which could be used all over the country, when he must know, as know he does, that the preceding Congresses, through all the varieties of the administrations for which he spoke here on this floor, failed to make any provision such as the present Congress has made, or, indeed, made effort of any kind to remedy the conditions.

Therefore, if my able friend is sincere when he says he is not speaking from a partisan point of view, that he in no wise refers to partisanship, he then could go further and in frankness express the truth—that these conditions which he indicts were inherited by this administration, and that the President of the United States a year or more ago, when he opposed an increase of the Army until there appeared a necessity for such increase, was merely voicing the natural view of the American public: First, Mr. President, to call for armies before they were due or necessary was to unnecessarily alarm the country; second, it was to be misunderstood in Europe at a time when we were seeking by diplomatic arrangements to bring forth results through peace and quiet. To demand then an excess of armies would have been to appear to contradict the efforts which were being made by the President to establish through peace and diplomacy the results sought to be achieved.

Now, Mr. President, I want to call attention to the fact that, even if the Army had been increased to the full number which the Senator from Massachusetts would have, still I invite the Senator's attention to a more practical fact than the mere assertion of figures. I ask what method would the Senator from Massachusetts prescribe by which enlistments could be secured? As long as the present prosperity of the country produced by a Democratic administration has been so inviting to the ordinary boy on the farm, to the man in the factory, and to the citizen in the city, he will not give up from seventy to one hundred and fifty dollars a month to enter the service of his country, when she is not actually at war, for a net compensation that will not equal $35 a month. Secondly, what method will the Senator from Massachusetts suggest by which we will secure these extra enlistments to the full extent of any quota that might have been provided in actual figures in the bill? The issue, Mr. President, is not what numbers you provide, but what method shall you provide to obtain the numbers?

The able Senator from Massachusetts said that the National Guard does not serve the deficiency, but he admits that at this particular time the President was compelled to call out the guard and that the guard has been called out to perform border duty, indicating very clearly, Mr. President, that the assault made against the uses of the guard some weeks ago by Senators now falls to the ground as having been unjustified, for it is now seen that in this particular hour it is the guard that had to be resorted to as the only source of refuge and protection upon that border because of the failure of previous administrations to give us an Army to the number which the Senator from Massachusetts would have us understand is necessary, and for the absence of which he would by implication indict the Democratic administration.

Now, sir, as to section 56, creating a volunteer army, I am one of the Senators responsible for striking it out—that is, the Senator from Maryland [Mr. LEE] and I led, so far as you can use that word in this body of equality, the assault on the section—pointing out that its effect would be to destroy the guard's usefulness, creating no force in its place, and suggesting other reasons which, to our minds, appeared sufficient. Now, the Senator from Massachusetts says that had section 56 been left in the bill, his judgment is that the laboring men or the union men would have participated in it.

Mr. President, let me call to your attention a thought that it is important to consider. If union labor will not join an army in a State known as State guard, where they by their votes elect the commander in chief, the governor of the State, where they elect the mayors of the cities and sheriffs that call out the guard whenever strike duty is required in the cities, these voters practically controlling the officers of the National Guard through the election of those instrumentalities and naming the officers practically, how will you, then, ever obtain that class of men for a Federal army over which they have no control whatever by voice or by vote, and where there is not a dollar provided to pay them for the time taken from their work, and where they run the risk of losing their employment, their occupation? It is idle to make the distinction suggested by the Senator, because it must fall upon the mere suggestion of it. Therefore the Senator from Massachusetts can not successfully make his appeal to that set of young men in Massachusetts who expect, perchance, to avail themselves of these camps this summer and in the coming fall, and who would feel kindly to the Senator in his election because he appeared to espouse their particular cause. It was upon my motion in this body, coupling my efforts with those of the Senator from Massachusetts, that has given the provision now in the bill establishing training camps in the United States.

Mr. President, I indulge these observations because I could not allow the insinuating and artful suggestions of the skillful Senator from Massachusetts to go forth to the public for the uses he intended them without their being replied to by one of the many who saw the purpose, and must contest it while they deny that it was proper in its place or just in its accusation.

The PRESIDING OFFICER. The question is on agreeing to the report of the committee of conference.

Mr. BORAH. Mr. President, I will not delay the Senator in charge of the conference report a great while. I can imagine his desire to be rid of the task which has devolved upon him for so many months, and which he has taken care of with such remarkable industry and ability. But before the conference report comes to its final disposition, I want to make such observations as seem to me to be justified, if not required, by the situation.

In matters of legislation ordinarily it is a wise rule to accept a half loaf when you can not get an entire loaf. As stated by the Senator from Georgia [Mr. HARDWICK], we can not have just what we want in legislation, and where there are a number of men holding diverse views there must necessarily be some compromise in the final results. I am fully aware that the Senator from Oregon and his associates upon the conference committee have labored earnestly and patriotically for as good a bill as could be possibly obtained under the circumstances, and it might very well comport, it would seem, with our duty to simply vote for it and pass on. If it were a mere matter of commendation of the earnest efforts and labors of those who have had charge of the measure, both in the committee and in conference, I would unhesitatingly do so. But that is not all there is to it. There are some things in the report which seem to me not only undesirable but pronouncedly bad. I understand, of course, how this report was brought about, and in

criticizing the report I do not feel that I am criticizing the conferees. I would be, in my judgment, better prepared to vote for this bill if it represented the real views of the conferees of the Senate. To my mind the step we are about to take is a step in the wrong direction, and I am not willing to take it without the RECORD speaking my sincere views in regard to it. If it were a step in the right direction, but a step which seemed to me not to go far enough, I would be content to await the future and go the rest of the way later. But where the step seems to me to be in the wrong direction I feel that the challenge should come now, and in a positive way. What I say will not, I apprehend, affect the result as to the report, but it will at least leave the record in such condition that it can not be said in the future that this legislation was initiated without objection.

The first objection I have to this bill is the one to which the Senator from Illinois [Mr. LEWIS] has just referred, and which I think is more serious than the Senator from Illinois would seem to think. There is no place in this bill, in my judgment, for the large body of men in this country who are known as union-labor men. They can not join the Regular Army and remain in the field of labor, and, from their viewpoint, they can not join the militia and remain laboring men. Mr. President——

Mr. LEE of Maryland. Mr. President——

The PRESIDING OFFICER. Does the Senator from Idaho yield to the Senator from Maryland?

Mr. BORAH. In just a moment. They have it within their power, of course, in the militia to select their officers, and so forth, as said by the Senator from Illinois [Mr. LEWIS], and in that respect it would, upon its face, be an advantage. If there were no other reasons, if there were no duties connected with the militia which would overbalance that, it would undoubtedly be a controlling influence in the mind of any man who desired to become a part of a military organization; but, as I ventured to say some weeks ago in the discussion of this matter, so long as the National Guard or the State militia can be utilized and so long as it is more and more used for strike purposes, and as the police force of the State, it stands to reason that no considerable portion, in fact a very small portion of the laboring men, will ever give it their consideration or support. They will not join an organization which may the next day be called into service against either themselves or their fellow workmen. That is one of the strong objections to the National Guard being organized and federalized as it is here sought to do. It can never be made into an effective military organization.

I yield now to the Senator from Maryland. I did not intend to keep him waiting so long.

Mr. LEE of Maryland. Mr. President, I wish to ask the Senator two questions, namely, Does he feel that organized labor is irrevocably and permanently committed to the idea that all of its agitations and strikes must be conducted upon an unlawful basis? That is question 1. Question 2 is this: Even if that were the case, does not organized labor and does not every person who thinks at all realize that all military force is per se a police power in the ultimate analysis, and if the local police is overcome by any form of disorder the militia are called upon; next and inevitably the standing Army of the United States would be called upon; and that from the standpoint of order it is simply a question of detail and not a question of principle; and whether or not really the Volunteer Army, or any other form of military power, is not necessarily available for the preservation of law and order in the country; and whether labor organizations do not realize that they must recognize that law and order will prevail in this country, and that their proceedings had better be upon a lawful basis as American citizens?

Mr. BORAH. Mr. President, the first question of the Senator from Maryland assumes that the laboring men of this country are committed to the proposition of accomplishing their purposes and designs through lawless methods.

Mr. LEE of Maryland. I asked the Senator if he thought so.

Mr. BORAH. I do not think so. There are always lawless individuals in every considerable number of men, but the great body of laboring men of the country are committed to no such doctrine as that of accomplishing their designs and purposes through lawless methods. There is one thing that the laboring man contends he has a right to do, and which I presume no one in this country would deny him the right to do, and that is to strike, to quit work. The difficulty has been, and the experience which we have had in many States is, that those in power do not wait until there is such actual demonstration of lawlessness as to necessitate the calling out of the State militia; but it has come to be the practice—and it is growing more and more so each year—that immediately upon a strike being called a military force, so near at hand and so ready to be used, is called in for the assumed purpose of maintaining law and order; and time and time again the lawlessness began when the military force was called into action. Now, I would be far from defending lawlessness, but I maintain laborers have a right to quit work. And, moreover, I contend that if they be guilty of lawlessness they are to be tried and acquitted or convicted according to the established law of the land and in the common-law courts of the country, and not by improvised court-martial tribunals. It is not a question of lawlessness against which we are all arrayed, but a question of whether, if lawlessness does occur, the guilty ones shall be proceeded against according to the spirit of our institutions or the spirit of military despotism.

The second question is, Will not the Regular Army be called into service in the matter ultimately? Undoubtedly that may be true, but the Regular Army will not be called into service in such cases in such a way or with such readiness as the State militia has been called. There must be a distinct showing upon the part of the governor of the State, the State authorities, that the State authorities as such, their sheriffs and their deputy sheriffs and the forces of the State represented by the civil authorities, have failed to maintained law and order; and when that showing is made, then the President must pass upon the question of whether or not the showing is sufficient, and it is very rare indeed that the Regular Army is called into action in any instance in these cases except where there is unquestionably an absolute necessity for it. And in no instance has the Regular Army improvised court-martial and tried the civilians. The Regular Army polices the situation.

Mr. CHAMBERLAIN. Mr. President, may I interrupt the Senator?

Mr. BORAH. I yield to the Senator.

Mr. CHAMBERLAIN. I want to call the Senator's attention to section 54 of this bill, in view of the fact that the Senator has expressed it as his opinion that there is no place in this bill for the laboring man or for those who are opposed to the National Guard. If the Senator will analyze that section, he will find that under the powers therein conferred the President can organize the force there provided for almost as efficiently as was done under section 56 as it was originally drawn. So it will be seen there is provision for all of those to enlist in the volunteer force for instruction and training, and their transportation and uniforms are all paid for by the Government of the United States.

Mr. BORAH. The Senator is much more familiar with the details of this bill than I am. I have only had since yesterday to study the report.

Mr. LEE of Maryland. I will ask the Senator whether they get any pay?

Mr. CHAMBERLAIN. No.

Mr. BORAH. I am exceedingly glad to know that there is some provision in the bill which looks in the direction the Senator says; but, as I have understood it, section 56 and all kindred principles had been eliminated from the bill.

Mr. CHAMBERLAIN. I will say to the Senator that section 56 was eliminated in conference from the bill. That section provided for the organization of a volunteer force, under the volunteer act of 1914, which could be used only in time of war. We made it applicable under the Senate bill in time of peace. But in eliminating that section we agreed upon a plan which was submitted to the House by those who wanted to organize a volunteer force for the purpose of training, and strengthened it by not only paying their transportation but by giving them uniforms and subsistence, so that it does not differ very essentially from section 56 in many of its particulars.

Mr. BRANDEGEE. Mr. President, let me ask the Senator from Oregon a question. He does not claim that under section 54 there is any chance for anybody to enlist in any way and become a part of the Army of the United States, does he?

Mr. CHAMBERLAIN. I think so. I will call the Senator's attention to it, if the Senator from Idaho will pardon me just a moment. The Senator will notice that in the very first part of the section it provides that—

> The Secretary of War is hereby authorized to maintain, upon military reservations * * * camps for the military instruction * * * of such citizens as may be selected for such instruction and training upon their application and under such terms of enlistment and regulations as may be prescribed by the Secretary of War.

So it does seem to me that the Secretary of War could prescribe the same terms of enlistment and the same terms of discharge and practically organize that as a volunteer force.

Mr. BRANDEGEE. But, Mr. President, does the Senator claim that they are then enlisted as enlisted men in the Regular Army of the United States and subject to be ordered out of the

country, because they enlist to go to one of these training camps for military instruction?

Mr. CHAMBERLAIN. I would not like to say what construction would be placed upon it by the authorities; but I believe that with the power that is given under that section these men could be, to all intents and purposes, enlisted in the Regular Army.

Mr. BRANDEGEE. If the Senator will pardon me, of course I will agree with the Senator from Oregon that under section 54, if the Secretary of War prescribes that nobody shall attend one of these training camps unless he does regularly enlist as a soldier of the United States and become a part of the Regular Army, then the Secretary of War can increase the Regular Army indefinitely by mere regulations; but it had never occurred to me, in the casual reading I have given that section, that that was the intention of the conference committee.

Mr. CHAMBERLAIN. The Senator from Mississippi [Mr. WILLIAMS] suggests that I used the words "Regular Army." I ought not to have said "enlisted in the Regular Army," but "enlisted in the volunteer force," practically as was provided under section 56.

Mr. BRANDEGEE. Does the Senator mean that the man who goes to one of these training camps for a month or two during the summer to get some knowledge of military tactics, as they did at the Plattsburg Camps, is then enlisted in the volunteer forces of the United States and occupies the same status that he would if section 56 had passed, which provided that the act of April 25, 1914, should apply in times of peace as well as in times of war?

Mr. CHAMBERLAIN. I am not prepared to say, Mr. President, just what the effect of that would be, but I am inclined to think that by putting restrictions around this provision, as the President is authorized to do, it can be made almost as effective as section 56 under the former bill.

Mr. NEWLANDS. Mr. President——

The PRESIDING OFFICER (Mr. HUSTING in the chair). Does the Senator from Idaho yield to the Senator from Nevada?

Mr. BORAH. I yield.

Mr. NEWLANDS. I call the attention of the Senator from Connecticut and the Senator from Oregon to the fact that these camps are organized for instruction and training and not for service, and that the enlistment referred to seems to be for instruction and training and not for actual service.

Mr. BORAH. Mr. President, the discussion leads me to conclude that I was not greatly in error in the inferences which I had drawn from the provisions of the bill as reported by the conference committee. But my objection to this whole proposition of federalizing the National Guard is not to be confined to such objection as I have just made. I think there is a more profound and far-reaching question involved in it, and it seems to me much more extensive in its bearings than we have yet been willing to concede. I feel now that it is more far-reaching than we are permitted to concede. There is an exterior restraint about this whole matter that is repulsive to contemplate.

I called attention the other day to the tendency in this country during the last 10 or 15 years to call into service upon the slightest excuse the State militia or the National Guard in these strike matters, matters which generally have been heretofore settled without the interference of military authority. I called attention to the tendency which had developed of late years, and especially since we had undertaken in a measure to Federalize the National Guard some 8 or 10 years ago. The military force is there; the military organization is at hand; and it has seemed to me that by reason of its readiness and nearness at hand the governors of the States have developed a marked tendency toward calling them into the service, supplanting the civil authorities and taking the place of the civil courts and the civil forces, without in many instances any reasonable justification at all.

I am not again going to review those instances; but I do want to call the attention of the Senate, and especially the attention of the Senator from Maryland [Mr. LEE]—who is so thoroughly in earnest, and no doubt conscientiously of the belief that this is a proper measure—to the fact that I am familiar with one instance in which the State militia was called into action, wherein it was found, after they had been called into action, that the captains and lieutenants and colonels and officers of the guard were practically all upon the pay roll and in the employ of the companies against which the strike was proceeding. It transpired in that instance that practically the entire control of the State militia was a part of the employment and a part of the pay roll of the corporations against which the laboring men were making their contention. It resulted in one of the most disgraceful episodes that has characterized this entire matter from the beginning. It naturally followed that it would be so, because those who were interested financially, with their prejudices and their interests aroused, were the parties who, under military organization and military authority, had the right to act as otherwise they would not have had.

Since we discussed this matter a few days ago, other incidents illustrating this tendency have arisen. In one State, upon what seemed to me very slight provocation, the State militia was called into action again. It is true that they did not proceed so far as to wholly supplant the civil authorities or the civil courts; but it discloses how ready we are in these days to revert back to the use of absolute power when the instrumentalities of absolute power are so near at hand and so easily called into action.

I also called attention in the recent debate to some precedents in English history as to this struggle against the use of arbitrary power and the supplanting of the civil authorities and the civil courts by military trials and military tribunals. I referred to the historic incident far back in 1322, when the Earl of Lancaster was arrested at the head of his troops, court-martialed, and executed, and that after his execution the members of the court-martial, the officers who composed it, were tried by the English courts and executed for murder. The Parliament, upon that occasion, declared that when the civil courts were open the realm was at peace, and there could be no justification for invoking the military authority and trying men through court-martial proceedings. I refer to other instances now, to refresh our memories as to how rigidly in these past years that nation has enforced the subordination of the military to the civil authorities. In 1782 Joseph Wall, governor of the British colony in Africa in command of troops, suspecting a mutiny, caused one Armstrong to be stripped, tied to the wheel of an artillery carriage and whipped with a rope. Armstrong died because of his injuries. Afterwards Wall was tried for murder in the courts of England. Some of the greatest of English jurists presided at Wall's trial, and it was held that he was guilty, notwithstanding the fact that he claimed that mutiny prevailed, that rebellion was in progress, that the laws were defied, and that the only method by which he could summarily administer justice was through his arbitrary punishment by military methods. But the court rejected his plea and held him responsible.

Alfred the Great, that marvel of intellectual power and indomitable courage, far back in the history of England, caused to be executed 44 judges because they denied his subjects a trial by jury. It is now nearly a thousand years, until very late, since anyone with success undertook to deny a man the right of trial by jury in England.

Strafford, when lord lieutenant of Ireland, caused Staremont to be tried by court-martial and put to death. His plea was insurrection, rebellion, necessity, and self-preservation. But this was one of the things for which Strafford was afterwards tried, condemned, and executed as a traitor to the institutions of his country.

Lord Brougham, in discussing the validity of the trial before a court-martial in British Guiana in 1824, said:

> No such thing as martial law is recognized in Great Britain, and courts founded on proclamation of martial law are wholly unknown.

In view of these precedents and of this long, noble struggle against arbitrary power, with what profound regret we read of these midnight judgments of the court-martial sitting at Dublin. It was a surprise, it was a shock to see this flagrant use of arbitrary power—this indiscreet, short-sighted, unnecessary use of the tyrant's court. It was in violation of England's best and noblest traditions, in contravention to the great, underlying principles of her venerable institutions, and in defiance of sound statesmanship and the higher concepts of a Christian civilization.

It is no part of our concern as to the punishment other nations administer to those who offend against their peace. Certainly we would not assume to sit in judgment upon the action of the established tribunals of other nations. But it was supposed, sir, that certain great principles for the determining of guilt and the administering of punishment had through these long struggles of the human family been established. It was therefore discouraging to see a great nation relapsing into the practice of the most absolute of Governments. It was unwise, it was unjust, it was a distinct retrogression of six centuries. It was a deed of folly. It was a stupendous blunder. It will compromise England's good name more than the story of the Dardanelles or any other misfortune of this war. It insures to England countless generations of hatred. And it all serves to warn us how difficult it is to establish the great principles of justice and humanity, how arduous is the task of building up institutions which will administer the established law to all alike. And, moreover, how easy it is, how very easy after great principles, through long sacrifice and time, are established and

great institutions of justice are built up to destroy them and tear them down in a single night. Verily has it been said that eternal vigilance is the price of liberty.

I am warned by these regrettable and unhappy instances, both those which have transpired in our own country during the last few years and those which have occurred of late in England—two great English-speaking nations devoted to representative Government, devoted to principles which the saints of liberty have sacrificed and died to establish—I am warned, I say, how easy it is to relapse and hasten on the back track to the old, brutal, cowardly, cruel days of arbitrary power. I do not want to take any further steps in that direction. I do not want a tremendous organization actuated by the spirit of militarism, on the one hand, and conscious of its political power on the other combining both for every emergency in its own interest fastened upon the taxpayers of this country. I want to know before I take the first steps where the last steps are going to lead. Arbitrary power is the besetting sin of all nations. It seems to be in the blood, and though for years it may not reveal itself, upon some untoward occasion it breaks out, as it has in Dublin, in all its hideous, repulsive, and hellish deformity. I do not want to feed this spirit. I do not want under the guise of preparedness to foster the feeling of contempt for civil government and civil courts which has been manifested so much of late. It is easy to have a Republic in name and have a despotism in fact, and where men are tried in times of peace and while the civil courts are open by military authority we have in fact a despotism under whatever name it may pass among men.

Let me here, so appropriate at this point, call your attention to a minority report upon this very subject which was filed in another branch of Congress no more than four years ago. I call attention to it, not for the purpose of involving anyone in a contradictory position, but because it contains, in my judgment, such sound principles that it ought to apply to any party or any administration and have weight in any legislative body.

You will remember that in 1912 we had before Congress what was then called the militia-pay bill, much less important than this in its aspect and in its largeness and in its comprehensiveness. Upon that a minority report was filed in the House of Representatives. This report, representing the views of the party now in power, says:

The proponents of the measure estimate that the amounts to be paid under it annually to each militiaman will range from $100 to $360 for officers and from $45 to $225 for enlisted men; also that, with existing militia organizations recruited only to the minimum prescribed strength, the total annual expenditure for militia pay may be $9,234,729, which, added to the more than $5,000,000 that the advocates of the measure say is the present annual cost of the militia to the United States, will entail upon the General Government a total annual expenditure of between $14,000,000 and $15,000,000 for militia purposes.

Four years ago the ambition of those who represented the militia and the National Guard was content with an expenditure of from fourteen to fifteen million dollars a year. This report very properly says that if that amount is expended, it will be but a short time until it is trebled or quadrupled. Now, within the space of some three and a half or four years we have not only enlarged very much the pay of officers, but we have enlarged the total expenditure to a point where it runs from somewhere about forty-five million to sixty-five million dollars a year.

This report further says:

And this will be the cost at the very beginning of the operation of the proposed law, and it affords no indication as to the enormous increase that will inevitably occur later by reason of the increase in militia strength, which it is the plain purpose of the pending measure to bring about, and which can and will be brought about without any additional legislation whatever by Congress if this bill shall pass.

Childish must be the credulity of him who can bring himself to believe that the militia will rest content "with any such reward or compensation" as that proposed by the pending bill, or that, if the bill becomes a law, Congress can successfully resist the tremendous pressure that will certainly be brought to bear upon it for more and more legislation of the same kind. The appetite for pabulum from the Public Treasury grows by what it feeds on, and so does the political strength of the possessor of such an appetite if that possessor happens to be an organizable body of men with widespread political and social affiliations.

I think, Mr. President, regardless of who the author was, or where it came from, that that must appeal to the judgment and the good sense of every man in the Senate. When you have an organized or an organizable body whose strength is accentuated by reason of its additional pay from the National Treasury, whose strength is accentuated by reason of its political influence, aside from its military influence, there is no limit to the demands which it may ultimately make. And when we reflect on what 125,000 men have already done in the way of molding public sentiment and public opinion, we can form some crude estimate of what 425,000 or 500,000 or a million men may do in the politics of the country in the future.

Again, this report says:

What may be expected of a widespread military organization, such as the Organized Militia, composed, as it is, of active, intelligent, and aggressive young men, every one of whom is a voter fully alive to his own interest and that of the organization to which he belongs and all of whom have such business or social relations as to make their combined influence very formidable politically? They are fully conscious of their power even now, and their representatives who, in support of the pending bill, have appeared before committees of Congress and have approached individual Senators and Members have presented and pressed their arguments in a confident and aggressive manner.

If this bill becomes a law it will confirm them in their estimate of the political strength of their present organization and will encourage them to use it in support of the many demands that they will surely make for further legislation by Congress in their behalf, and their power to back up their demands will increase pari passu with the great increase in their numerical strength that it is the evident purpose of this bill to bring about, and it will undoubtedly take place under it, should it become a law.

The gift of prophecy is not needed to foretell the nature of the demands that will be made upon Congress for additional militia legislation if this bill is passed. First and foremost there will be insistent and persistent demands for more pay for officers and men, and every demand of this kind that is made will be followed sooner or later by others of the same kind, each being based upon the assertion, doubtless correct, that the constantly advancing standard of requirements of members of the Organized Militia compels officers and men to give more and more of their time to their military duties and less and less of it to their ordinary vocations. Then will come the demand, already voiced in some quarters, that the General Government shall assume the very great expense of furnishing and maintaining horses for Cavalry and Field Artillery and shall relieve the States of other and greater burdens, notably those of providing and maintaining armories, target ranges, drill, encampment, and maneuver grounds, and other necessary facilities, all of which but few, if any, of the States are able or willing even now to furnish to the extent of meeting the urgent needs of the present relatively small militia force, and all of which they will surely be far less able and far more unwilling to furnish to the extent required by the greatly increased force to which the door is opened by the pending bill.

Our population of more than 90,000,000 people will easily permit the expansion of our militia to more than a million men. With the same ratio of expense per man that this bill and existing laws permit the annual cost to the taxpayers would be $116,000,000. An officer of the National Guard has been heard to say that in a few years the yearly cost for maintaining the militia will be $100,000,000, and after making that statement he added, "But what of it?"

As the militia increases in numerical strength, so also will increase its power to influence the policy and legislation of the various States as well as of the Nation. It may be confidently expected that after it has been found that the General Government can be induced to bear an additional share of the burden of supporting the militia the States will not only shape their policy and legislation with a view to inducing or compelling the United States to shoulder more and more of that burden, but will actively support their militiamen in concerted efforts to obtain for themselves, at the expense of the General Government, more and more benefits in the shape of pay, allowances, quarters, retired pay, and pensions, all gradually approaching and perhaps finally equaling those allowed to officers and enlisted men of the Regular Army.

I quote further from this well-drafted report. It is even more applicable now than then, for subsequent events have justified the gravest fears then entertained.

The minority making this report is convinced that the legislation proposed by the pending bill is not only unwise but that it is dangerous in the extreme. Rather than enter upon a legislative course that will inevitably entail upon the General Government an enormous expense, which may be found in dire emergency to have been wasted, a course that will surely lead to the creation of a great military force that will become so powerful politically that Congress will be no more able to resist its demands than it has been to resist the demands of the far less compactly organized and manageable army of pension applicants and their friends, this minority would favor a reasonable increase of the Regular Army, leaving the States to maintain their own troops in their own way and at their own expense, without any aid whatever from the United States. Objectionable as such an increase of the Regular Army would be, it would have the merit of assuring us the possession of an armed force that in time of war would by its persistent training be worth all of its cost, which undoubtedly would be cheaper in the end than the cost of the great semimilitary, semicivil organization, wielding tremendous political power, that will grow up as surely as the sun will rise and set if the course of legislation outlined by the pending bill is once entered upon.

It now costs more than a thousand million dollars a year to support the Federal Government. Measures are pending before Congress, or being investigated by committees, which if approved will add hundreds of millions to the annual toll exacted from the taxpayer. Very few, if any, will cost more than the "militia-pay bill." None will cost more than the "militia-pay bill" if it shall develop as there is every reason to expect it will develop in a few years.

And there is more, discussing the different features of this proposed military organization four years ago. In so far as the writer undertook to prophesy or foretell what would take place, he has proven himself to be entirely accurate. He foresaw, reading well human nature, precisely what would happen. Give some power, and more will inevitably be asked. The writer was convinced they would not long be satisfied with $15,000,000 a year, and he was right, for in four years their demands have gone up to from forty-five to sixty-five or seventy millions a year, increasing four and five times the original demand. It has been stated since this debate began that our militia should be increased to a million men, which would make the burden upon the taxpayers at least $150,000,000 a year. Before men in this Con-

gress retire from public life the demands will be made, and will be acceded to, even though perfect peace should prevail, to increase the appropriation to one hundred and fifty million a year.

This is in no sense, of course, a party question. There are men on this side of the Chamber just as enthusiastic in the support of this proposition as upon that side of the Chamber, and it can in no sense be a party question; but it is a governmental question. It is a political question. It is an exceedingly important proposition for us to consider as a people. Do we want to take permanently the step of placing some 425,000 men upon the national pay roll? Do we want to organize and enlist them and connect them with the National Treasury under the guise of preparedness and leave them as such a tremendous organization to spend one hour at drill and two hours in politics, as I shall later show?

So long as they are under the control of the States, so long as the States must provide for them, must pay them, and meet their expenses, the States can control them and keep them within reasonable limits and bounds. But when you place above and over them a greater power, a power to which they can appeal, and give them the influence which they have as an organized body of men, you are taking a step which, in my judgment, will be far more detrimental in the final result of things than will possibly come from any invading army of a foreign foe.

There is now but one kind of militarism to be feared in this country. The militarism of the standing army is in my judgment not nearly so serious as the militarism in Congress through the avenue of politics and which dominates legislation through its presence here in the Capital. There can be only one kind of militarism in our Republic, and that is the militarism which arises by reason of the combination of the military power and the political power. Men who are organizing as a military force but exercise their influence under their organization as a political force constitute the greater menace to our institutions. I have less fear of a standing army because the people are braced through inherited prejudices and beliefs, they are on their guard against it; but when you take an organization organized for military purposes and at the same time active through political channels and for political purposes, it becomes an organization subject to the direction and control of the political general who may best mobilize the forces. It is not the military general who will organize these military forces but the political general.

The old form of militarism, the man on horseback, the crossing of the Rubicon, the coup d'etat—these things are ancient and out of style and wholly behind the times. There is a more modern, a more subtle, a less risky, and less suspected method by which modern militarism under the guise of law and order, as in West Virginia, supplants the courts and tears down the guarantees of personal liberty. It subordinates the civil to the military authority as happened in the New York convention when the influence of the State militia defeated the proposed provision to the constitution providing a jury trial for civilians when the courts were open. Modern militarism dictates from the gallery here through its persistent and well-organized lobby what appropriations shall be made in its interest and on its behalf. It sends its generals and lieutenants here to the Capital, whose business it is to notify the constituents of each Senator and Congressman that their representatives assume some views of their own which are to be shortly and adequately changed. Why should men adopt the old method and risk life in an effort to subjugate a government or a country to their will when they can effectuate their purposes, fix the amount of the appropriation and shape the laws, set at defiance the courts and usurp the civil authorities, and do it all under the inspiring shibboleths of law and order, preparedness, and patriotism. This measure has been shaped in its most vital parts by a military organization exerting its political influence. It is fastening upon the people an exorbitant annual tribute of from forty-five to sixty million dollars a year, a tribute which Congress left to itself would not have contemplated for a moment, for Congress knows and everyone knows that it is not preparedness but politics. These statements seem harsh but they are really within the facts, and those who can reflect upon them without some misgivings as to the future are welcome to do so.

Mr. President, there is another feature of this bill. I stated in the debate when this matter was before us that there were State militias that were efficient, well organized, and capable, but when you take the 48 States for which we are covering, and take all the State militias together, there could not be a more pronounced travesty upon military preparedness than the 48 different militias of the different States.

During the debate upon his bill a few weeks ago a distinguished gentleman sat in the gallery who was said to be a major general in the State militia and directed the political forces toward the enlargement of this particular feature of the bill. It is perfectly safe to say that a more thoroughly organized, efficient, energetic lobby has seldom been seen in the Capitol than the one which backed up the building up of this National Guard proposition and dictated the most vital portions of the bill.

The evening the Senator from Oregon [Mr. CHAMBERLAIN] brought in his bill and explained it I submitted to him a few interrogatories, not indicating how or wherein I stood with reference to the National Guard, but they scented the opposition, and the next morning when I arrived at my office I found upon my desk not only telegrams from the majors and colonels and captains of the National Guard in my far-away State, but I found there telegrams from county chairmen, from commercial clubs, and other organizations. I was urged to support that which the major had informed them that I was opposing. It so happened that the major had permitted his telegram to be published in the papers at home, so I am not guessing. There was no doubt about where it, the motive, was located—here in the Capitol.

I have no doubt at all that that same thing occurred wherever there was found to be opposition. Was that the military power of this organization or was it political influence or political power? They were using their political influence and their political power in putting up and strengthening their military power.

I am going to read some reports in order to show the condition of the militia in the State of this gentleman who sat in the gallery and conducted this campaign for national preparedness. I desire you may see that instead of being here if he was anxious to put his troops in a condition where they might be of service he had far better been at home with his militia. These reports are from the War Department, dated April 20, 1916:

APRIL 20, 1916.

From: Department commander.
To: The Adjutant General of the Army.
Subject: Inspection, Organized Militia, 1916.

1. In connection with the reports of the annual armory inspections of the following militia companies of the Florida National Guard, viz, Company I, First Infantry, Tallahassee; Company L, First Infantry, Apalachicola, I recommend that Federal recognition be withdrawn for the following reasons: Incomplete records, bad condition of rifles, unsatisfactory storage of public property, and poor showing in general efficiency.

2. Attention is invited to my remarks on the subject of records in connection with the report on Company C, Second Infantry, Florida National Guard.

Again, April 20, 1916:

It is recommended that Federal recognition of this company be withdrawn on account of deficiency in strength, lack of records, very poor condition of rifles, unsatisfactory storage of public property, shortage of equipment, and poor showing in general efficiency.

Again, April 20, 1916:

TO THE ADJUTANT GENERAL UNITED STATES ARMY:

In view of the importance of records as a means of determining whether or not Federal recognition of an organization is justified, it is believed a company showing such disregard thereof as in this case should not longer be allowed to receive Federal funds. It should be a regulation of the Division of Militia Affairs that recognition will be withdrawn from any organization which does not show complete records bearing every evidence of genuineness and reliability. Also recognition should, as a rule, be withdrawn from any organization which shows for several successive years a large percentage of change in personnel for reasons other than expiration of service.

In this company 34 men have had less than one year's service; 28 have been discharged for reasons other than expiration of service.

The carelessness about records, the lack of protection of property against fire and theft, the poor condition of the rifles, unsatisfactory storage of public property, shortage of equipment, and the rating in instruction, which is poor to fair, mark this organization as unworthy of further Federal recognition.

These are regular reports. That which I have read is not all. There are other reports, equally interesting, applying to other States in the Union.

Mr. President, let me call attention to other reports of a different nature which I have, later reports than those which I discussed here a few days ago. They are in the RECORD, but I wish to call your attention to some figures. This is a part of the expenditure of Federal money from the six to eight million dollars which we have been expending for the last 10 years.

The amount paid to major generals, $355.55. This is the 1913 report.

To brigadier generals, $5,399.99; to colonels, $5,955.53; to lieutenant colonels, $3,723.63; to majors, $12,433.31; to captains, $29,047.95; to lieutenants, $14,091.98; to second lieutenants, $8,105.55; to enlisted men, $7,013.63. In other words, the total amount paid to officers was $79,093.48. The total amount paid to enlisted men was $7,013.63.

Mr. O'GORMAN. May I ask the Senator as to the number of enlisted men who got $7,000 between them and the number of officers who got the larger amount?

Mr. BORAH. I have not that information, Senator, but I made an estimate the other day of the number of enlisted men in the militia and the number of officers, and I found that there was about one officer for every six enlisted men of the National Guard.

Mr. THOMAS. Did the Senator notice the presence of any of the enlisted men of the National Guard in the lobby here about Washington?

Mr. BORAH. No. I was going to say this: Since this discussion took place a few weeks ago I have had a vast amount of correspondence—some of it unpleasant—in regard to the National Guard; but all I have had from the enlisted men was to the effect that if their lips were not closed by their superiors they would object to this bill. The men who will bear the brunt of the fighting, if fighting be done, are not asking for this legislation. It is an officers' lobby and not a lobby upon the part of the men who will be called on to bear the heaviest burden of war.

I submit, Mr. President, that this bill ought to go back to conference. If I could, I would like to send it there and keep it there until this feature is eliminated from the bill. We could not do our country a greater service than to prevent the establishment of this precedent at this time.

Mr. President, I have said all I desire to say. I will be charged with feeling, but I have never had an unpleasant relationship with a member of a militia in any way. With many of the individual members my relationship has been altogether agreeable. I look at this matter solely from the standpoint of good government, of justice to the taxpayers, and, I confess, a jealous and anxious regard for the great underlying principles of the wisest and best Government ever organized by the mind of man.

Mr. LEE of Maryland. Mr. President, I would like to respond very briefly, because this legislation will probably be enacted in its present shape, to some of the suggestions thrown out by the Senator from Idaho [Mr. BORAH]. The criticism made by these reports against certain companies of the National Guard of Florida significantly bear a date subsequent to the time when Gen. Foster was here in the interest of the National Guard. Of course it is a mere inference that he was thus attacked in the rear, but military strategy always justifies a rear attack. These criticisms mostly appear to be of a trivial nature, and are all of a kind that can be prevented when the National Guard are given some compensation for service. Gen. Foster was here very legitimately. He is the head of the organization of the National Guard officers of the United States. It was his duty to be here at this session of Congress, and he did his duty well. I am not willing to listen to indefinite and unjust criticism of these officers of the National Guard without resenting it, because, in my humble judgment, there is no more patriotic class of men in the United States than the officers of the National Guard. They deserve the thanks and gratitude of the country for long and faithful service, the cost of which they have largely borne themselves, rather than the condemnation of any citizen or of the able Senator from Idaho.

There is hardly one of these guard officers who has not lost by his association with the National Guard hundreds of dollars by reason of the expenses to which he is subjected, and the pay provided for them in this bill is scarcely enough money to compensate them for the expenses they are subjected to, not to mention their actual loss of time. These officers and these men have endured this loss for years, and they now come here, to the Legislature of the Nation, asking that they be relieved from loss for the future.

Mr. President, the other day some Member of this body praised the militia under Gen. Jackson, who so signally defeated the English at New Orleans, praised "the backwoods rabble," that was the term used before the fight by the English officers in describing Jackson's men, who in numbers only—5,000—defeated 15,000 regular British troops, these American militia accomplishing a complete victory by the use of arms of precision—that is to say, accurately firing the rifle—for the first time on a field of battle in the history of the human race. There was the beginning of a new form of tactics, the use of arms of precision on the battle field, and so great was the confidence which Jackson had in the capacity of his men to use their arms with precision that he caused the artillery to stop firing when the British were still beyond the range of the rifles, in order that the damp, heavy air of that morning should not hold on the field the powder smoke of cannon and interfere with his men using accurately the rifles with which their commander believed them capable of inflicting destruction upon an enemy.

Mr. President, that "backwoods rabble," so called by the British, were for the most part disciplined militia, and they inflicted an unparalleled defeat upon the most highly organized troops of Europe of that time. A dozen Americans were killed and wounded. The English losses were over 3,000.

But it did so happen that on the other side of the Mississippi River a small group of the American militia, the least disciplined and poorest armed, were met by a larger number of British, some thousand British sailors, marines, and infantry, under the command of Capt. or Col. Thornton, against about 700 militia from Kentucky and Louisiana. Gen. Jackson had to use his best and largest forces against the main body of his enemy.

I think it was the Senator from Idaho who, when the great victory of Jackson's militia army was praised here the other day, commented upon this side affair, the slow retreat or withdrawal of this small body of militia on the other side of the Mississippi, as practically showing that militia are unreliable under general circumstances and as neutralizing the glorious record of the militia under Jackson in the main battle. I can not help on this occasion to call the attention of the Senate to the fact that the way in which those 700 men on the other side of the river had been handled and the way they came to New Orleans was an exact illustration of just what the Senator from Idaho wants to have go on in the history of this country. Those 700 militia were mostly a part of the Kentucky Militia, that had been brought down the Mississippi River in flatboats not long before the battle. They were brought down there without any guns in their hands at all, and when they got to New Orleans they were furnished with some old Spanish fowling pieces, known as escopetas, without bayonets, and, as one of the historians says, these escopetas were little better than good, heavy clubs in the hands of the stalwart Kentuckians.

Those men were brought to New Orleans unarmed, and with these old guns, these obsolete weapons, in their hands, they were sent out to face the best-trained troops from Europe, and, though they did retreat from one position to another, they inflicted a loss of 100 killed and wounded upon the British, with only some 20 killed and wounded on their side, and they finally took a position from which it would have been very difficult to dislodge them. The great main victory of the American troops, who were armed with rifles, ended this minor engagement.

The Senator from Idaho, if I remember correctly, considered that incident as an illustration of how unreliable militia are. It is quite the contrary, Mr. President. It shows, in my judgment, that the American citizen can be made a soldier very rapidly if Congress gives him a fair chance. The disciplined militia under Jackson overthrew three times their number of regular troops, and revolutionized the military tactics of Europe. The militia who partly failed at New Orleans had their arms given to them after they arrived on the scene of conflict, and they are now reviled, 100 years afterwards, in the United States Senate because they were not fully successful against a superior number of well-armed English troops, who had bayonets on their guns, and were superior enough in numbers to turn the flank of the poorly armed and smaller force. This is a wonderful illustration, Mr. President, of the attitude and policy of some Members of this body toward the militia of the United States.

The officers who represent the National Guard of the United States who have been here giving their time and attention to this important feature of preparedness have been called a lobby. Any man can be called a lobbyist who writes or speaks to a Member of Congress. The real trouble is with the mental attitude of the critic who seeks to smother all argument by applying the offensive epithet of lobbyist to citizen soldiers who come here properly to advise Congress on a subject as to which these soldiers are qualified to speak.

These men are practically without pay. They have served with loss through years and years. When this organization upon which they have labored so long has at last got a chance to be recognized and put upon a more efficient basis for national defense, they naturally and properly and patriotically come here and criticized this bill from the standpoint of their knowledge of the military needs of the country.

I may say right here, Mr. President, that in their criticisms, and I have heard at least half a dozen of them talking to members of the committee on one occasion, they were as broad, as patriotic, and as wise from a military standpoint as any other witness before your committees. Their testimony, from the standpoint of military knowledge and practical suggestions, compares favorably with that of the Regular Army officers.

I may say, Mr. President, we have gotten to a very strange pass in the affairs of this country when regular officers can be heard here without the suggestion of criticism; yet, when the men who have been working for years for the country without pay, and who have raised an Army and disciplined an Army 30 per cent larger than the regular officers, with all their pay have been able to get together—when those men come here and put up an argument for the benefit of their country and

the great organization upon which they have labored so long and so disinterestedly, that they should be criticized and called a lobby. It was highly proper that both sets of officers should testify and advise Congress.

Mr. President, I submit that this attitude of denunciation and for the suppression of facts and argument at so great a national crisis, the attitude of many of the newspaper men of this country, which seems to be against the National Guard, shows that there is something behind this whole business from a centralization standpoint which is unhealthy for the future of the country. I congratulate the Senate and the House for showing their discipline and for standing up for the citizen soldiery of George Washington and the Constitution.

The Senator from Idaho just now spoke of the danger to this country of a combination of military force and political force. He said that led to and would be equal to despotism. There is some truth in his suggestion. But a President of the United States can represent political force and with an army of 500,000 centralized troops under him might be said to represent military force. The result would represent such despotism as might suit the individual President and his occasion. Congress has preferred to follow in this law the balance and suggestions of the Constitution and the teachings of Gen. Washington.

The Senator from Idaho can only see the danger of coming despotism when it comes through the local governments of this country. Mr. President, despotism is much less likely to come through the 48 local governments than it is to come through the one great National Government. Anyone concerned as to the probabilities of despotism in the United States, the probabilities of a coup d'état in this country, must realize, and realize inevitably, that if there is any such danger to the American people that danger must spring from the power of one man over a military organization that will obey any order regardless of what that order may be.

The Senator from Idaho the other day, in commenting upon this very bill, quoted from some of Mr. Hamilton's expressions, in the twenty-ninth article, I believe, of the Federalist, and there he found what to my mind appears to be the sheet anchor of safety to the free institutions of this country in developing a great military power for the protection of the country against foreign invasion. The Senator from Idaho then called attention to the fact that Alexander Hamilton himself conceded that the States had left to them two powers over the militia under the Constitution of the United States, namely, the appointing of officers and the training of the troops through the agency of the officers, and that seems to have been the element of safety against national despotism that Hamilton may be said to have conceded to the school of Jefferson. When we have the Hamiltonian and Jeffersonian ideas agreeing on a general proposition, I think both the Republican and Democratic Parties may get together on it also, and feel that the country is fairly safe.

But, strange as it may be, there were Democrats on this side of the Chamber who, when we came to the question of the old section 56—the Volunteer Army in time of peace—were willing to leave in the hands of any President power over a trained and disciplined and centralized army of 500,000 men, and were apparently indifferent as to the militia, the balancing force of the Constitution. These Democrats were not apparently willing to let the States of this country have the protection for their rights that Alexander Hamilton was willing to concede against centralization and to local self-government.

I agree with the Senator from Idaho [Mr. BORAH] in one thing. I am inclined to think that this country is in as great danger of possible attack upon its free institutions from the inside as is the danger of attack from without, and certainly both dangers must be guarded against in any sane form of preparedness.

The power of a trained soldier to-day as compared with the power of a trained soldier in the days of the Revolution is tenfold greater. The instrumentalities of war have become so complex, have become so destructive that an equipped and disciplined army of 100,000 men to-day, in my humble judgment, has the power of subduing an unarmed male population of ten times that number. Mr. President, when Gen. Emory Upton, who wrote that famous book on the Military Policy of the United States, was considering this very question, he laid down the limits of the size of the National Army in this country, consistent with the safety of our institutions, as 100,000 men for our present population. He fixed this proportion at a time when the arms in the hands of a disciplined soldier were, comparatively, not one-fifth so effective as are the arms in his hands to-day.

Mr. President, I believe that this bill as it is agreed upon with reference to the National Guard is, for the first time in the history of this country, a commensurate and proper step taken toward the arming, organizing, and the disciplining of the militia of the several States under Federal authority, and I believe that it is a safe step, a step in the right direction. It is no more dangerous, Mr. President, to put the power of the rifle and the bayonet in the hands of an American citizen than it is to put the power of the ballot in the hands of an average American citizen. It is a fair inference, Mr. President, that the men in this body, the men elsewhere who have control of the newspapers in their attack upon the National Guard of the country, really are of the type who do not want either the power of the ballot or the power of the bayonet to be in the hands of the average American citizen.

Mr. President, I inquired of the Senator from Massachusetts [Mr. LODGE] just now what kind of opportunity the young man desiring to do his duty as a patriot to this country and as a soldier for the protection of the country, could desire better than that which is afforded him now by this bill in connection with service in the National Guard, and the Senator from Massachusetts suggested that organized labor would not be able to become members of the National Guard. The Senator from Idaho [Mr. BORAH] indicated that that is by reason of prejudice, but I do not believe, Mr. President, that organized labor in this country is blindly prejudiced against the instrumentalities of law and order. I believe that organized labor, no matter what may be their present views or their experience from an abuse of local military power, no matter what may be the views of organized labor in the Senator's own State—and he has doubtless heard from it—in a short time, thinking this thing over, by and large, organized labor will come to the conclusion that any possible danger of despotism is from a great army, under the control of one central power, and not from the National Guard of the several States.

Mr. BORAH. Mr. President——

The PRESIDING OFFICER (Mr. THOMPSON in the chair). Does the Senator from Maryland yield to the Senator from Idaho?

Mr. LEE of Maryland. Certainly; with pleasure, Mr. President.

Mr. BORAH. The Senator from Maryland says that the Senator from Idaho doubtless has heard from union labor in his State upon this subject. In order that those who are absent may not be unjustly commented on, I wish to say that I have never heard a word from them on this subject. So far as the people of my State are concerned, I think I know how they feel upon it. They undoubtedly feel upon it like all members of union labor, but they have not communicated with me in reference to this bill in any way, shape, or form.

Mr. LEE of Maryland. Then, perhaps, it was not necessary for them to communicate with the Senator from Idaho.

Mr. BORAH. No; because I think I have my own mind about these things, which people outside do not control.

Mr. LEE of Maryland. Mr. President, recurring to the possibility of union labor becoming a part of a volunteer army under the original section 56 of the bill, which the Senator from Massachusetts just now suggested as an argument in favor of that section, that plan provided for volunteers in time of peace being raised by the Federal authority, receiving the pay of the private soldiers of the Regular Army, and giving up their local employment and their family obligations for a period of not less than two or three months. For any man to suggest that labor of any kind could leave its home and its occupation and income and could become a part of this Federal volunteer system for from 30 to 60 days, would imply very little idea, I respectfully submit, of the present or average income of the labor of this country and of the duty of such men to their families and to themselves. The very last element in this country that can be found willing to go to a camp in the summer for from 30 to 60 days is the element that is dependent for its livelihood upon its daily labor.

There must be some other objection to the National Guard, or to the citizen soldiery, lurking within the minds of the gentlemen who are willing to add, by hook or by crook, as much power as they can to the military system under the control of the Central Government of the United States. My humble judgment, Mr. President, is that in connection with this bill we have had show itself in this country, show itself through the press, show itself here in this Senate, some of the old-time conflict between centralization and State rights; and the friends of centralization have shown that they have no respect for the fair and humane balances of the Federal Constitution.

Mr. President, when Alexander Hamilton was willing to concede that the power of the States to appoint the National Guard officers and to train the State troops was a proper power, from the standpoint of the balance between the States and the Union, I think that there should certainly be no objection from our side, the Democratic side, of the Senate to creating a defensive force in this country, which would be safe from the standpoint of internal revolution, and not open to any doubts upon the question of overthrowing the power of local self-government.

The balance of the Constitution, Mr. President, is a very vital thing in this day. It is a very great inspiration that has expressed itself in our Constitution for preserving peace between the warring elements of mankind. To appreciate that we have but to look upon what is going on in Europe, where they have no constitution governing the several countries of the European Continent for the settlement of any serious question that may come up between them, where they have but one way of settling great questions between nations, and that is by killing men. After diplomacy has ceased to exercise its power, there is nothing left for them but war and force to bring about a definite result; yet here in this country we have this great national system under our Constitution of settling all questions by discussion, deliberation, and voting.

I know there are some cynics who say, "What is the Constitution between friends?" Whatever they may think about the usefulness of the Constitution as "between friends," the Constitution is of absolutely vital importance as between possible enemies. It has a way of settling the greatest difficulties that can arise between elements of the human family by discussion, deliberation, and voting, and it represents the highest attainment of the human race in the direction of permanent peace between the nations or States of our continent.

Under those circumstances I am glad that this bill respects, to the extent it does, the balance between the States and the National Government. I think the Senate and the House of Representatives are to be congratulated upon it. At this time, when we see the National Guard of Massachusetts, of New Jersey, and of New York—essential, as the Senator from Massachusetts has just admitted, to the proper protection of those States at this moment—and when we see the National Guard of three States upon the borders of Mexico, being summoned by the President and the national authorities to the protection of that section, I think the very conditions of our time show us that this body of citizen soldiery has been pretty well developed, even though Congress has not done all that it might have done for them.

Reverting now to a detail, I noticed in the criticisms of the National Guard of Florida, which the Senator from Idaho has put into the RECORD, complaint that the personnel of the companies was changing; that company commanders were accused of being unable to keep the run of some of the equipment that was put into the hands of the State troops. I am willing to aver, without fear of contradiction, that the most gifted officer who was ever graduated from West Point could not have maintained a company or a regiment without pay. When there is no pay, any lost article of clothing or equipment can not be exacted of the soldier who has not a single dollar coming to him to set the value of that property off against. It is cruel, indeed, to criticize the men and officers of the National Guard who have made good such inevitable losses out of their own money. Property loss and changing membership are unavoidable under the conditions Congress has imposed on the National Guard, yet that body has persisted and exists to-day 134,000 strong for the safety of the country and to the great credit of the men and officers who thus serve the Nation and the States.

The officers' appeal has been made to the patriotism of the men to become a part of the militia of the country; it was a voluntary association for patriotic purposes; and whenever it failed it was simply a failure of unpaid patriotism, and should not be commented upon disrespectfully by any Senator who has refused through long membership here to give proper compensation to these men for the time they have devoted to this patriotic purpose.

These citizen soldiers in Florida are experiencing what the unarmed part of the Kentucky militia experienced at New Orleans and since. It is just exactly the repetition of the lesser experience at New Orleans. "Do not arm the militia; do not clothe them; do not pay them," but when they are floated down the Mississippi River on flatboats and old Spanish escopedas are put into their hands to repel the charge of the best-equipped British infantry, then curse the militia because they were not able to withstand the charge, and keep up the cursing for 100 years.

Mr. President, I will conclude by expressing as an individual my personal appreciation and gratitude to the members and the officers of the National Guard of the United States, who, in addition to the sacrifices they have already made in behalf of the citizen soldiery of this country through long years of expense—making good their own expenses and the expenses and losses of some of the other soldiers—have added to the obligations that this country owes them by coming here to Washington and giving to Members of the Senate and of the House of Representatives, who needed it, the technical information upon military matters, that these men had and thus helping us to put in this bill the provisions that have made it for the first time in the history of the Congress of the United States a tolerably decent provision for the disciplining, organizing, and arming of the citizen soldiery of this country.

Mr. CHAMBERLAIN. Mr. President, I ask unanimous consent that at not later than half-past 4 o'clock this afternoon we vote on the conference report.

Mr. STONE. Mr. President, I have no objection to that request, but I desire to occupy the time of the Senate for a few moments.

Mr. CHAMBERLAIN. May I ask to have my request first put? I ask unanimous consent that at not later than half-past 4 o'clock we may vote on the conference report.

The PRESIDING OFFICER. The Senator from Oregon asks unanimous consent that at not later than half-past 4 o'clock——

Mr. SMOOT (to Mr. CHAMBERLAIN). That will require a roll call.

Mr. CHAMBERLAIN. I withdraw the request, Mr. President.

Mr. STONE. Mr. President, I ask to be recognized.

The PRESIDING OFFICER. The Senator from Missouri.

Mr. STONE. Mr. President, I had intended to speak at some length on this conference report, but as it is I am going again to do what I have often done heretofore, bury in the waste basket, so to speak, practically all of the speech I had in mind to make. I think it more important that we get on with the business of the Senate than that I should make a speech expressing my personal views. My speeches are not important; the business of the Senate is.

I wish to join the Senator from Idaho [Mr. BORAH] in the just compliment he paid the Senator from Oregon [Mr. CHAMBERLAIN], chairman of the Committee on Military Affairs, on his fine management of this measure. I think he has managed it with great skill—a skill so excellent that he has accomplished results which I did not believe he could accomplish, and some of which I do not think should have been accomplished. But this only adds to my admiration of his legislative diplomacy.

Mr. President, I will be brief in what I have to say, pocketing most of what I intended to say. I do not wish to stand in the way of concluding this business and in the way of taking up what I understand to be the unfinished business—the rivers and harbors bill.

To my mind by far the most important item in this military bill is the one which makes provision for a Government plant to develop the fixation of atmospheric nitrogen. I am not going to discuss that subject or undertake to emphasize its importance as I had intended to. I think possibly that has been done sufficiently already; but the Senator from Alabama [Mr. UNDERWOOD], who has been giving a great deal of attention to that subject, and who is exceedingly well informed about it, during his remarks this morning made the statement that in times of peace the United States could for an indefinite period secure from Chile all the materials necessary for the use of the Government in the manufacture of explosives. I am not sure of that. I hold in my hand a copy of an address delivered on the second day of the present month before the National Conservation Congress, by Mr. Henry J. Pierce, of Seattle, Wash. I understand this gentleman to be a man of high scientific attainment and well prepared to speak on the subject covered by his address. I call attention to one remark made by him in that address, which I had the pleasure of listening to. He said:

> The richest nitrate beds of Chile, however—

He had been talking about the nitrate beds in Chile—

> The richest nitrate beds of Chile, however, will be practically exhausted by 1923.

Then he proceded to enlarge upon that subject.

I call attention to this remark, assuming, without knowledge as to the extent of the Chilean deposits, that Mr. Pierce has some definite authoritative knowledge on the subject and that what he says is substantially correct. Does anyone know to the contrary? If what he says be so, it emphasizes very strongly the importance, without reference to whether we are to have peace or war, that provision should be made in this country for the manufacture of nitrates.

Mr. HARDWICK. Mr. President, will the Senator yield for a moment?

Mr. STONE. Yes.

Mr. HARDWICK. Of course that could not be true, if in point of fact the most enlightened nations of the world, such as Germany and others, have already discovered a cheaper and better process for making nitrates needed for gunpowder, and have abandoned the water-power process.

Mr. STONE. Mr. President, I heard that statement in substance and effect made this morning by the senior Senator from Massachusetts [Mr. LODGE] and I heard him make the same statement some time ago.

Mr. HARDWICK. If the Senator will allow me a further interruption, I desire to say that I read that in the magazines and it was claimed to be true. I do not know whether it is true or not, but I merely invite the Senator's attention to it.

Mr. STONE. I do not know whether it is true or not; but I heard the Senator from Alabama answer—I thought very effectively—that very statement made here some weeks ago by the Senator from Massachusetts when this bill was then before the Senate. The two Senators had a very interesting colloquy upon that subject; they debated it more or less at length. Now, I do not know what these alleged chemical processes are, nor have we been informed by anyone respecting them.

Mr. HARDWICK. If the Senator will allow me to interrupt him again, ought we not to know concerning that before we go into this business?

Mr. STONE. We hear about things and we read about things in magazines and other publications, but it often happens—and it may easily happen—that when certain people or certain interests for one reason or another desire to defeat legislation they can initiate any sort of propaganda through magazines and newspapers. Such things can be written and published, and Senators can get upon the floor, as the Senator from Massachusetts and the Senator from Georgia have done, and say, "We are informed that in Germany or in some other foreign land chemical processes have been discovered and are being developed that will put water power out of business." But, sir, I would not have our matured plans delayed, especially where such vital interests are involved, to await an uncertain development of some nebulous theory. As legislators we must deal with facts, not mere possibilities.

Mr. President, I had intended to ask leave of the Senate to print the address of Mr. Pierce, to which I have referred, as a public document.

Mr. SMOOT. It has already been printed as a public document.

Mr. STONE. I had intended to have it put in the RECORD or printed as a document, but I had abandoned the idea even before the Senator from Utah informed me it had been already printed, for the reason that I do not think, even if printed in the one way or the other, that anybody, or at least very few, would ever read it. If I thought it would be read, I would be very glad to have it reprinted in the RECORD; but believing, as I do, that few people ever read documents of this nature, however valuable, I am not much inclined to put the Government to the expense of the printing.

But, Mr. President, notwithstanding it is already a public document, I am going to ask to print at least a part of this address, incorporating it in my remarks. I wish to insert the following at this point, beginning on page 7 and continuing down to the first three lines of page 16. This covers what Mr. Pierce had to say about the production of fixed nitrogen as it may be applied in useful ways to electro fertilizers and to explosives. If I may have leave to have that printed, I will send it down to the reporters.

The VICE PRESIDENT. Without objection, it is so ordered.

The matter referred to is as follows:

PRODUCTION OF FIXED NITROGEN.

The greatest need for the development of our water powers is the imperative necessity, and it is a national necessity, that sufficient fixed nitrogen should be produced within the boundaries of the United States to meet its requirements. Nitrogen comprises four-fifths of the atmosphere and is a constituent of all organized life and tissues. It is a colorless, tasteless, odorless, gaseous, nonmetallic element. We live in it, we breathe it, we eat it, and it constitutes a portion of our human frame. It is absolutely necessary to the existence of animal and plant life. Without fixed nitrogen the earth would soon become an uninhabited, desert waste. While the atmosphere contains an exhaustless supply of nitrogen, it being estimated that 20,000,000 tons exist above each square mile of the earth's surface, yet 90 per cent of the plant life that lives in it does not absorb it, and the remaining 10 per cent absorbs but a small portion of that which it requires. The world has been dependent for most of its supplies of fixed nitrogen upon the nitrate of soda beds of Chile, where, during some convulsion of nature at some remote-past time, the soda absorbed quantities of nitrogen from the air. During 1913 the United States imported 625,000 tons of Chilean nitrates, valued at $21,000,000, upon which the Chilean export duty was 60 per cent. We thus paid to the Chilean Government $7,500,000, which may be considered merely a part of the amount which the people of the United States pay for its policy of water-power stagnation. In other words, the people of this country would be quite as well off as they now are if they granted a subsidy or bonus of $7,500,000 per annum for the establishment of the water-power nitrogen industry in the United States. In the past 30 years the export tax on nitrates has netted the Chilean Government about $500,000,000. The richest nitrate beds of Chile, however, will be practically exhausted by 1923, and were it not for the most wonderful of all modern discoveries, whereby it is now possible with the aid of electric energy to obtain a supply of fixed nitrogen from the atmosphere, the world would stand in imminent, deadly peril, the perpetuation of the human race would be endangered, and we would be in a position similar to that of a shipwrecked sailor drifting on an immense ocean of brine but dying for lack of water. It is a wonderful providence that perpetual and inexhaustible supplies of nitrogen may be obtained from the atmosphere by the use of electric energy obtained from our water powers, whose flow is also everlasting, and that thus the limited supplies of coal and other fuels laid aside by nature may be conserved for other uses. The governmental paralysis imposed seven years ago upon the development of water powers in the United States, through the restrictive interpretation of Federal laws, still continues; but that period has been one of great hydroelectric development in Europe, where over 1,200,000 water horsepower has been utilized for the extraction of nitrogen from the atmosphere, being over three times the quantity of power produced at Niagara Falls, while the United States, out of 61,000,000 horsepower, is not using a single horsepower for that purpose. Hydroelectric nitrogen plants have been established in Norway, Sweden, Germany, Australia, Italy, Switzerland, France, Spain, Japan, and Canada, but none in the United States. The nitrogen industry of Europe represents an aggregate investment of over $300,000,000, employs 50,000 people, and the annual value of its products and derivatives is upward of $220,000,000. In Germany, where practically all the water powers have been developed, a nitrogen plant is being built which will use 100,000 horsepower, to be produced from cheap coal. England is seriously considering the development of 1,000,000 water horsepower in Sweden and Iceland to provide for her future supplies of nitrogen. Thus, with a foresight that is a reproach to our intelligence and enterprise, these other countries are insuring their requirements of this great human necessity against the time when it will be no longer possible to obtain supplies from Chile. It seems incredible that nothing has been done thus far toward the establishment of the nitrogen industry in the United States.

Several years ago an effort was made to locate an atmospheric nitrogen plant upon the Coosa River in Alabama where a large water power would have been developed, and near which were ample supplies of the necessary raw materials, high-grade limestone, and cheaply mined coking coal. The plant, moreover, would have been located in the center of the cotton belt, where the most of its product would have been marketed in the form of fertilizer. As development capital could not be obtained under our restrictive Federal water-power laws, a bill was introduced in Congress to meet the requirements of the case, but failed to become a law, and as a result the plant was established at Niagara Falls, Canada, where a contract was obtained for electric energy at a low figure, and the capacity of this plant has been increased sixfold in five years. As a result the United States has lost and Canada has gained a great manufacturing institution, covering an investment of millions of dollars, and the farmers of Alabama are paying the freight on its product from Canada to their cotton fields. It is estimated that an investment of $860,000,000 would be necessary to produce mechanically from the atmosphere as much nitrogen as Chile's nitrate deposits yield every year, and this shows the enormous possibilities for the future contained in the establishment of this entirely new industry in the United States.

The two largest and most necessary uses for nitrogen are in connection with the manufacture of electrofertilizers and explosives.

ELECTROFERTILIZERS.

Seven million tons of fertilizer, valued at $170,000,000, were sold in the United States during 1913, and for its manufacture over $40,000,000 of nitrogenous and other material was imported, most of which could have been made in this country with the aid of electricity. The average amount of fertilizer used in the United States is 28 pounds per acre of cultivated lands, against 200 pounds per acre in Europe, with the following results.

Comparison of average yield per acre in bushels of crops in the United States and Europe:

	Wheat.	Oats.	Barley.	Rye.	Potatoes.
Europe	32	47	38	30	158
United States	15	29	25	16	96

In 20 years Germany has, through the use of fertilizer, increased the average of all crops three and one-half times as much per acre as America. Germany, with 70 per cent of the population of the United States, and cultivating but one-fourth the area, grows 95 per cent of the food products which she consumes.

If our use of fertilizer had been equal to one-half of that of Europe per acre in 1913, 24,000,000 tons would have been required, of the value of $580,000,000, and in the production of which 12,000,000 water horsepower must have been utilized, and the resultant increase of crop value would have exceeded $2,000,000,000.

Careful and extensive experiments made in Germany have shown that by the addition annually of 150 pounds of nitrogen per acre, crops of rye, wheat, oats, barley, and potatoes are more than doubled, and the reports of the German agricultural department show that as the result of feeding the soil with 2,000,000 tons of nitrates the increase of crops amounted to 63,000,000 tons. These figures show how important is the rôle actually played by nitrogen in the cereal production of Europe. The German farmer, who pays but one-half as much for his fertilizer as does the American farmer, practically uses his land as an agent for transforming fertilizer into product, while the American farmer tries to get products out of his starving land without feeding it sufficient plant food. The American people are falling far behind the rest of the civilized world in the most important of all human activities—the cultivation of the soil. European nations waste nothing, and in many clever ways create values out of what we discard as worthless. Our comparatively young country is wasting its resources with terrible prodigacy, as is evidenced by our using up our stores of coal and oil instead of utilizing our wasting water powers.

The crops harvested annually in the United States abstract over 1,000,000 tons of nitrogen from the soil, and, as the world's supply of combined nitrogen is increased only slowly and in small degrees by nature, the soil of farmed lands is entirely dependent upon fertilizer for replenishment of the stock of nitrogen which it gives up in its yield of crops.

At the agricultural station at Rothamsted, England, wheat has been grown year after year on the same land for 63 seasons without fertilizer, with an average crop return of 12 bushels per acre, while during 10 years the average crop on adjacent plats of ground receiving plant food each year was 40 bushels per acre.

The present method of manufacture produces a finished product containing but 12 per cent of active fertilizer and 88 per cent of utterly useless material on which freight and haulage must be paid by the farmer, whereas the electrofertilizer product contains 60 per cent of fertilizing material. By the electric process not only is nitrogen obtained from the atmosphere, but phosphate rock may now be treated by electricity, instead of sulphuric acid, for extraction of phosphoric acid.

It is estimated that fully 10,000,000,000 tons of phosphate rock containing an average value of 70 per cent is located in Idaho alone. Phosphorus is an essential constituent of flesh and blood and bone and brain. How essential it is has been clearly shown by experiments recently made by the Wisconsin experiment station. Animals fed with a ration deficient in phosphate thrived for a time and after three months collapsed. In an immature state some of them were killed and it was found that the flesh was taking the phosphate from the bone in order to supply its need. This went on until the bones were no longer able to supply phosphate to the flesh and the collapse came.

The use of fertilizer has a most intimate relation to the cost of living, which has increased in this country at a much more rapid rate than it has abroad.

The population of the world doubles in 65 years, and with increase in numbers there is an increased per capita consumption of food.

The extraordinary increase in the cost of living in the United States has been principally in the cost of food products, while other items than foods have increased at only the general rate prevailing throughout the world. From 1900 to 1910 the cost of foods in the United States increased 35 per cent and abroad only 15 per cent. While our population increased 21 per cent during those 10 years, crop production increased only 10 per cent, and our exportation of wheat and flour decreased from 31 per cent to 13 per cent of the amount produced. The rapid increase in food cost in this country can only be checked by increased crop production, just as food prices are held down in Europe through increase in yields per acre obtained without additional labor through the use of fertilizer. The countries of highest agricultural development are the largest consumers of fertilizers.

The less nitrogen there is available as foodstuff, the nearer the population is to starvation. The great famines in such nitrogen-deficient countries as India, China, and Russia are sad but striking examples of nitrogen starvation.

The mutterings of strife for commercial supremacy between England and Germany were heard as far back as early in the nineteenth century, when, the value of bones as a plant food becoming realized, the great German chemist, Liebig, was moved to say:

"England is robbing all other countries of their fertility. Already in her eagerness for bones she has turned up the battle fields of Leipsic, of Waterloo, and Crimea. Already from the catacombs of Sicily she has carried away the skeletons of many successive generations. Annually she removes from the shores of other countries to her own the manurial equivalent of three and one-half millions of men."

EXPLOSIVES.

Nitrogen, in the form of nitric acid, is the principal constituent of explosives, such as guncotton, dynamite, and smokeless powder. The basis may be glycerine, wood pulp, cotton, or a coal-tar product, but in every case nitric acid is the agent used to transform inert substance into powerful explosives. Modern warfare to-day means nitric acid. What use are men and guns without powder? Powder to-day has the significance in war that it has never had before. To-day a battle field, as to attack, is the playing of a sheet of metal at such velocity and in such volume that it sweeps clear to the underlying rock everything within reach and is like a hose playing a leaden stream. The whole thing means powder, and there is no such thing as powder without nitrogen.

We are annually producing about 250,000 tons of explosives, valued at $40,000,000, and we pay $23,000,000 for the raw materials that enter into them, most of which are imported. Had it not been for the discovery of the nitrate fields of Chile, the explosive industry as it is known to-day would have been impossible; and, as coal and minerals could not have been mined without the use of explosives, the development in mining and transportation, which has characterized the last half century, could not have been made.

In case of war we would be almost entirely dependent upon foreign nations for our supply of nitrogen for manufacture of powder and would be practically defenseless unless we could obtain it from other nations. If the country with whom we were at war should be strong enough to seize the nitrate deposits of Chile or to prevent shipments to this country, it would leave us helpless, in spite of our 100,000,000 of people and our Army and Navy. We would be forced to commandeer all sources of nitrogen, including fertilizer, and it might come about that some of our agricultural regions could no longer be devoted to food production, even though the scene of conflict never penetrated to them. The War Department is greatly concerned over this weak point in our national defense, and writers who are authorities upon the subject from the military standpoint urge the immediate development of our water powers and establishment of atmospheric nitrogen plants, in order to insure the production of our requirements of nitrogen within the borders of our own country; and they strongly recommend that the nitrogen plants be so strategically located throughout the country as to be reasonably well protected against attack in case of foreign invasion.

Franklin K. Lane, Secretary of the Interior, in his last annual report, under the poetic and beautiful caption, "Turning water into power," says:

"Then, too, there is that mystifying miracle of drawing nitrogen from the air for chemical use, which can be done only with great power, but is being done in Germany, Norway, Sweden, France, Switzerland, and elsewhere, by which an inexhaustible substitute for the almost exhausted nitrates of Chile has been found. To increase the yield of our farms and to give us an independent and adequate supply of nitrogen for the explosives used in war we must set water wheels at work that will fix nitrogen in lime."

Gen. William Crozier, Chief of Ordnance, United States Army, said in his last annual report to the Secretary of War:

"I do not know of any article which at the present time should cause more concern with reference to the war-time supply than should nitric acid. The nitrogen in the nitric acid is obtained from sodium nitrate, which comes from Chile, and the country is therefore dependent for its powder manufacture upon Chile."

A recent statement showed that the stock of powder for small arms in possession of the War Department amounted to 200,000,000 rounds, which would only be sufficient in time of battle to last an army of 500,000 men eight days; further, that there is only sufficient ammunition on hand to fire all of our coast-defense guns 40 times, or continuously for about one hour. The War Department has for some time been accumulating a stock of Chilean nitrate to provide for emergencies, but in time of war it would produce only sufficient explosives to last for a short period of time. Germany is shut off from supplies of Chilean nitrate for powder making, and if she had not developed her water powers for the purpose of obtaining nitrogen from the air the European war would be ended to-day and Germany beaten. But the Germans are operating all their nitrogen-fixation plants on a war basis, and thus are enabled to manufacture a plentiful supply of ammunition.

Mr. STONE. Now, Mr. President, I wish to ask my friend, the chairman of the Committee on Military Affairs, a question, and I am through. I should like to know from him, and thus get the information authoritatively in as narrow and concrete a form as possible, just what under this bill the number of men of all arms would be in the Regular Army, both in the first instance as a minimum, and secondly as to the possible authorized increase of that force.

Mr. CHAMBERLAIN. Would the Senator like to have that now?

Mr. STONE. Yes.

Mr. CHAMBERLAIN. Mr. President, the Army has been increased under this bill to 65 regiments of Infantry, 25 regiments of Cavalry, 21 regiments of Field Artillery, and 263 companies of Coast Artillery. In addition to those, there is the Corps of Engineers.

The minimum strength of these several branches under the bill is as follows:

The 65 regiments of Infantry at their minimum strength would be 87,035; the Cavalry, 24,900; the Field Artillery, 18,018; the 263 companies of Coast Artillery, 30,009; the Corps of Engineers, 5,334. That would make 165,296 men at the minimum strength proposed by the bill. In addition to that—and these are not included in the combative force of the Army—are the Philippine Scouts, 5,733; the Quartermaster Corps, 6,409; the Medical Department, 10,000; the Signal Corps, 3,387; and the unassigned recruits, 6,098; making a total of 31,627 men. That is estimated, of course, because the Quartermaster Corps——

Mr. STONE. You do not put all that in the Regular force?

Mr. CHAMBERLAIN. No; they are not in the enlisted force. I have given the Senator the Regular force.

Mr. STONE. One hundred and sixty-five thousand?

Mr. CHAMBERLAIN. One hundred and sixty-five thousand.

Mr. STONE. That is the minimum?

Mr. CHAMBERLAIN. That is the minimum strength. These that I read last and that are not included in the combative force vary in some degree, because the President has the power to increase or to diminish the Quartermaster's Corps, the Medical Corps, and the Signal Corps; and the unassigned recruits naturally change. They are the men that are recruited at the recruiting stations and vary according to the number that may be on hand.

Mr. STONE. In order that I may not get the questions and answers confused, let me see if I correctly understand. I understand that the minimum of the authorized Regular Army force is 165,000, in round numbers?

Mr. CHAMBERLAIN. One hundred and sixty-five thousand two hundred and ninety-six.

Mr. STONE. That is the minimum. What, then, is the maximum?

Mr. CHAMBERLAIN. The maximum would run it up to about 200,000. The minimum is practically two-thirds of the authorized strength. It would add to it enough to make it about 200,000—a little bit over 200,000.

Mr. STONE. But I thought it was more——

Mr. CHAMBERLAIN. Oh, the maximum? The maximum would run it up to about 216,000. That is the full amount that the President can call into requisition and increase these different organizations to the full maximum strength. To that still would have to be added the noncombative force, which would run it up——

Mr. STONE. What do you call the noncombative force?

Mr. CHAMBERLAIN. The Quartermaster's Corps, the Medical Department, the Signal Corps, the unassigned recruits, and the Philippine Scouts are not included in the combative force.

Mr. STONE. That altogether would make how many?

Mr. CHAMBERLAIN. About 245,000 or 250,000.

Mr. STONE. About 250,000. Then, in addition to that——

Mr. CHAMBERLAIN. There is the National Guard.

Mr. STONE. The National Guard. Mr. President, I desire that information in that concrete form. About 250,000 men

then would be connected with the Regular Army as authorized under this bill.

Mr. President, I wish to say just a few words more before I sit down for I wish to keep my promise about time—and what I am going to say is but a repetition of what I said when the bill itself was before the Senate—that I see as little need now as at any time in our history for a large increase of the Army of the United States. I have a great admiration for the Army and its officers, but I see no need for this increase. I would like to enlarge upon this theme, and would do so except for the reasons I have stated. My deliberate judgment is that we are about to entail upon the taxpayers of the United States a great and useless burden. The only possible use we could have for an army would be either to attack an enemy by invading his country, or to defend our own country against an invasion. We are not creating this Army to invade a foreign land. On the other hand, there is not a Senator, not a Member of the House of Representatives, not a man connected with the executive departments of the Government, who will sincerely say that in his opinion we are in danger of assault on land—I say on land—by an invading army from any power on the earth that is worth our serious attention.

We have gone wild about this military business. We have become hysterical about it, and in consequence we are about to pile up an enormous indebtedness or to impose enormous taxation on the people without any compensating benefit that I can see. To my thinking, it is a folly amounting to wickedness.

The Senator from Massachusetts [Mr. LODGE] spoke this morning about our troubles with Mexico. Of course we all hope, and many believe, that in the end the troublous conditions in Mexico will end in peace—that pacification will take place and a stable government be established, without any real intervention by the United States. But let us assume the contrary to be true. And if unhappily the contrary be true, we know we would not need any such military force as this bill provides for in any such service as that. The soldiers we now have in the Regular Army within the continental United States and one-half the National Guard would be more than sufficient to answer every military exigency that could arise so far as Mexico is concerned. We know that. Every man of sense knows that. Do we wish to fool ourselves? Do we wish to deceive others? What are we trying to do with public opinion? What is the matter with us here in Washington?

I can not understand, to save my soul, why we are trying to do this thing. Do we want to build up a Military Establishment that is going to cost us I do not know how many hundreds of millions annually without need for it—need that anybody can tell us about?

While the Senator from Massachusetts was speaking this morning, and I asked him about Mexico, he said we ought not to be compelled to strip our coast defenses or our military posts in the interior of troops in order to supply the demand on the Mexican border. Mr. President, about the only need now that I can see that we have for men for our coast defenses or our military posts is to have enough men left to guard and take care of the defenses and the posts. There is nobody on the wide earth threatening them.

But the Senator proceeded to say that we need men to guard our border. Maybe so; certainly so to any reasonable extent. While the Senator from Massachusetts was speaking the Senator from Arizona [Mr. SMITH] interrupted, and there was a colloquy between those Senators, joined in by the Senator from New Mexico [Mr. FALL]. Senator FALL said there were no troops between Yuma and Nogales, and that it was 250 miles between those towns. The Senator from Arizona replied that there were only two or three scattered settlements in that great distance; and nobody spoke to the contrary. He was presumably speaking from knowledge.

What, then, are we to do? What are we expected to do? Mr. President, it would take more than 250,000 men, even more than half a million men, to line the border between Mexico and the United States with troops from the Gulf of Mexico to the Pacific. Are we going to stretch out one long line of khaki uniforms for 2,000 miles?

You do not expect to do that. You have no thought of that. No sane man has that in mind. We can only locate troops at strategic points where they can be moved here and there as occasion needs. Certainly nobody wants to raise an army of a quarter of a million or half a million men to scatter along the border between the United States and Mexico. Such a suggestion would be an absurdity. For what, then, do we need this great, expensive Military Establishment?

Mr. President, I heartily favor the provision for a nitrate plant and I want that provision to go through. I feel that whatever else may happen, the Government of the United States should be in a position of absolute independence when it comes to supplying the means necessary for its defense or for any lawful purposes, whether it be for defense or something else.

Mr. SMOOT. Mr. President, will the Senator yield for a moment?

Mr. STONE. I shall be through in just a moment, unless the Senator wishes to interrupt me now.

Mr. President, I am not going to say any more, for I am keeping my friend the Senator in charge of this bill waiting—impatiently waiting, I think, as he should be—for a vote.

Mr. President, I received a postal this morning. I am going to ask to put it in the RECORD. I do not know from whom it came. I am going to read it. What it says is true, no matter whom it came from. I suppose every Senator got one. The card merely contains quotations from eminent men. Here it is:

Napoleon Bonaparte said: "The more I study the world the more am I convinced of the inability of brute force to create anything durable."

He ought to have known whereof he spoke.

George Washington said: "Cultivate peace and harmony with all nations. Overgrown military establishments are, under any form of government, inauspicious to liberty and are to be regarded as particularly hostile to republican liberty."

I know that the advice and admonitions of Washington are not held in such high esteem now as they were a few years ago. He is regarded as an old fogy and not up to date; and that is true.

Ulysses S. Grant said: "Though I have been trained as a soldier and participated in many battles, there never was a time when, in my opinion, some way could not be found to prevent the drawing of the sword."

Mr. OVERMAN. Read the balance.

Mr. STONE. Very well. I have been asked to read the balance. There is not much balance, but I will read it.

Gen. Philip H. Sheridan said: "By the next centennial"—

He said this in 1876—

"arbitration will rule the world."

I doubt the certainty of that prophecy.

On the back I find written these words, and they are real words of wisdom:

Wisdom is better than weapons of war.

The Senator from Oregon suggests sotto voce that this is a good place to stop, and so I think.

Mr. FALL. Mr. President, I had not expected to take any part at all in this debate, and I shall only ask the indulgence of the Senate for a very few minutes; but I can not refrain at this time from expressing, as briefly as possible, views somewhat at divergence with those which have just been uttered by the Senator from Missouri [Mr. STONE].

I am one of those who possibly may be hysterical, I am possibly more nervous than is the Senator from Missouri. I may be more susceptible to the influence of what is ordinarily known as fear. I will admit, sir, that I see danger to this country. I do not intend at this time nor at length to go into a detailed discussion of the danger which I anticipate to this country from a land attack. I do fear that unless we discharge our duty to the people of this country as we have not discharged it in the past, and perform that duty in the very near future, we shall be compelled to abandon the only public policy which we have ever inaugurated and followed since this Government was formed, together with our prestige on this continent, together with our ownership or control of or interest in the Panama Canal; that we shall be compelled to abandon the Monroe doctrine, or compelled to meet foreign legions on Mexican soil, unless we perform at an early date our duty to Mexico and to ourselves with reference to Mexico. I am not going to give my reasons in detail. They are sufficient, at least, for my own conviction.

The Senator from Missouri has said that in the event that unfortunately we were compelled to discharge what I think to be our duty to Mexico and to ourselves, by armed intervention in Mexico, the troops that we now have on Mexican soil and along the border, or available, are amply sufficient in numbers. I presume he means, amply sufficient with which to conquer Mexico. In my judgment, he is entirely correct. Let alone, unhampered by orders from Washington, with discretion placed as it has not been placed, with our military leaders along the border, despite newspaper reports to the contrary, with orders to overcome armed opposition and restore peace and order in Mexico, there are now enough regular soldiers on Mexican territory to perform that duty.

I am frank to say to you, sir, from my knowledge of Mexico and of its conditions and of its people and of its soldiers, that the 14,000 troops that are now under Gen. Pershing in Mexico can march from Columbus to the City of Mexico, occupy every town of 5,000 inhabitants, and maintain open lines of communication from every port in Mexico to the City of Mexico; and if they were to receive orders to do it they would have the substantial backing of 90 per cent of the Mexican population in their endeavors. They would be compelled to fight a lot of bandits who have been recognized by this Government as constituting the armed forces of the chief depository of the executive power of Mexico, I believe—bandits of Villa yesterday, loyal soldiers of Carranza to-day, changing their service because their officers are paid to deliver the soldiers, and the soldiers themselves not even taking an oath of allegiance to their new commander or to their new leader.

The people of the United States apparently will not understand, and the representatives of this administration apparently will not endeavor to understand the conditions as they are now existing in Mexico. If the State Department of this Government have not information which would lead them to investigate the question whether certain parties in Mexico—certain leaders, military and otherwise, of the Carranza Government—are not at this moment in negotiations with a foreign country as against the United States; if they have not such information in their possession as would lead them to such an investigation, then it is because they would not receive or pay heed to such information when offered. It is in the possession of others, sufficient to justify, at least, a very serious investigation.

Mr. President, the Senator said it would require 250,000 men to patrol the border. The border of Mexico has been patrolled. It has not been in such an unprotected condition as it is now until the recognition of Mr. Carranza. I have the records and can read them to the Senate when necessary to show that on the 3d day of January Gen. Obregon made a request that the border patrol be removed, and that the border patrol between the Gibson ranch and Columbus was removed, and that there was no patrol there to intercept Villa's forces when they marauded across the border and murdered the citizens of my State.

The border patrols are removed at the request, I suppose, of the general in chief of the recognized Government of Mexico, and the citizens of New Mexico were murdered in their beds. The border has been patrolled at this particular point, and they only require these men to patrol the border between Columbus and the Gibson ranch. There are 50 men to patrol the border for 30 miles between Columbus and Huachuca, and the entire border may be patrolled with the men who are now on it riding from one station to another a mile apart. It can be done. Why is it not done? I presume because we are afraid of wounding the tender susceptibilities of the Mexican murderers who are constantly raiding our borders.

Mr. SMOOT. Mr. President, the Senator from Missouri [Mr. STONE] has doubts as to whether he should vote for the conference report or not, but states he thought that he would do so, as section 124, which provides for a nitrate plant, is of such vital importance to the country he thought he would vote for the conference report, notwithstanding the other objectionable features of the report.

Mr. President, I look at the conference report in just the opposite way from the Senator from Missouri [Mr. STONE]. If I do vote for the report, I certainly do not want it understood that I approve of section 124. It seems to me that by adopting that section we are entering upon a dangerous policy. In that section $20,000,000 is provided for the erection of a nitrate plant. In ordinary times the Government of the United States purchases less than 20,000 tons of nitrates. At $50 a ton that is only $1,000,000. Three per cent upon $20,000,000 is $600,000, or enough to buy 12,000 tons of nitrate.

Mr. President, there is no business man who would undertake to invest $20,000,000 in a nitrate plant that will cost him as much to make, and perhaps more than he can purchase it for, if he has to borrow the money, as the Government of the United States will have to do, and pay 3 per cent interest upon it, and particularly when the interest upon his loan would purchase almost enough nitrates to supply his needs. This is about the condition the Government will find itself in if it undertakes to manufacture nitrates.

There is no danger, Mr. President, but what the Government of the United States can purchase all the nitrate it needs. I have a great regard for the opinion of Mr. Pierce, referred to by the Senator from Missouri, but I doubt very much the statement made in his address that the nitrate fields of Chile will be exhausted by the year 1923. I have attended national conservation congresses and heard statements made that in 28 years all the known coal of the world would be exhausted. Eight years of that time have gone by and I do not believe that there has been consumed in the United States during that time 1 per cent of the coal known to exist in the State of Colorado. The State of Colorado has coal enough to last the United States for hundreds of years.

Mr. SHAFROTH. If the Senator will yield, I will state that the Geological Survey stated that there were 391,000,000,000 tons of coal in the State of Colorado. They have been mining coal there for 60 years, and there has not been taken out yet one-half of 1 per cent of the coal of that State.

Mr. SMOOT. The statement the Senator makes at least confirms the moderate statement that I made. I know there is coal enough in the State of Utah to last the United States for a hundred years if there was not another pound of coal to be secured from any other source.

But that is not all. Grant that what Mr. Pierce says is true; agree with him that in 1923 there can be no more nitrates secured from Chile; then what? Mr. President, the Senate but a few weeks ago passed what is known as the Shields water-power bill. That bill is now before the House, and I say without fear of successful contradiction, if that bill becomes a law private parties will begin the manufacture of nitrates in the United States if the field is left to private enterprise, and the Government of the United States can buy nitrates as soon as a plant or plants are in operation for less money than the Government is buying nitrates from Chile to-day. There is not near the draft upon the nitrates of Chile to-day that there was years ago, as nitrates by the thousands of tons are being manufactured in Norway.

Mr. STONE. What?

Mr. SMOOT. Yes; I mean it.

Mr. STONE. In Norway?

Mr. SMOOT. Everybody knows it who knows anything about the manufacture of nitrates.

Mr. STONE. That is an easy statement to make, and it is not a very respectful one to make. I should like to know just where the Senator gets official or reliable or authoritative data for that statement.

Mr. SMOOT. I get it from the Geological Survey, and if the Senator wishes me I will send and get reports and show him the names of the companies in Norway manufacturing nitrates from the air, the amount of power used, and the amount of nitrates produced. They are making nitrates from the air in Canada. Mr. Pierce spoke of the plant that is now in Canada. In fact, if the Senator attended the lecture of Mr. Pierce, he saw moving pictures representing the plant located in Canada.

Mr. STONE. Which we lost.

Mr. SMOOT. Yes; I was going to say that plant would have been located in the United States if the Shields bill had been enacted into law a few years ago. But, Mr. President, a similar bill was passed, but did not meet the approval of certain people representing what was known as the National Conservation Congress, and at that time they had power enough to secure the veto of the bill.

Mr. President, I want to say again that if the Shields bill was the law to-day private capital would begin the manufacture of nitrates from the air. The Government of the United States could buy most of the nitrates they require for the interest upon the amount of money provided for in this bill to erect a plant only.

Mr. STONE. From whom would they buy it?

Mr. SMOOT. From individual parties who would begin the manufacture of nitrates from the air.

Mr. HARDWICK. Obtaining water power under the Shields bill.

Mr. SMOOT. Yes; I have no doubt of it. In fact, it has been testified before committees a number of times that the very parties who built the plant in Canada would have built it in North Carolina, if the President of the United States had not vetoed the water-power bill, as the bill would have allowed them to establish their plant upon some navigable stream in the United States.

Mr. OVERMAN. The company was already organized.

Mr. SMOOT. The company was already organized, as the Senator from North Carolina states; the capital was arranged for. I know if the water-power bill had become a law there was ample capital ready and individuals anxious to invest in a plant for the purpose of manufacturing nitrates from the air.

Mr. HARDWICK. If the Senator will pardon me, that is true in a case in Alabama, too.

Mr. SMOOT. I understood so, but I am not so familiar with that as I am with the North Carolina case.

So, Mr. President, there is no reason for this appropriation of $20,000,000, and I am sorry to see it in the bill. It looks to me as though we are running headlong into paternalism. As long

as I can prevent such a thing by a vote of mine I am going to do so. Let us place the railroads, the express companies, the telephone and telegraph lines, water transportation, and the manufacturing of nitrates under Government ownership and management, and let the work be done by men appointed for political reasons, and I say God help our country. I believe it will be a sorry day for the United States when individual initiative is destroyed in our country, as that is what has made our country as great as it is.

Such action as proposed is a long step toward defeating the policy that has made our country the greatest on the globe. If I vote for this report it will be because I believe the balance of the report is absolutely necessary for the immediate protection of our country.

Mr. SHAFROTH. If the Senator will yield, I should like to ask him whether he believes that because the Government is going to construct one nitrate plant it will do away with the necessity of private companies establishing other nitrate plants.

Mr. SMOOT. It may not do away with it entirely, but this is about what will happen. Ultimately private parties will erect plants for the manufacture of nitrates from the air, and I have no doubt but they can manufacture it cheaper than the Government of the United States can, providing all legitimate charges are made against the cost of the manufacture of it by the Government.

Mr. SHAFROTH. If they are going to manufacture cheaper than the Government can, and I believe the Senator is correct, I believe the private enterprise can do it, unless they have gentlemen's agreements and trust agreements by which it is thwarted, the Government will not interfere to any extent with private capital in the development of nitrate production.

Mr. SMOOT. The only question is as to how soon private parties will undertake it with the Government in the business and any loss made covered up by appropriations made by Congress. I have no doubt but what there will be private capital that will ultimately undertake it.

Mr. SHAFROTH. Does not the Senator think that a Government plant would serve this purpose if no other? If there were gentlemen's agreements to put up the price and make 400 and 500 per cent profit upon the product, the work on the part of the Government would tend to show the exact cost of it and would not that have a tendency to keep the price down?

Mr. SMOOT. I do not believe the exact cost will be known when manufactured by the Government. If we are to take past history into consideration and if we are to judge by the wasteful extravagances of the departments in spending appropriations, I want to say now that there will be no question but what the cost of manufacturing nitrates by the Government will be greater than by private parties.

Mr. SHAFROTH. Does not the Senator——

Mr. SMOOT. I want to say to the Senator that I believe private companies can make nitrate under the strict business rules by which such companies are generally managed cheaper than the Government can make it if actual cost is ascertained and can sell at a price fixed by the Government and make a profit.

Mr. SHAFROTH. They can, but will they not try to make an exorbitant profit by agreements such as we witness in many instances in products that are manufactured?

Mr. SMOOT. That, of course, I could not say; but we have a Federal Trade Commission to regulate such combinations, and I think they ought to be regulated.

Mr. SHAFROTH. But does not the Senator believe that the Government of the United States in the manufacture of its munitions and other things would have an advantage in the way of knowing processes and the latest inventions and keeping them, so that in case of war with a foreign country we would have an advantage in bringing forth something new that is devised by our inventive genius?

Mr. SMOOT. No; I do not think there will be any advantage on the part of the Government in keeping abreast of the times as to the improvements in any kind of processes or machinery for the manufacturing of any kind of article, I do not care whether it is nitrate or any other article manufactured for use.

Mr. VARDAMAN. Will the Senator from Utah yield for a question?

Mr. SMOOT. Certainly; I yield to the Senator.

Mr. VARDAMAN. The Senator from Utah is opposed to the Government building its own ships, manufacturing its own munitions of war, and otherwise engaging in enterprises of that character, is he not?

Mr. SMOOT. Mr. President, certainly I am opposed to the Government going into the building of ships. I am not opposed to the Government of the United States manufacturing a portion of the powder that it requires.

Mr. VARDAMAN. Why not by the Government of the United States?

Mr. SMOOT. I will state to the Senator why I say I do not believe that it is wisdom, nor does any other country believe it is, for the Government to manufacture all the powder that is required by——

Mr. VARDAMAN. Why not?

Mr. SMOOT. The Government of the United States to-day is relying upon private concerns for over one-half of its powder. We appropriate money every year to enable the Government to manufacture about a third of its requirements. It is the policy now that we shall manufacture that amount of our requirements, and depend upon private companies for the balance, so that in case of war or in case of a sudden call there would be private plants in operation, and the Government would be able to call upon them for their entire output.

Mr. VARDAMAN. When the Government manufactures its own powder it takes away the incentive to enlarge the Army which grows out of the enormous profits enjoyed by private companies. Why ought not the Government do it and thereby save the profits to the taxpayers rather than permit the profits to go into the coffers of the rich manufacturers of munitions of war?

Mr. SMOOT. That is another question entirely. I wish to say to the Senator that the real reason for the provision authorizing the Government to manufacture nitrates is not to enable the Government to manufacture it in case of war; that is so remote that it is hardly worth considering. The dominating reason is to allow the Government to manufacture nitrates to sell to the concerns of this country that make fertilizers.

Mr. VARDAMAN. Does not the Senator understand that if the Government did have that power it could be used to very great advantage to the farmers of the country by regulating very largely the price of the fertilizer which is so essential to them?

Mr. SMOOT. The price of the fertilizer is not regulated in the least.

Mr. VARDAMAN. No; but there will be no trouble, when plants shall be constructed, to provide for that by legislation, if it is in the interest of the American people.

Mr. SMOOT. This does not provide for the manufacture of fertilizer. It provides for the manufacture of nitrate, and the President is authorized to sell the nitrate on the best terms possible.

Mr. VARDAMAN. Well, the Senate can reasonably indulge the presumption that the President is going to exercise that discretion in the interest of the American people rather than in the interest of a few fertilizer manufacturers.

Mr. SMOOT. I will grant that, Mr. President, but that has nothing to do with what the farmer will pay for his fertilizer. The manufacturer of fertilizer will fix the price.

Mr. VARDAMAN. That is a mere matter of detail that will be met when the occasion arises. It is presumed that the Congress of the United States is going to act intelligently and patriotically in dealing with all of these questions. This is but the beginning. I really think it is the only thing in the bill for which I care.

Mr. SMOOT. Of course the Senator believes entirely differently from what I do. The Senator believes in Government ownership; the Senator believes that it would be wise for the Government to own the railways, to manufacture powder, and other munitions of war, and to manufacture anything which it desires. I think the Senator believes that the Government ought to build ships and to go into the transportation business.

Mr. VARDAMAN. I really think the Government ought to perform those functions where it is to the interest of the masses rather than to restrict its operations to certain things where it is to the interest of the few.

Mr. SMOOT. Well, Mr. President, my opinion is that it is for the interest of the masses of the people for the people themselves to attend to the business of the country. I think through competition and through regulation where there is no competition greater benefits will come to the people by the individual initiative of the American people and the manufacture of goods by and through that source.

Mr. THOMAS. Mr. President, will the Senator from Utah permit me to ask him a question?

Mr. SMOOT. Certainly.

Mr. THOMAS. The Senator from Utah referred some time ago to the Shields bill and what could be done under it, evidently upon the assumption that the Shields bill would become an accomplished fact in legislation. My query is whether the Senator has any information upon that subject? I know that bill received the denunciation of some very distinguished opponents of it some time ago, accompanied by directions to both

Houses, and practically to the President, as to what their duty would be under the circumstances. I was a little bit curious to know whether the Senator could tell me if the bill would probably become a law? Of course, if it does not, there can be no nitrates manufactured under its provisions.

Mr. SMOOT. I will say, Mr. President, that Mr. Pinchot prepared a statement denouncing the bill in the most vicious terms, and sent a copy to every newspaper in the United States, to little weekly papers, and even to some that are only issued once a month, calling attention to the fact—if it was a fact—that the Senator from the State where the paper was published voted for that iniquitous measure. Senators have, no doubt, been receiving protests from a few of these papers, inclosing the Pinchot letter of denunciation as a basis of the protest.

The National Conservation Congress held a meeting here at Washington on May 2, 3, and 4 of this year——

Mr. POMERENE rose.

Mr. SMOOT. Just a moment, and I will yield to the Senator.

At that meeting, Mr. President, there was a vote taken on the Shields bill, and the resolution approving of it passed the congress by a vote of 116 to 39, notwithstanding the propaganda that had been carried on against it from Washington, notwithstanding the denunciation of it made by the so-called father of the congress. The people are beginning to learn that a certain kind of conservation and as construed by certain people in this country is not conservation in its truest sense.

Mr. POMERENE. Mr. President——

Mr. SMOOT. I yield to the Senator from Ohio.

Mr. POMERENE. I want to ask the Senator what general means of information the author of that paper had over other common mortals?

Mr. SMOOT. I had rather let the author of the letter answer that himself, for I think he can do it better than I.

I will say to the Senator from Colorado [Mr. THOMAS] that I have hoped and believed that the Shields bill will pass the other House, and I believe it is going to become a law at this session of Congress. There may be some modifications of the bill as it passed the Senate, but I believe that the main provisions of the bill are going to be carried into law. When that is done water-power development will begin and the water of this country will be utilized and will not as at present flow from the mountains to the ocean unused and worse than wasted; and that utilization I believe, Mr. President, is in consonance with the spirit of true conservation.

Mr. SHAFROTH. Mr. President, I should like to call the attention of the Senator from Utah to the fact that the bill was passed by an enormous majority in this body—a majority of nearly 2 to 1, I think it was—and that if this body stands firm and reiterates the incontrovertible truths that were stated in behalf of that bill, it seems to me the other House will consider that and acquiesce in the judgment of the Senate.

Mr. SMOOT. I think that is true, Mr. President. I know, however, that the Senator from Oregon [Mr. CHAMBERLAIN] desires to have a vote upon the adoption of the conference report, and so I shall not occupy longer the time of the Senate.

Mr. BRANDEGEE and Mr. LANE addressed the Chair.

The VICE PRESIDENT. The Senator from Connecticut.

Mr. LANE. Mr. President, I should like to say that I do not understand the logic of the argument of the Senator from Utah [Mr. SMOOT].

Mr. BRANDEGEE. I believe I have the floor, Mr. President.

Mr. LANE. I will say——

Mr. BRANDEGEE. I will yield to the Senator, if he wishes.

Mr. LANE. I only desired to make a few remarks.

Mr. CLARKE of Arkansas. Mr. President, I want to say that we had a sort of "gentlemen's agreement" that we should vote on the pending conference report at half past 4 o'clock this afternoon. I, of course, probably state it extravagantly when I say a "gentlemen's agreement"; but the Senator from Oregon [Mr. CHAMBERLAIN] rose and asked unanimous consent to vote on the report at that time. The objection was made that that request would involve a roll call, but the indications were that we might vote about that time.

I want to say that I believe I shall subject myself to just censure if I do not hereafter insist that the river and harbor bill shall be kept before the Senate until it is passed. When we met this morning it was with the understanding that discussion of the pending measure would not require more than two hours. I trust Senators will understand the motives which prompt me to make this announcement at this time, and will this afternoon conclude the consideration of this particular matter, so that to-morrow morning we may resume the consideration of the river and harbor bill and keep it under consideration until it is disposed of.

Mr. BRANDEGEE. Mr. President, I hope I have not lost the floor, for I did not yield to the Senator from Arkansas, but I wish to say that I did not understand there was any agreement as to the time when the vote should be taken on this report. I saw the Senator from Oregon [Mr. CHAMBERLAIN] rise and heard him ask unanimous consent that a vote be taken at half past 4 o'clock, and then he withdrew the request.

Mr. CLARKE of Arkansas. The request was withdrawn, as I understand, for the purpose of avoiding a roll call.

Mr. BRANDEGEE. Whatever the purpose may have been, the request was withdrawn, and there was no assent to the request. So I assume there has been no hour fixed for a vote on the conference report.

Mr. President, I desire to ask the chairman of the committee what was the minimum number of enlisted men of the line provided in the bill as it passed the Senate?

Mr. CHAMBERLAIN. I will say to the Senator that the minimum number in the bill as it passed the Senate is practically as it is under the provisions of the conference report, because the numbers of organizations and the composition of the units are the same in the bill as it passed the Senate and in the report now before the Senate, except as to the amendment which the Senator from Connecticut proposed and which was adopted by the Senate increasing the enlisted strength to 250,000 men as a maximum.

Mr. BRANDEGEE. That was not the minimum?

Mr. CHAMBERLAIN. No; that was not the minimum.

Mr. BRANDEGEE. So that, if I understand the Senator correctly, the minimum number at which the Regular Army must be maintained, according to the provisions of the conference report, which he has stated to be 165,000 men, is the number which was provided by the bill as it passed the Senate.

Mr. CHAMBERLAIN. Yes; that is the same.

Mr. BRANDEGEE. Mr. President, I agree with the Senator from Missouri [Mr. STONE] in stating that I am considerably puzzled about how a Senator ought to vote on this conference report. I am more puzzled how a Senator who believes in real preparedness ought to vote on this conference report. The Senate put into this bill a provision that the total enlisted force of the line of the Regular Army, excluding the Philippine Scouts, the enlisted men of the Quartermaster Corps, of the Medical Corps, and the unassigned recruits, should not exceed 250,000 men, as appears on page 7271 of the RECORD. Now, if I understand the provisions of the conference report correctly, it provides:

> That the total enlisted force of the line of the Regular Army, excluding the Philippine Scouts and the enlisted men of the Quartermaster Corps, of the Medical Corps, and of the Signal Corps, and the unassigned recruits, shall not at any one time, except in the event of actual or threatened war or similar emergency in which the public safety demands it, exceed 175,000 men.

That means that the Senate conferees have agreed that the maximum strength of the Army, to put it in a brief phrase, shall be reduced 75,000 men below the number which was fixed by the Senate, whereas the House conferees have only agreed to increase the minimum number provided for in the House bill, to wit, about 145,000 men, to 165,000 men. I think that is extremely unfortunate, Mr. President. The Senate conferees have not only receded upon that question of the strength of the Army, but they have stricken out absolutely section 56 from the bill.

Without reading section 56, I will ask, in order that those who wish to compare that section with the section that the conferees have substituted for it, that section 56 of the bill as it passed the Senate be printed in my remarks, and, immediately following it, section 54 of the conference report.

The VICE PRESIDENT. Without objection, it is so ordered.

The sections referred to are as follows:

Section 56 of the bill as passed by the Senate is as follows:

> SEC. 56. The Volunteer Army: The President is hereby authorized, at any time, to organize, maintain, and train, under the provisions of sections 3 to 12, both inclusive, of an act entitled "An act to provide for raising the volunteer forces of the United States in time of actual or threatened war," approved April 25, 1914, volunteer forces, not exceeding an average of 600 officers and enlisted men for each congressional district. The term of enlistment, which shall in no event be greater than that of the Regular Army, the period of service with the colors and with the reserve, and the period of training shall be as the President may prescribe, those passing to the reserve to have the status and obligations prescribed for reserves of the Regular Army: *Provided*, That as reserves no compensation shall be paid except for actual services. Officers and enlisted men of the volunteer forces raised under the provisions of this section shall be entitled to the pay and allowances of officers and enlisted men of corresponding grades in the Regular Army during periods of training only: *Provided further*, That without the consent of Congress such volunteer forces shall not be called out for field service for more than a total period exceeding 30 days in any one year.
>
> Temporary appointments and promotions of officers of the Regular Army arising from the operation of this section may be terminated at the discretion of the President.

Officers of the Regular Army who receive commissions in the Volunteer Army herein authorized shall in time of peace receive the pay and allowances of their respective grades in the Regular Army, and no more.

Section 54 of the bill as agreed to by the conferees is as follows:

SEC. 54. Training camps: The Secretary of War is hereby authorized to maintain, upon military reservations or elsewhere, camps for the military instruction and training of such citizens as may be selected for such instruction and training, upon their application and under such terms of enlistment and regulations as may be prescribed by the Secretary of War; to use, for the purpose of maintaining said camps and imparting military instruction and training thereat, such arms, ammunition, accouterments, equipment, tentage, field equipage, and transportation belonging to the United States as he may deem necessary; to furnish, at the expense of the United States, uniforms, subsistence, transportation by the most usual and direct route within such limits as to territory as the Secretary of War may prescribe, and medical supplies to persons receiving instruction at said camps during the period of their attendance thereat, to authorize such expenditures, from proper Army appropriations, as he may deem necessary for water, fuel, light, temporary structures, not including quarters for officers nor barracks for men, screening, and damages resulting from field exercises, and other expenses incidental to the maintenance of said camp, and the theoretical winter instruction in connection therewith; and to sell to persons receiving instruction at said camps, for cash and at cost price plus 10 per cent, quartermaster and ordnance property, the amount of such property sold to any one person to be limited to that which is required for his proper equipment. All moneys arising from such sales shall remain available throughout the fiscal year following that in which the sales are made, for the purpose of that appropriation from which the property sold was authorized to be supplied at the time of the sale. The Secretary of War is authorized further to prescribe the courses of theoretical and practical instruction to be pursued by persons attending the camps authorized by this section; to fix the period during which such camps shall be maintained; to prescribe rules and regulations for the government thereof; and to employ thereat officers and enlisted men of the Regular Army in such numbers and upon such duties as he may designate.

Mr. BRANDEGEE. Section 56 of the bill as it passed the Senate provided for the creation of a volunteer army, and was so entitled. Section 54 of the conference report provides simply for the establishment of training camps, and is so entitled.

The Senator from Oregon, the chairman of the committee, has given some intimation that under section 54 of the conference report something might result similar to what would happen under section 56 of the Senate bill. I must, with all due respect, entirely differ from his construction of the language of section 54 of the conference report. It simply provides that—

The Secretary of War is hereby authorized to maintain, upon military reservations or elsewhere, camps for the military instruction and training of such citizens as may be selected for such instruction and training, upon their application and under such terms of enlistment and regulations as may be prescribed by the Secretary of War.

Obviously the "terms of enlistment" and regulations to be prescribed by the Secretary of War, as stated in that section, are simply for the purposes of the section, to wit, military instruction and training in the camps. The section does not contemplate at all the enlistment of one of the citizens who goes to a training camp in either the Regular Army or the volunteer army, if there be such a thing, of the United States. It does not make him a United States soldier at all; he incurs no obligation to go into the service of the United States thereafter when called upon; but it is good in so far as it goes.

Another part of the section, which I have not read, provides that the citizen who goes to a training camp shall have his equipment furnished him, and so forth. Of course, the provision can not contemplate service in the Army of the United States, because it does not provide for any pay; but in the opinion of those who want to provide a real reserve of United States soldiers to be called upon in time of national peril, who would have had training in military camps in evolutions, in marksmanship, and who would have undergone a hardening process to put them in a condition to endure the privations of military life as they have to be endured in the field, section 56 of the bill as passed by the Senate provided something real and tangible.

Mr. CHAMBERLAIN. Mr. President, may I interrupt the Senator?

Mr. BRANDEGEE. The Senator may.

Mr. CHAMBERLAIN. I think that section 56 did not provide for pay except during the time the men were in training, but the Senator will remember—I hope the Senator will remember, at least—that the House and Senate had reached an impasse by virtue of the action of the House in absolutely refusing by an overwhelming vote to accept that Senate amendment; so that it was either the provision agreed to or nothing. If the Senate conferees had insisted all the time upon the retention of section 56, I for one felt—and I believe my colleagues on the conference committee felt as I did—that the situation was too serious to absolutely block all legislation on this subject, particularly in view of the fact that the Senate organization was retained intact as to the Regular Army.

Mr. BRANDEGEE. Mr. President, I beg to assure the Senator that I estimate him as a true friend of maintaining the national authority of this Government and of having the necessary force, the necessary military arm, to protect the life of this Government and its people under any and all circumstances; and I have no doubt that if the Senator could have had his way he would have had a real bill, in which the country could have had some confidence and which would have resulted, come what may, in at least affording the nucleus of a Regular Army organization and a possibility of training a reserve for it which would be reliable and which would not disappoint us in case of emergency. I have no doubt the Senator did the best he could to get the other body to accede to what I would consider a reasonable view of this situation; but I think it is a serious question after all whether it would not have been better for the Senate conferees, who no doubt believed in the bill which the Senate passed, to have absolutely broken with the House conferees over this difference and to have declined to enter on a system and to commit this country to a system, which I hope will not be permanent, of attempting to rely upon the militia of the several States as the first line of defense after the Regular Army of this country.

Mr. President, the individuals who compose the militia of the several States are patriotic and well-meaning. They show that by going into the militia. They do the best they can. They want to do something to be of service to their State and their country. Unfortunately it is not their fault that they can not be made a reliable part of the first line of defense as a Regular Army reserve. It is not their fault. It is simply that the Constitution of the United States prevents its being done, willing and able as they may be.

Mr. LEE of Maryland. Mr. President——

The VICE PRESIDENT. Does the Senator from Connecticut yield to the Senator from Maryland?

Mr. BRANDEGEE. I do.

Mr. LEE of Maryland. I should like to ask the Senator how it is that the Constitution of the United States prevents it, when the Constitution of the United States has exactly the same terms that the Constitution of Switzerland has, and Switzerland has an efficient citizen militia?

Mr. BRANDEGEE. Mr. President, I am not an expert on the Swiss Constitution. My learning has never extended that far, and I have not read the document. I do know that the Constitution of the United States provides that the militia of the several States can be called into the service of the United States for three, and only three, specific purposes—to enforce the laws of the United States, to suppress rebellion, and to prevent invasion. The trouble about relying upon the militia of the several States as an adequate supplement to the first line of defense—to wit, the Regular Army—is that until we get to the point where invasion has to be repelled we can not call the militia into the service of the United States. In other words, however well prepared each separate body of militia may be in its own State for those purposes, they can not be immediately called into the field—to-day, for instance—and put into training camps by the President of the United States, in the service of the United States, for the purpose of hardening them down, of testing their marksmanship, and of making them proper men to put into the field service with the Regular Army to repel invasion or to meet veterans.

Reason about it as you may and cavil about it as you may, there is that chasm between the militia of the several States and the Regular Army, that hiatus between the militia and the authority of the President of the United States, who is the Commander in Chief of the militia of the several States only when they are called into the service of the United States, and he is utterly without authority over them at other times. There is that hiatus that can not be bridged; and this whole bill, so far as it attempts by the use of language and adroit expressions and phrases to accomplish the process designated as "federalizing the militia," is a failure so far as any immediate results could be obtained from the militia as a first line of defense. Every lawyer knows it. Every Army officer knows it. The militia know it. The adjutant generals who have been so insistent here to prevent a Regular Volunteer Army of the United States know it and admit it. There is no use in attempting to deny it, or even to disguise it.

Whatever may be said about the distinguished brigade of adjutant generals who have taken a benevolent interest in the procurement of this legislation, or at least who have taken a position of open hostility toward section 56, and have finally valiantly succeeded in trampling it under their feet and substituting their own organizations in lieu of it—whatever may be said about them as a lobby, which term the Senator from Maryland [Mr. LEE], who is the champion of this embattled

brigade, resents—I say, I will not call them a lobby. I see that the distinguished Senator from Illinois [Mr. LEWIS], who claims to divide with the Senator from Maryland the honor of marshaling here this host who have vanquished section 56, is very much interested in this question. Whatever may be said about the wisdom of the action of this distinguished brigade, they have conducted a propaganda here.

If you do not like the word "propaganda," I will modify that to "an organization." They have maintained a very effective organization, and they have won their point. I think they have done more harm to their country than their military services will ever be able to redeem. Be that as it may, that feature is accomplished. But I say this conference report, which strikes out section 56, providing for the volunteer army, substitutes a mere authorization that men may have their uniforms furnished to them if they want to go into a training camp, and cuts down the 250,000 maximum number of the Regular Army as fixed by the Senate—although the President of the United States himself, disagreeing with the distinguished chairman of the Committee on Foreign Relations of the Senate, has openly stated to the country that he regarded 250,000 men as a very small Regular Army for a country of 100,000,000 population and of our great wealth—the conference report which has done all those things is most regrettable. And, Mr. President, I can not help but express my surprise and regret and my amazement to have heard the distinguished chairman of the Foreign Relations Committee, the Senator from Missouri [Mr. STONE], stand here this afternoon and say that he regards even this small army of 165,000 men as imposing an utterly unjustifiable burden of expense upon the taxpayers of this country.

Why, Mr. President, anybody in the position in which that Senator has been for the past year, and I should think anybody who has been in America in the past year and has kept track of current events pertaining to our foreign relations, would see beyond peradventure that it was the duty of this country to keep at all times, in peace as well as in war, a sufficient skilled military force to take the field and to meet danger, from whatever quarter of the compass it might appear. Let no Senator delude himself with the idea that the minute the present Mexican situation may be settled, or the minute the present European war may be over, this country will cease having its entanglements and its dangers from foreign powers. In my opinion they are going to be much greater and much more frequent in the future than they ever have been in the past.

I wish it were within my power to convince those who differ with me in this respect that what this country needs, if it is to be prepared to defend itself at all—and I am not arguing with anybody who thinks it is wrong to defend the country—is to have your force ready at all times, for it is the sudden emergency, the being taken unaware, that is the great danger. This country is so large territorially and in population and is so wealthy that I am almost tempted to pardon some people who believe that on those accounts it could never be attacked. But, Mr. President, the larger it is and the richer it is and the wealthier it is the more danger of attack; and the fact that after years of training and rush and tremendous payments of money and sacrifice of life we might then get in condition to repel the invader, whom we might have been able to expel with a thousandth part of the expense then entailed, would be no consolation to us now.

I think those who talk about "militarism" in this country are simply repeating a parrot cry. There is no such thing, and I do not believe there ever can be such a thing, in this country. But since when has it been considered militarism that a sovereign Government of 100,000,000 people should maintain a respectable-sized standing army and have the necessary munitions of war always on hand?

Everybody knows, every schoolboy knows, that the alluring picture of a thousand or a million embattled farmers springing to their arms on the bugle call and repelling the foreign invader is a mere idle dream. If the million farmers sprang, there would be no arms for them to spring to; and if there were, they would not know how to handle their arms. They would have to be put in great encampments and taught in some way to march shoulder to shoulder and taught what the military commands meant; and when they got so that they could be trusted with rifles, so that they would not shoot themselves or their companions, they would have to have the intricate mechanism of the arms explained to them for weeks.

While I do not want to reflect upon the benefits of the Plattsburg camp or other such camps, Mr. President, I have been told within a few weeks by a gentleman who attended one of those camps that even to-day—and he is the captain of one of the rifle teams—he has members that attended that camp bring their rifles to him because they have been unable to put them together after having taken them apart, after two months of training; and they were not unintelligent people.

But, in addition to that, an army is composed of units. The armies of to-day are not mere men with muskets in their hands; they are men of the highest mechanical skill, manipulating all sorts of delicate instruments. To say, living in a fool's paradise as we are, that we will stake everything upon the chance that nobody will attack us and that we will not be called upon to enforce our policies or help defend anybody else, with our Panama Canal and our Philippine Islands and our outlying possessions in the Atlantic and Pacific; to talk about trusting in Providence or to preach moral homilies to the tigers and panthers that are raging around the world licking their chops and seeking whom they may devour; to talk about garlands of roses and the millenium and the brotherhood of mankind simply makes me sick, Mr. President. The English language fails to express my feelings in that respect.

When a nation falls so low or becomes so effeminate or cowardly or contemptible that it will not fight to defend its own firesides and its own people, or when it becomes so brainless and steeped in maudlin, gummy sentiment, or so stingy that it will not prepare and pay the necessary insurance against the calamities that we see have befallen in Europe, I say it ought to go down. I hope the Lord, who is kind to drunkards and fools, will continue to preserve the United States even if the Congress will not furnish anything for Him to do it with.

Mr. LEE of Maryland. Mr. President, immediately after the close of the remarks of the Senator from Connecticut [Mr. BRANDEGEE] I should like to read into the RECORD the provision of the Constitution of the United States and the similar provision of the constitution of Switzerland as to the powers of our States and their Cantons in appointing officers for the militia. They are as follows:

Section 8, Article I, of the Constitution of the United States provides:

> Congress shall have power to provide for organizing, arming, and disciplining the militia and for governing such part of them as may be employed in the service of the United States, reserving to the States, respectively, the appointment of the officers and the authority of training the militia according to the discipline prescribed by Congress.

Now, the Swiss provision is as follows:

> So far as military reasons do not prevent, corps of troops shall be formed from soldiers of the same Canton. The composition of these bodies of troops, the maintenance of their effective strength, the appointment and promotion of their officers, shall belong to the Cantons, subject to general regulations which shall be issued to them by the Confederation.

Mr. BRANDEGEE. Mr. President, if the Senator will yield, I do not deny that the Swiss Army is efficient. I think it is. It has been sufficient to protect their country and keep out invaders.

Mr. LEE of Maryland. Then there is no reason why the Senator can not be comforted, because our people are as good as the Swiss; and with the same Constitution why can we not have the same kind of an army?

Mr. BRANDEGEE. Does the Senator from Maryland claim that under the Constitution of the United States the President can order the militia into service for the purpose of training in time of peace?

Mr. LEE of Maryland. It is in this bill.

Mr. BRANDEGEE. I know; but it is not in the Constitution.

Mr. LEE of Maryland. And it will operate in this bill, and it will operate so that the Senator will be comforted, and the country will be safe.

Mr. BRANDEGEE. That is one of the evasions and subterfuges that I criticize in the bill.

Mr. OLIVER. Mr. President, I can not allow the bill to come to a vote without explaining why I feel compelled to vote for the conference report. Rather than leave our country in its present condition unprepared to repel an invasion, which I feel sure will some time come, I am willing to sacrifice somewhat even in matters of principle. But I want to register my protest against the unfairness of compelling men who are willing to do everything in their power to put our country in its proper position in a military sense to vote for something which is absolutely repugnant to them as a matter of principle, and I refer to the provision for the nitrate plant.

I regard this provision as unwise in the extreme, even if it were true as alleged in the debate in the Senate before it was adopted as an amendment that there was any danger whatever of our country in time of war being short of a sufficient supply of nitrates to provide explosives. The argument was presented that as we now rely upon a foreign supply for a large part of our nitrates and as that supply might be cut off we must place ourselves in a position to provide for it from within.

Mr. President, I believe that before 10 years, before 5 years, have passed we will be in a position to obtain all the nitrates

that we can possibly need in time of war for explosives and in time of peace for fertilizers by the development of an industry the extent of which is not appreciated even by those who are intimately connected with the great iron and steel industries of the country. Up to within very recent years the coke necessary for our blast furnaces has been produced almost entirely in what is known as the old-fashioned beehive oven. The development of the by-product coke industry is driving the beehive oven out of existence, and within a few days I heard a man familiar with all branches of the industry predict that even within five years there would be no more coke made by that process.

As a by-product coke oven produces ammonia, from which nitrates can be made to an almost unlimited extent. In time of war our iron and steel industry would necessarily be busy, and there would be no difficulty whatever in obtaining all the nitrates we need, and on account of the great quantities which would be produced, in my opinion, the production of them would be infinitely cheaper than what it would cost either the Government or private parties to produce them by extracting nitrogen from the air.

Mr. POMERENE. Mr. President, can the Senator state whether it has been demonstrated that nitrates can be produced profitably from the by-products of coke?

Mr. OLIVER. I will say, Mr. President, that I have not the figures, as I was promised them a few days ago. They do not appear at my office. I have been away for a week, and I returned only to-day. I expected that before the debate would come on to have figures to prove that with the extension of this industry and the consequent large production of ammonia as a by-product of these ovens the cost of producing them and the necessity of disposing of them would be such that the cost to the consumer would necessarily be less than it would be by any possibility by extracting nitrates from the air.

Mr. POMERENE. As a practical proposition up to date can nitrates be produced profitably in this way or have they been produced profitably in this way?

Mr. OLIVER. They have undoubtedly been produced profitably in this way. About one-third of the nitrates that are now produced by the by-product oven are going into other lines of industry, not into fertilizers. A large part of them are already going into fertilizers and into explosives; but you must remember that the quantity produced to-day is as nothing compared to what it will be, I say, within five years, because the extent to which this industry is developed is known only to those who have been in intimate association with the business.

Mr. POMERENE. I asked the question because I have had several letters on the subject, and in construing the letters it seems to me that it is a case of hope springing eternal in their souls rather than because they have any definite knowledge on the subject.

Mr. OLIVER. Mr. President, I say in all good faith and in all good conscience I believe that before 10 years the quantity of nitrates that will necessarily be produced as a by-product of this industry will render them infinitely cheaper than they are to-day or than they will be or can be produced by this proposed Government plant.

For these reasons, Mr. President, I shall vote for this report, because I think some such measure is absolutely necessary, and I can not stand in its way; but I shall vote for it with the strongest kind of protest against the insertion of such a provision as section 124.

Mr. UNDERWOOD. Mr. President, at this late hour of the evening I do not intend to occupy the time of the Senate with any extended debate. I have great respect for the opinion of the Senator from Pennsylvania [Mr. OLIVER] on all questions of the kind he has just spoken upon, but I think he is mistaken in his opinion that necessarily nitrates for war purposes can be supplied for our Government by private coke-oven industry. In the first place, a hundred tons of coal will make only 2,688 gallons of sulphate of ammonia. When you reduce it to tons and realize that the war supply of the Government will require 180,000 tons a year of concentrated nitric acid, I think it is apparent how far we are away from the necessary supply of the by-product coke-oven business to furnish the country with enough nitrate to supply the Government.

It is apparent that you can not burn a hundred tons of coal for the mere purpose of making 2,600 gallons of sulphate of ammonia. You can only produce it as a by-product, and the limitation on your production is the limitation that is caused by the manufacture of pig iron. Therefore you can not expand it for war purposes. You are absolutely limited to your production of pig iron in the amount of sulphate of ammonia that you produce.

In the next place, sulphate of ammonia is not concentrated. You have to carry it to some central point to concentrate it, unless you propose to have the Government build a concentration plant in each pig-iron furnace or each by-product coke oven. The cost of transportation would be great. You have to carry it in tank cars to the point of concentration. After you have concentrated it you have to put it through other processes that are very expensive.

I have no doubt in my own mind that it will cost vastly more to produce your nitrate supply from the by-products of coke oven than through an air-nitrogen process.

But, in the next place, there is no possibility of the Government preparing itself in advance of a great war along this line. The Government can not go out in times of peace and build concentration plants, build plants to make the ammonia in various parts of the country, and carry them for years for no serviceable purpose other than to wait for a war, whereas if you create an air-nitrogen plant you can use it for other serviceable purposes.

Mr. OLIVER. Mr. President, I ask the Senator from Alabama if the Government is not now proposing to do that very thing, to prepare in time of peace for some war that may never come?

Mr. UNDERWOOD. Certainly; but it is a very different kind of preparation. I say the preparation suggested by the Senator from Pennsylvania is not practical.

Mr. OLIVER. I am not proposing to prepare at all. I am proposing that the Government shall intrust its citizens with the duty of preparing, as they will prepare if you will allow individual enterprise to have its full course.

Mr. UNDERWOOD. But the citizen of the United States is not going to prepare for a surplus supply. He can not afford to do it. The extent to which he will manufacture sulphate of ammonia through the by-product coke oven is only to the extent of peace demands, and the peace demands to-day are consuming his present supply. The larger portion of the supply of sulphate of ammonia to-day is used for cold-storage purposes. You would not divert that supply in time of war. You need the refrigeration plants as much or more in war than you do in peace. The balance of the supply is going into fertilizers to-day. You would not divert it from the field of fertilization in time of war.

Mr. OLIVER. I would.

Mr. UNDERWOOD. Unless there was no other place at which to get your supply. But I say that the Government itself can not go to work to-day and build its concentration plants, provide its tank cars for the concentration of sulphate of ammonia, and hold it in waiting indefinitely for war to come. It can build a great water power. It can build one plant that may lie idle or may not, waiting 50 years, because it can rent its power, it can sell its power, it can dispose of its surplus product. It is the economical way to do it.

But there is one argument that, in my judgment, is unanswerable to the argument made by the Senator from Pennsylvania, and that is that in the German Empire there was practically all its coke made by the by-product coke oven. They had more by-product coke ovens, and have to-day, than any other nation in the world. Yet when this war came on and the supply of Chilean saltpeter was cut off from the German Government, they did not resort to their by-product plants to obtain sulphate of ammonia to supply their factories with nitrogen and their armies with explosives. No, they developed an air-nitrogen process in an expensive way. Where they did not have the water power they put fuel under the boilers of their engines and produced the electric power that will make air nitrogen. There is no nation in the world from a scientific standpoint that is better prepared and better developed to meet the situation than the German Empire. The German Empire in what it has done has answered the argument that is made by the Senator from Pennsylvania on this subject by refusing to follow the course he advises the Senate of the United States to follow to-day.

The VICE PRESIDENT. The question is on agreeing to the conference report.

The report was agreed to.

MESSAGE FROM THE HOUSE.

A message from the House of Representatives, by J. C. South, its Chief Clerk, announced that the House had passed the bill (S. 2986) to provide capital for agricultural development, to create a standard form of investment based upon farm mortgage, to equalize rates of interest upon farm loans, to furnish a market for United States bonds, to provide for the investment of postal-savings deposits, to create Government depositaries

and financial agents for the United States, and for other purposes, with amendments, in which it requested the concurrence of the Senate.

PETITIONS AND MEMORIALS.

Mr. GALLINGER presented a petition of the William B. Durgin Co., of Concord, N. H., praying for the enactment of legislation to authorize the Supreme Court to prescribe forms and rules in legal work, which was referred to the Committee on the Judiciary.

He also presented the petition of Harry E. Barnard, State food and drug commissioner of Indiana, praying for increased appropriations for the Biological Survey, Department of Agriculture, which was referred to the Committee on Agriculture and Forestry.

He also presented the petition of F. J. Swords, of New York City, N. Y., praying for an investigation into the practice of vivisection, which was referred to the Committee on Agriculture and Forestry.

Mr. PHELAN presented petitions of sundry citizens of San Jose and Berkeley, in the State of California, praying for the enactment of legislation to prohibit the exportation of intoxicating liquor to Africa and the insular possessions of the United States, which were referred to the Committee on the Judiciary.

He also presented a memorial of sundry citizens of San Diego, Cal., remonstrating against the enactment of legislation for compulsory Sunday observance in the District of Columbia, which was ordered to lie on the table.

He also presented a petition of Unity Council, No. 39, Junior Order United American Mechanics, of San Jose, Cal., praying for the enactment of legislation to further restrict immigration, which was ordered to lie on the table.

He also presented a petition of the Master Painters and Decorators' Association, of San Francisco, Cal., praying for the enactment of legislation to prohibit fraud in the manufacture of paints, which was referred to the Committee on Interstate Commerce.

Mr. POINDEXTER presented a petition of Fern Bluff Grange, Patrons of Husbandry, of Sultan, Wash., praying for Government ownership of telegraph and telephone systems, which was referred to the Committee on Post Offices and Post Roads.

He also presented the memorial of Mrs. G. H. Homann and sundry other citizens of Vancouver, Wash., remonstrating against the enactment of legislation for compulsory Sunday observance in the District of Columbia, which was ordered to lie on the table.

Mr. PAGE presented petitions of Columbia Council, No. 11, Sons and Daughters of Liberty, of Hartland; of Evening Star Council, No. 6, Sons and Daughters of Liberty, of North Danville; and of G. O. Farr Council, No. 15, Sons and Daughters of Liberty, of Plainfield, all in the State of Vermont, praying for the enactment of legislation to further restrict immigration, which were ordered to lie on the table.

Mr. OLIVER presented a petition of sundry citizens of Pittsburgh, Pa., praying for an increase in armaments, which was ordered to lie on the table.

He also presented memorials of sundry granges of Pennsylvania, remonstrating against an increase in armaments, which were ordered to lie on the table.

He also presented petitions of sundry granges of Pennsylvania, praying for Government ownership of telegraph and telephone systems, which were referred to the Committee on Post Offices and Post Roads.

He also presented petitions of sundry patriotic societies of Pennsylvania, praying for the enactment of legislation to further restrict immigration, which were ordered to lie on the table.

He also presented petitions of sundry citizens of Pennsylvania, praying for the adoption of an amendment to the Constitution to prohibit polygamy, which were referred to the Committee on the Judiciary.

He also presented petitions of sundry citizens of Pennsylvania, praying for national prohibition, which were referred to the Committee on the Judiciary.

REPORTS OF COMMITTEES.

Mr. SMITH of Maryland, from the Committee on the District of Columbia, to which was referred the bill (S. 5863) authorizing the health officer of the District of Columbia to issue a permit for the removal of the remains of the late Charles H. Bingham from Congressional Cemetery, District of Columbia, to Lock Haven, Pa., reported it with an amendment and submitted a report (No. 448) thereon.

Mr. POINDEXTER, from the Committee on Naval Affairs, to which was referred the bill (S. 3776) providing for the establishment of a radio station on Unga Island, Alaska, reported it with amendments and submitted a report (No. 449) thereon.

BILLS INTRODUCED.

Bills were introduced, read the first time, and, by unanimous consent, the second time, and referred as follows:

By Mr. NELSON:

A bill (S. 6042) granting an increase of pension to Mary L. King; to the Committee on Pensions.

By Mr. CHILTON:

A bill (S. 6043) for the relief of William Leslie Nelson (with accompanying papers); to the Committee on Military Affairs.

By Mr. JAMES:

A bill (S. 6044) granting an increase of pension to Catherine E. Richards (with accompanying papers); and

A bill (S. 6045) granting an increase of pension to Alice J. Buck (with accompanying papers); to the Committee on Pensions.

By Mr. POINDEXTER:

A bill (S. 6046) authorizing the Secretary of War, upon the request of the governor of a State, to designate one or more commissioned officers of the United States Army to cooperate with the school authorities of the State in the establishment and proper conduct in any of the public schools of the State of the so-called Wyoming plan of military and physical training according to the system prepared by Lieut. E. Z. Steever, United States Army, and recommended by the War College Division of the General Staff Corps, United States Army; to the Committee on Military Affairs.

By Mr. GALLINGER:

A bill (S. 6047) to carry out the purposes mentioned in section 3 of the act of March 1, 1911, entitled "An act to enable any State to cooperate with any other State or States, or with the United States, for the protection of the watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers"; to the Committee on Agriculture and Forestry.

By Mr. HITCHCOCK:

A bill (S. 6048) to provide for the taxation of the lands of the Winnebago Indians and the Omaha Indians in the State of Nebraska; to the Committee on Indian Affairs.

By Mr. OLIVER (for Mr. PENROSE):

A bill (S. 6049) providing for the purchase of a site and the erection thereon of a public building at Midland, in the State of Pennsylvania; to the Committee on Public Buildings and Grounds.

A bill (S. 6050) to correct the military record of Charles Mace; to the Committee on Military Affairs.

A bill (S. 6051) to increase the pensions of those who have lost limbs or have been totally disabled in the same in the military or naval service of the United States;

A bill (S. 6052) granting a pension to Nathan K. Epler; and

A bill (S. 6053) granting a pension to George G. Richie; to the Committee on Pensions.

AMENDMENT TO POST OFFICE APPROPRIATION BILL.

Mr. POINDEXTER submitted an amendment providing that periodical publications issued at stated intervals as frequently as four times a year by any department of a State government as a part of the official work of that department and for public purposes only shall be entitled to second-class mail rates, etc., intended to be proposed by him to the Post Office appropriation bill (H. R. 10484), which was referred to the Committee on Post Offices and Post Roads and ordered to be printed.

AMERICAN CITIZENS IN IRELAND.

Mr. KERN. I submit a resolution and ask that it be read.

The VICE PRESIDENT. The Secretary will read as requested.

The resolution (S. Res. 196) was read, as follows:

Whereas it is represented that at the time of the recent revolt in Ireland there were, and are yet, many American citizens in districts in which martial law was proclaimed and in which armed conflicts occurred; and

Whereas the relatives and friends in this country of such American citizens whose safety has been thus endangered are apprehensive lest their lives and property have been imperiled: Therefore be it

Resolved, That the Secretary of State be, and is hereby, requested to cause inquiry to be made through our consular representatives as to the safety and well-being of American citizens in Ireland, and to take such steps as may be necessary for the safeguarding and protection of their lives and property.

Mr. STONE. Mr. President, I ask that the resolution be referred to the Committee on Foreign Relations.

Mr. KERN. I should like immediate consideration of the resolution, if there is no objection.

Mr. STONE. I ask that it be referred to the Committee on Foreign Relations.

Mr. KERN. That is the usual course, I presume, and it will have to be done.

The VICE PRESIDENT. The resolution will be referred to the Committee on Foreign Relations.

OSAGE OIL LANDS.

Mr. CHILTON submitted the following resolution (S. Res. 198), which was read and referred to the Committee to Audit and Control the Contingent Expenses of the Senate:

Whereas the Osage Indians have questioned the legality and advisability of the proposed leases of oil lands upon the Osage Indian Reservation in Oklahoma, now pending before the Department of the Interior for the approval of the Secretary: Therefore be it

Resolved, That pending the investigation by the Committee on Indian Affairs of the Senate the Secretary of the Interior be, and he is hereby, requested to suspend all action upon all oil leases covered by the so-called Edwin B. Foster lease of lands upon the Osage Indian Reservation, except that pending such investigation all leases which were in force on March 16, 1916, are to be extended until such time (not to exceed one year) as a full and complete report is made by the Committee on Indian Affairs to the Senate.

Resolved, That the Committee on Indian Affairs of the Senate, through a subcommittee of five members to be chosen by it, be, and it hereby is, authorized and directed to fully investigate the methods of controlling and marketing the oil production of the Osage Reservation in Oklahoma and all affairs connected therewith, and that the said committee be empowered to send for persons and papers and to subpœna witnesses, to administer oaths, and to sit during the sessions of the Senate and during vacation; and said committee shall make full and complete report, together with its recommendation to the Senate. The necessary expenses of said investigation shall be paid out of the contingent fund of the Senate.

FEDERAL EMPLOYEES' RETIREMENT BILL.

Mr. POMERENE submitted the following resolution (S. Res. 197), which was considered by unanimous consent and agreed to:

Resolved, That the Bureau of Efficiency is directed to prepare and submit to the Senate estimates of the immediate and ultimate cost of pensioning or retiring the civil employees of the United States, and in order to prepare such estimates the Bureau of Efficiency shall obtain from the executive departments, from the chiefs of bureaus, and independent establishments, such information regarding persons appointed to and separated from the executive civil service as may be necessary for that purpose, including their salaries and dates of birth, appointment, and separation;

Resolved further, That for said purposes the heads of the executive departments, chiefs of bureau, and other executive or administrative officers are hereby directed to furnish the said Bureau of Efficiency with said information.

PREPAREDNESS AND DEMOCRATIC DISCIPLINE (S. DOC. NO. 443).

Mr. KERN. Mr. President, I have here an article published in the Atlantic Monthly of April, 1916, entitled "Preparedness and Democratic discipline," written by Mr. George W. Alger, an accomplished writer and a distinguished lawyer of New York City, which I should like to have printed as a public document. I regard it as a very valuable contribution to the literature on that subject.

The VICE PRESIDENT. Without objection, it is so ordered.

WYOMING PLAN OF MILITARY TRAINING.

Mr. POINDEXTER. I ask to have printed as a public document an article prepared in the War College Division of the Army on an outline of a plan for military training in public schools of the United States, commonly called the Wyoming plan of military and physical training.

Mr. FLETCHER. Mr. President——

The VICE PRESIDENT. Without objection, it is so ordered.

Mr. FLETCHER. The Senator from Washington, as I understand, has asked to have a certain paper printed as a public document. I do not know anything about it, and I think it ought to go to the Committee on Printing for consideration.

The VICE PRESIDENT. If there is any objection, the paper will be referred to the Committee on Printing. That order will be made.

GOVERNMENT OF THE PHILIPPINES.

Mr. HITCHCOCK. Mr. President, I desire to give notice that immediately upon the conclusion of the consideration of the river and harbor bill I shall ask the Senate to consider the amendments of the House to the so-called Philippine bill (S. 381), which are now on the table.

RURAL CREDITS.

The VICE PRESIDENT laid before the Senate the amendments of the House of Representatives to the bill (S. 2986) to provide capital for agricultural development, to create a standard form of investment based upon farm mortgage, to equalize rates of interest upon farm loans, to furnish a market for United States bonds, to provide for the investment of postal savings deposits, to create Government depositaries and financial agents for the United States, and for other purposes.

Mr. HOLLIS. I move that the Senate disagree to the amendments of the House and request a conference with the House, the conferees on the part of the Senate to be appointed by the Chair.

The motion was agreed to, and the Vice President appointed Mr. OWEN, Mr. HOLLIS, and Mr. NELSON conferees on the part of the Senate.

Mr. HOLLIS. I ask unanimous consent that the rural-credits bill be printed in a form to show the House amendments.

The VICE PRESIDENT. Does the Senator ask that the Senate and House bills be printed in parallel columns?

Mr. HOLLIS. I will not ask for that now; but I ask that it be printed so that the Senate bill will show the House amendments.

Mr. NORRIS. Why does not the Senator have the bill printed in parallel columns?

Mr. HOLLIS. Because in the House they changed the order of the sections so that I am afraid that will be a very difficult thing to do. However, the Printing Clerk is going to see if it can be done; if so, then I shall ask for such an order.

Mr. SMOOT. Mr. President, I should like to suggest to the Senator that I believe the best way to have the bill printed is in parallel columns. I hardly think it could be printed in the way the Senator suggested, if I understood his request, but it can be printed in parallel columns. No matter whether the sections follow each other or not, the notes on each section will show exactly to what section in the opposite column it has reference. I think it is very much better to have it printed that way.

Mr. HOLLIS. Then I will ask that the bill be printed in parallel columns.

The VICE PRESIDENT. Without objection, it is so ordered.

The order was reduced to writing and agreed to, as follows:

Ordered, That there be printed as a Senate document, in parallel columns, a comparative print of the bill (S. 2986) "to provide capital for agricultural development, to create a standard form of investment based upon farm mortgage, to equalize rates of interest upon farm loans, to furnish a market for United States bonds, to provide for the investment of postal-savings deposits, to create Government depositaries and financial agents for the United States, and for other purposes," showing the bill as passed by the Senate and the bill as passed by the House of Representatives. (S. Doc. No. 444.)

Mr. HOLLIS subsequently said: Mr. President, I brought up this morning the question of having printed the rural-credits bill and asked to have the bill (S. 2986) printed, showing the amendments of the House. Some objection was then made, but I think there was a misunderstanding; and I now ask that the order be made, and that the bill be printed, showing the amendments of the House.

The VICE PRESIDENT. Without objection, it is so ordered.

PENSIONS AND INCREASE OF PENSIONS.

Mr. JOHNSON of Maine submitted the following report:

The committee of conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H. R. 12027) granting pensions and increase of pensions to certain soldiers and sailors of the Civil War and certain widows and dependent children of soldiers and sailors of said war, having met, after full and free conference have agreed to recommend and do recommend to their respective Houses as follows:

That the Senate recede from its amendment numbered 9.

That the House recede from its disagreement to the amendments of the Senate numbered 1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, and 14, and agree to the same.

That the House recede from its disagreement to the amendment of the Senate numbered 15 and agree to the same with an amendment, as follows: On page 29, line 1, strike out "$30" and insert in lieu thereof "$24"; and the Senate agree to the same.

CHARLES F. JOHNSON,
WILLIAM HUGHES,
REED SMOOT,
Managers on the part of the Senate.

JOE J. RUSSELL,
WILLIAM A. ASHBROOK,
CHARLES E. FULLER,
Managers on the part of the House.

The report was agreed to.

Mr. JOHNSON of Maine submitted the following report:

The committee of conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H. R. 12843) granting pensions and increase of pensions to certain soldiers and sailors of the Civil War and certain widows and dependent children of soldiers and sailors of said war having met, after full and free conference have agreed to recommend and do recommend to their respective Houses as follows:

That the Senate recede from its amendments numbered 2, 4, 7, 9, 11, and 16.

That the House recede from its disagreement to the amendments of the Senate numbered 3, 5, 6, 8, 10, 12, 13, 14, 15, 18, and 19, and agree to the same.

That the House recede from its disagreement to the amendment of the Senate numbered 1, and agree to the same with an amendment as follows: On page 4, line 5, strike out amount named and insert in lieu thereof "$24"; and the Senate agree to the same.

That the House recede from its disagreement to the amendment of the Senate numbered 17, and agree to the same with an amendment as follows: On page 25, line 21, strike out amount named and insert in lieu thereof "$36"; and the Senate agree to the same.

CHARLES F. JOHNSON,
WILLIAM HUGHES,
REED SMOOT,
Managers on the part of the Senate.
JOE J. RUSSELL,
WILLIAM A. ASHBROOK,
CHARLES E. FULLER,
Managers on the part of the House.

Mr. GALLINGER. Before the conference report is agreed to I will ask the Senator from Maine if the allowance to Mrs. Sternberg is in this report.

Mr. JOHNSON of Maine. It is not. That provision is in a Senate bill, which has been reported and is now on the calendar.

Mr. GALLINGER. This is a conference report on a House bill?

Mr. JOHNSON of Maine. Yes; on a House bill.

Mr. GALLINGER. I wish to say to the Senator that when the bill containing the provision for Mrs. Sternberg comes before the Senate I should like to be heard on that particular item.

The VICE PRESIDENT. The question is on the adoption of the report.

The report was agreed to.

HEIRS OF HUNDLEY V. FOWLER.

Mr. VARDAMAN. Mr. President, I ask unanimous consent for the present consideration of the bill (H. R. 8787) for the relief of the heirs of Hundley V. Fowler, deceased. It carries a small appropriation to pay an old claim to the heirs of a former very worthy citizen of my State; and I should like very much to have the Senate consider it this afternoon.

Mr. STONE. Mr. President, I hope the Senator will not press that request. If he does so, other Senators will want to secure the passage of bills. It is desired to have a short executive session, and it is getting late.

Mr. VARDAMAN. I do not think it will take a moment to pass this bill, Mr. President.

Mr. STONE. I understand, but there may be other bills which Senators may desire to have passed.

Mr. VARDAMAN. I do not think any Senator wants to have passed a bill as much as I should like to have this one passed.

Mr. STONE. I shall not object, if the Senator can put it through.

Mr. SMOOT. Mr. President, the bill to which the Senator from Mississippi refers is similar to about 15 or 16 other bills on the calendar; that is, the claim involved in it has the same basis. I objected to the consideration of all of the others when the calendar was up, and while I dislike now to object to this bill on account of the interest the Senator from Mississippi feels in it, I am compelled to do so at this time.

EXECUTIVE SESSION.

Mr. STONE. I move that the Senate proceed to the consideration of executive business.

The motion was agreed to, and the Senate proceeded to the consideration of executive business. After five minutes spent in executive session the door were reopened, and (at 5 o'clock and 30 minutes p. m.) the Senate adjourned until to-morrow, Thursday, May 18, 1916, at 12 o'clock meridian.

NOMINATIONS.

Executive nominations received by the Senate May 17 (legislative day of May 16), 1916.

APPOINTMENTS IN THE ARMY.

MEDICAL RESERVE CORPS.

To be first lieutenants with rank from May 12, 1916.

James Lee Funkhouser, of Illinois.
Clarence Linwood Scamman, of Maine.
James Lona Stewart, of Idaho.
Lincoln Davis, of Massachusetts.
Edward Lorraine Young, jr., of Massachusetts.
John Aloysius McKenna, of Pennsylvania.
Henry Lee Smith, of Maryland.
William Hayes Mitchell, of Vermont.
Philip Levey, of Nebraska.
Paul Regan Howard, of Nebraska.
William Alexander Fisher, jr., of Maryland.
Reuben Spencer Simpson, of New York.
James Torrance Rugh, of Pennsylvania.
Otto Lowy, of New Jersey.
Roger Kinnicutt, of Massachusetts.
Custis Lee Hall, of the District of Columbia.
George Adams Leland, jr., of Massachusetts.
Walter James Dodd, of Massachusetts.
Charles Galloupe Mixter, of Massachusetts.
William Thomas Fitzsimons, of Missouri.
Carl Henry Davis, of Illinois.
Harvey Heber Martin, of Indiana.
Beth Vincent, of Massachusetts.
Charles Ira Redfield, of New York.
Charles Andrew Fife, of Pennsylvania.
Malcolm Eadie Smith, of Washington.
Arthur Ellison Midgley, of Wisconsin.
Albert David Kaiser, of New York.
Charles Chester Benedict, of Washington.
Arthur Wilburn Allen, of Massachusetts.
Robert Williamson Lovett, of Massachusetts.
Joseph Clapp Hubbard, of Massachusetts.
Isedor Mack Unger, of New York.
Charles Henry MacFarland, of Ohio.
Andrew Smith Robinson, of Ohio.
George Washington Wales Brewster, of Massachusetts.
Michael Joseph Sheahan, of Connecticut.
Theodore Foster Riggs, of South Dakota.
George Noble Kreider, of Illinois.
John Carl Arpad Gerster, of New York.
Montrose Thomas Burrows, of Kansas.
Verne Rheem Mason, of Maryland.
Charles Alexander Waters, of Maryland.
Homer Graham Duncan, of Colorado.
Robert Davies Rhein, of Pennsylvania.
Harry Carl William Schultz-de Brun, of New York.
Clinton Ephraim Harris, of Iowa.
Robert Coalter Bryan, of Virginia.
Charles Christian Wolferth, of New Jersey.
Truman Gross Schnabel, of Pennsylvania.
Rutherford Lewis John, of Pennsylvania.
Jacob Leon Herman, of Pennsylvania.
Edward Harris Goodman, of Pennsylvania.
John Dibble, of New Jersey.
Emory Graham Alexander, of Pennsylvania.
Bruce Gretton Phillips, of New York.
Philip Edward Rossiter, of New York.
Chester Field Smith Whitney, of New York.
William Ropes May, of New York.
Everett Garnsey Brownell, of New York.
Brooks Hughes Wells, of New York.
Francis Stuart Matthews, of New York.
Lawrence James Nacey, of New York.
John Rochester Booth, of New York.
Harry Rubin, of Georgia.

PROMOTIONS IN THE ARMY.

INFANTRY ARM.

Capt. Edward C. Carey, First Infantry, to be major from May 15, 1916, vice Maj. James T. Moore, Sixteenth Infantry, who died May 14, 1916.

First Lieut. Guy E. Bucker, Seventh Infantry, to be captain from May 15, 1916, vice Capt. Edward C. Carey, First Infantry, promoted.

Second Lieut. Oral E. Clark, Seventh Infantry, to be first lieutenant from May 15, 1916, vice First Lieut. Guy E. Bucker, Seventh Infantry, promoted.

CONFIRMATIONS.

Executive nominations confirmed by the Senate May 17 (legislative day of May 16), 1916.

MEMBER PHILIPPINE COMMISSION.

Eugene E. Reed to be a member of the Philippine Commission and secretary of commerce and police.

UNITED STATES ATTORNEY.

Charles F. Lynch to be United States attorney for the district of New Jersey.

SECRETARIES OF EMBASSY OR LEGATIONS.

CLASS 5.

Norman Armour to be a secretary of embassy or legation of class 5.

Allen W. Dulles to be a secretary of embassy or legation of class 5.

Robert M. Scotten to be a secretary of embassy or legation of class 5.

John C. Wiley to be a secretary of embassy or legation of class 5.

POSTMASTERS.

ARIZONA.

Hugh E. Laird, Tempe.
Milville C. Hankins, Douglas.

GEORGIA.

T. B. Banks, Grantville.
Frank Flynt, Griffin.
Dan A. McMillan, Bartow.
Mattie N. Riley, Butler.
J. Frank Stovall, Madison.

KANSAS.

Alexander Burgess, Mulvane.

MAINE.

Harry E. Roberts, Kittery Point.

MASSACHUSETTS.

Charles W. Swift, Yarmouth Port.

NEW HAMPSHIRE.

Elmer T. Ford, Hanover.
Frank L. Marston, Conway.

NEW JERSEY.

Richard M. Crawford, Westville.
James D. Moriarty, Orange.
Sol Needles, Cape May.

NEW YORK.

Lewis O. Davis, Port Jefferson.
Frederick M. Welsh, Patchogue.

OHIO.

Fred H. Hart, Beverly.
D. A. Muskoff, Navarre.
Augustus S. Tuttle, Creston.

SOUTH DAKOTA.

Tom Larson, Colton.
Kate A. Schnacke, Bigstone City.

VIRGINIA.

Nannie B. Campbell, Amherst.

HOUSE OF REPRESENTATIVES.

WEDNESDAY, *May 17, 1916.*

The House met at 12 o'clock noon.

The Chaplain, Rev. Henry N. Couden, D. D., offered the following prayer:

O Thou great Spirit, Father of all souls, above, beneath, around, within, make us susceptible to Thy holy influence that we may be inspired to pure, noble, generous thoughts, the antecedents of pure, noble, generous deeds; that we may be the instruments in Thy hands for a wider civilization which shall make for righteousness in the souls of men everywhere; that unholy strife, contentions, and wars may cease and Thy love be reflected in every heart after the example of the world's great Redeemer. Amen.

The Journal of the proceedings of yesterday was read and approved.

FEDERAL MOTION-PICTURE COMMISSION.

Mr. HUGHES. Mr. Speaker, on behalf of the Committee on Education I have submitted to-day a report (No. 697) on the bill (H. R. 15462) to create a commission to be known as the Federal motion-picture commission, and defining its powers and duties, and I ask unanimous consent that the minority have five legislative days within which to file minority views.

The SPEAKER. The gentleman from Georgia asks unanimous consent that the minority of the Committee on Education have five legislative days within which to file their views on the motion-picture commission bill. Is there objection?

There was no objection.

Mr. MOORE of Pennsylvania. Mr. Speaker, I make the point of order that there is no quorum present.

The SPEAKER. The Chair will ask the gentleman to withhold that a moment until he can lay before the House the following communication, which the Clerk will report.

The Clerk read as follows:

HOUSE OF REPRESENTATIVES,
CLERK'S OFFICE,
Washington, D. C.

Hon. CHAMP CLARK, *Speaker.*

SIR: Desiring to be absent for a short period from my office upon important business, I hereby designate the Chief Clerk of the House, Jerry C. South, to act in my official capacity during my absence.

SOUTH TRIMBLE, *Clerk.*

Mr. RAKER. Mr. Speaker, a parliamentary inquiry.

The SPEAKER. The gentleman will state it.

Mr. RAKER. The gentleman from Pennsylvania, I understand, has withdrawn his point of no quorum?

The SPEAKER. No; he has not.

Mr. RAKER. Then, Mr. Speaker, I will ask if he will not withhold it for five minutes, and by that time I am satisfied a quorum will be present. I would like to have unanimous consent to proceed for five minutes.

Mr. MANN. Oh, that would empty the House. [Laughter.]

The SPEAKER. The Chair desires to carry fair with the gentleman from Pennsylvania. The gentleman from Pennsylvania makes the point of order that there is no quorum present. Evidently there is not a quorum present.

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I move a call of the House.

The motion was agreed to.

The doors were closed.

The Clerk called the roll, and the following Members failed to answer to their names:

Aiken	Doremus	Kiess, Pa.	Pratt
Anderson	Driscoll	Kreider	Price
Barchfeld	Fairchild	Langley	Ramseyer
Beales	Farr	Lehlbach	Reilly
Black	Flynn	Lesher	Riordan
Borland	Focht	Lewis	Roberts, Mass.
Browning	Gardner	Liebel	Rowland
Brumbaugh	Godwin, N. C.	Lindbergh	Saunders
Burke	Goodwin, Ark.	Loft	Scott, Pa.
Butler	Graham	McFadden	Scully
Candler, Miss.	Gray, N. J.	McKellar	Sears
Carew	Griest	McLaughlin	Shouse
Casey	Hadley	Maher	Sparkman
Clark, Fla.	Hamill	Matthews	Steagall
Coady	Harrison	Mondell	Steele, Pa.
Coleman	Hart	Mooney	Sutherland
Conry	Hayes	Morin	Tillman
Copley	Heaton	Moss, W. Va.	Tinkham
Costello	Henry	Nolan	Towner
Crago	Hollingsworth	North	Vare
Dale, N. Y.	Hopwood	Parker, N. J.	Volstead
Darrow	Johnson, S. Dak.	Patten	Watkins
Davis, Minn.	Johnson, Wash.	Peters	Watson, Pa.
Dewalt	Jones	Platt	Young, N. Dak.
Dies	Keister	Porter	
Dooling	Kelley	Pou	

The SPEAKER. On this roll 330 members have answered to their names, a quorum.

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I move to dispense with further proceedings under the call.

The motion was agreed to.

The doors were opened.

Mr. RAKER. Mr. Speaker, I ask unanimous consent to proceed for five minutes.

The SPEAKER. Is there objection?

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I object.

SPEECH OF THE PRESIDENT OF THE UNITED STATES.

Mr. DILL. Mr. Speaker, I ask unanimous consent to extend my remarks in the RECORD by printing the speech of the President delivered at the National Press Club on Monday evening, May 15, 1916.

The SPEAKER. The gentleman from Washington asks unanimous consent to print in the RECORD a speech delivered by the President of the United States at the Press Club. Is there objection?

There was no objection.

SENATE BILLS REFERRED.

Under clause 2 of Rule XXIV, Senate bills of the following titles were taken from the Speaker's table and referred to their appropriate committees, as indicated below:

S. 5086. An act amending section 4 of the public building act approved March 4, 1913, providing for the purchase of a site for a building for post office and customhouse at Nogales, Ariz.; to the Committee on Public Buildings and Grounds.

S. 4655. An act authorizing and directing the Secretary of the Interior to determine the most suitable method of preventing further erosion and overflow on Gila River, Ariz.; to the Committee on Flood Control.

CORRECTION.

Mr. AUSTIN. Mr. Speaker, the gentleman from Louisiana, Mr. MARTIN, being called out of the city on April 28, requested me a few days since to pair him upon the affirmative side on the adoption of the rule to make in order certain provisions on the Agricultural appropriation bill. I so notified the pair clerk, but it appears that he is recorded as being absent and not paired. I make this statement in order that it may appear in the RECORD.

The SPEAKER. The Chair again desires to state to the House that neither the Speaker nor the House has anything to do with the pairs. That is an outside matter, a sort of excrescence that has grown up in the body politic. Without objection, the correction will be made.

There was no objection.

FLOOD CONTROL.

The SPEAKER. This is Calendar Wednesday. The unfinished business is the bill (H. R. 14777) to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes. The House will automatically resolve itself into the Committee of the Whole House on the state of the Union for the further consideration of this bill.

Accordingly the House resolved itself into the Committee of the Whole House on the state of the Union for the further consideration of the bill H. R. 14777, with Mr. CARAWAY in the chair.

The CHAIRMAN. The House is in Committee of the Whole House on the state of the Union for the further consideration of the bill, the title of which the Clerk will report.

The Clerk read as follows:

A bill (H. R. 14777) to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes.

Mr. MOORE of Pennsylvania. Mr. Chairman, a parliamentary inquiry.

The CHAIRMAN. The gentleman will state it.

Mr. MOORE of Pennsylvania. I wanted to know whether, when the House arose on Wednesday last, debate had been concluded on the Mississippi River paragraph?

The CHAIRMAN. It had.

Mr. MOORE of Pennsylvania. And no debate is now permissible on that paragraph?

The CHAIRMAN. The Clerk will now commence the reading of the next paragraph.

Mr. MOORE of Pennsylvania. My recollection, Mr. Chairman, is that there was an understanding that we should not go beyond the Mississippi River paragraph, and there was no understanding that we should begin on the California paragraph.

The CHAIRMAN. The Clerk had read to line 3, page 4, before the committee arose. The discussion of paragraph 1, relating to the Mississippi River was concluded, and the Clerk will read.

The Clerk read as follows:

SEC. 2 That for controlling the floods, removing the débris, and continuing the improvement of the Sacramento River, Cal., in accordance with the plans of the California Débris Commission, the Secretary of War is hereby authorized and directed to carry on continuously, by hired labor or otherwise, the plan of said commission contained in its report submitted August 10, 1910, and printed in House Document No. 81, Sixty-second Congress, first session, as modified by the report of said commission submitted February 8, 1913, approved by the Chief of Engineers of the United States Army and the Board of Engineers for Rivers and Harbors, and printed in Rivers and Harbors Committee Document No. 5, Sixty-third Congress, first session, in so far as said plan provides for the rectification and enlargement of river channels and the construction of weirs, to be paid for as appropriations may from time to time be made by law, not to exceed in the aggregate $5,600,000: *Provided*, That not more than $1,000,000 shall be expended therefor during any one fiscal year.

Mr. GARD. Mr. Chairman——

The CHAIRMAN. For what purpose does the gentleman from Ohio rise?

Mr. GARD. Mr. Chairman, I move to strike out the last word. I desire to ask the chairman of the committee a question. I desire to ask the chairman of the committee to advise me what reason existed in the minds of the committee to make the change from the report as offered in the Sixty-second Congress to that of the Sixty-third Congress, I believe, in which the change of apportionment is made from a one-third contribution by the Government to a one-half contribution by the Government?

Mr. HUMPHREYS of Mississippi. The proportion that the Federal Government would pay under the report submitted in the Sixty-second Congress was something more than $11,000,000. Under the report submitted to the Sixty-third Congress it was $5,800,000. The first report contemplated doing that work by by-passes, river levees, rectification of the channel, and so forth, at a cost of $33,000,000, of which the local interests were to provide two-thirds, about $22,000,000, and the Federal Government $11,000,000. That was subsequently modified by the engineers when the matter was submitted to them for further investigation, and the State of California then proposed that it would pay one-half of the $11,000,000 which had been estimated as the proper contribution of the Federal Government. That was the modification, and that is the one which the committee approved.

Mr. GARD. What reason is there why the United States should pay one-half instead of one-third, as recommended in the first report?

Mr. HUMPHREYS of Mississippi. The reason which I have just given, that is, that the one-third would amount to $11,000,000, and that was referred back to the engineers for further consideration, that is to the California Débris Commission. That commission, after consultation with the authorities in California, made a subsequent report in which it was agreed that the State of California and the private interests who owned this property in the Sacramento Valley would pay all but $5,800,000, and that is the reason the committee accepted it.

Mr. GARD. I yet can not understand why the proportionate increase of the Government contribution was made from one-third to one-half.

Mr. HUMPHREYS of Mississippi. Well, I tried to make that plain. The Government under the first proposition was called upon to make a contribution of one-third, which amounted to $11,000,000, and that Congress did not do, the Committee on Rivers and Harbors did not accept it, but referred the matter back for further investigation, and the State of California said then the State would pay half of that third and the Federal Government pay the other half, and that is the shape the matter came to Congress in. That was the report of the California Débris Commission which was submitted.

Mr. GARD. The State was willing to let the Government pay the additional money——

Mr. HUMPHREYS of Mississippi. The State was willing to save the Government $5,800,000. The gentleman understands that the one-third, which was $11,000,000, is more than the half, which is $5,800,000?

Mr. GARD. I understand what the gentleman says.

The CHAIRMAN. The time of the gentleman has expired.

Mr. MOORE of Pennsylvania. Mr. Chairman, I move to strike out the last word.

Mr. HUMPHREYS of Mississippi. Just for one moment. The gentleman has no amendment to offer.

Mr. MOORE of Pennsylvania. I make a pro forma amendment.

Mr. HUMPHREYS of Mississippi. I was going to say if there is no amendment offered I would try to agree on time.

Mr. FREAR. I desire to offer an amendment striking out the paragraph later.

Mr. HUMPHREYS of Mississippi. That is one of them. Then I would ask to close debate on the paragraph in 15 minutes.

Mr. RAKER. I want five minutes.

Mr. HUMPHREYS of Mississippi. I ask unanimous consent that all debate on this paragraph and all amendments thereto close in 20 minutes.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and amendments thereto close in 20 minutes. Is there objection?

Mr. SMALL. Mr. Chairman, reserving the right to object——

Mr. HUMPHREYS of Mississippi. Does the gentleman want time on this particular paragraph?

Mr. SMALL. Does the gentleman mean this entire section or just this paragraph?

Mr. HUMPHREYS. Just this paragraph.

Mr. SMALL. I do not care for it under this paragraph.

Mr. MOORE of Pennsylvania. Mr. Chairman, I understand my time begins now. I have made a point which I think is worthy of consideration by the Members of the House, that this bill contemplates navigation work, and to a certain extent it is a recourse by which two projects are taken from the regular rivers and harbors bill and are given special consideration in the House. They are both important projects, and, perhaps, in each instance there should be some Government relief; but there is no special reason why they should be taken away from all other projects and given a quittance from the so-called rivers and harbors bill, in which they have hitherto participated very largely.

But I call the attention of the Members——

Mr. CLARK of Missouri. I would like to ask the gentleman from Pennsylvania one question. Is it not true that the hue and cry that has been raised against river and harbor improvement in this country for the last several years grew out of the fact that they were all massed together, and it was claimed that

it was a "logrolling" performance? And does not this bill take it out of that class?

Mr. MOORE of Pennsylvania. To a large extent the statement made by the gentleman from Missouri [Mr. CLARK] is true, but I question whether taking the Mississippi project, which involves the largest expenditure, out of the rivers and harbors bill relieves the situation as to the other projects.

Mr. CLARK of Missouri. Can not the whole principle be settled on this Mississippi River bill? If we are going to continue the levee system, let us say so; and if not, let us not do it at all.

Mr. MOORE of Pennsylvania. It might save the situation if it were true that taking the Mississippi River problem out of the rivers and harbors bill would permit other great projects in this country to go on, but if taking the Mississippi River project out of the rivers and harbors bill destroys all other projects, then it is a very serious question for people elsewhere throughout the country.

Mr. CLARK of Missouri. To be very frank, the gentleman has been fighting this bill from the very start. What ground has the gentleman from Pennsylvania [Mr. MOORE] on which to base the assumption that you are not going to do anything more to any other rivers in this country?

Mr. MOORE of Pennsylvania. On the ground that the Mississippi River has been annually taken care of by large appropriations, while other worthy projects in the eastern part of the country, with which I am familiar, have been utterly ignored and neglected and are treated in this House sometimes with derision when brought on the floor.

Mr. CLARK of Missouri. That was under the old system, was it not?

Mr. MOORE of Pennsylvania. I very much fear if this $50,000,000 bill goes through, with filibusters conducted against the regular river and harbor bill here and in another body, it will be a long time before any other worthy projects will obtain recognition in this House.

Mr. CANNON. Will the gentleman yield?

Mr. MOORE of Pennsylvania. I will.

Mr. CANNON. If the former Mississippi project be a "logrolling" project, does not the gentleman think that this bill with all its provisions might beget two "logrolling" projects?

Mr. MOORE of Pennsylvania. That might be if we could ever arouse the East to the fact that the West was taking all the appropriations and leaving the East alone. One reason for criticizing this bill is to call the attention of the people of the East to the fact that the money keeps steadily flowing out of the Treasury into the Mississippi Valley. That is as true as I can state it and is as true as gospel. It is said that these two projects are necessary projects, but they are brought in under the guise of flood control. Floods occur only occasionally. And the facts are in this instance, that while you are asking for $45,000,000 for the Mississippi, and $5,500,000 for the California river, which is being thrown in here as a sop with which to catch the western vote, both projects will cost two or three times the amount of money appropriated in this bill before they are ever completed. The people who pay the bill ought to know that.

The CHAIRMAN. The time of the gentleman has expired.

Mr. FREAR. Mr. Chairman, I move to strike out the paragraph. Before I address myself to that I wish to respond for a moment to the remark of the gentleman from Missouri [Mr. CLARK] addressed to the gentleman from Pennsylvania [Mr. MOORE], and I quote from a paper of recognized influence in the South, known as the New Orleans Item. In an article printed on September 28, 1914, a little over a year ago, that paper says:

THE PORK BARREL, US, AND OUR NEIGHBOR.

The National Rivers and Harbors Congress conducts a national lobby for the pork-barrel bill.

The Mississippi River Levee Association was organized by some railroad interests who do not want genuine and permanent stream control, because it threatens competition by levee-board politicians and levee contractors, whose jobs and profits depends upon the perpetuation of the stupid and vicious old system of disjointed levee maintenance under which the people of the valley have been bled and pillaged, both ignorantly and willfully, for the past generation, and left hopelessly exposed to terrible floods at the end of the process. The genii that framed this latter organization also framed a bill, and Mr. RANSDELL and Congressman HUMPHREYS of Mississippi let their names be tacked to it.

The two institutions are ostensibly separate.

The statement that the Item or Mr. Maxwell attacked the Rivers and Harbors Congress is untrue. Our general attitude toward it has been a feeling that if the Federal Treasury is to be looted for the selfish purposes of Congressmen and local interests that have strings on Congressmen, our own part of the country had as well have its share of the loot. * * *

What the Item has done in this matter is to tell its readers the simple truth about the standing of this pork-barrel measure before the people of the country. We have not been ignorant or dishonest about it. We told you a year ago that the feeling of the Nation against the abuses of the pork barrel was approaching a climax so rapidly that it was utterly unsafe to trust to the barrel for any adequate relief from floods. We warned you that the country would not allow many more pork barrels to be opened. * * *

The Item has been the only newspaper in New Orleans to take this course. The result vindicates its stand. We have been bitterly berated for this course by the other three newspapers. Ignorance or untruth alone can account for their behavior. We urge you to be charitable in determining for yourself to which their course is chargeable.

The Item's readers know from its past exposures that the Mississippi Valley Levee Association is built on a foundation of railroad cash. It is a pleasure to note that the Item's photographic proof of this fact was exhibited to the Senate during the recent debate. Everybody ought to know the truth.

We do not accept our good neighbor's well-meant statement of the case, but lest there be any doubt about it, we hasten to assure everybody that we are quite proud of our contribution to the enlightenment of a suffering people, oppressed by log-rolling politicians and benighted by an ignorant and incompetent press, upon the fundamental causes that keep the pall of flood above them.

Now, that comes from pretty good authority, published a little over a year ago in the city of New Orleans. I desire to enter into the RECORD as a part of my remarks editorials by the New Orleans Item, also one by the Chicago Tribune, which was received this morning. Let me say of the Tribune that it is a paper with a great circulation, possibly larger than the entire population of the city of New Orleans, and its remarks are along the same direction. It pays attention to this remarkable proposition which we have here of reclaiming the lands along the lower Mississippi Valley at practically Government expense—two-thirds of it contributed for that purpose. I ask to have it introduced because of its important criticism on the land-reclamation bill, and I do so notwithstanding some embarrassment because of the personal allusion it contains.

A great many people have asked what is the reason for this bill. Forty-five million dollars is to be put in, first, for the benefit of the levee boards and contratcors in the South, to be followed by $200,000,000 or more as we must do if we make effective flood control. Now, I will admit that I am in favor of meeting the proposition if we can of controlling floods, but how under heavens are you going to take out 16,000,000 acres of natural reservoirs over which water now flows and help flood reclamation? To build up flood levees in that vain hope is beyond justification by Army engineers. In Mr. Crosser's report the Mississippi River Commission says that the floods are raised by reason of this very levee system which brings the river into a narrow compass. The present proposition is one which is largely for land reclamation. The two propositions of flood control and land reclamation are antagonistic and should be disassociated. I speak on the authority of men who know the valley and have studied the problem—the two propositions can not stand together. One consists in bringing the river to a narrow compass and reclaiming the land; the other in providing reservoirs and regulate floods.

He calls attention to the greater flood heights which would ensue in the central channel if you narrow the levees on the banks. That is the fight between the by-passes they have out there.

The CHAIRMAN. The time of the gentleman from Wisconsin has expired.

Mr. FREAR. I ask unanimous consent, Mr. Chairman, to introduce into the RECORD the editorials I have mentioned.

The CHAIRMAN. The gentleman from Wisconsin asks unanimous consent to extend his remarks in the RECORD in the manner indicated. Is there objection?

There was no objection.

Following are the statements referred to:

[From the Chicago Tribune, May 16, 1916.]

PORK HUNTERS' INGENUITY.

An even quarter billion of dollars is the amount the Democratic Congress would like to divvy up this year among its friends in various districts. The amount is huge, larger, it is believed, than any of Congress's past charities to constituents; but the amount is not the most sinister aspect of the pork-hunters' progress. It is their growing ingenuity.

Probably because of the repeated and often successful attacks by Congressman FREAR and others on the river and harbor bills by which money is habitually distributed to local contractors for dredging creeks and enlarging worthless harbors, new vehicles for carrying pork have been created.

Of these the flood-prevention bill, championed by Congressman HUMPHREYS of Mississippi, is the most dangerous. It purposes to save the residents of the Mississippi Valley from floods by constructing out of Government funds levees along the river in the Southern States.

The idea is that the landowners have spent all the money they can afford for protection and that the Government should step in and relieve them. Mr. HUMPHREYS would have them pay about one-fourth of the initial cost. These southern farmers, it is argued, are suffering because the northern part of the Mississippi Basin has been denuded of trees through agricultural development, thus increasing the danger of floods. Therefore it is fair to tax the country to build levees.

But there is an even more alluring prospect. Levees will, Mr. HUMPHREYS says, not only protect against floods but will reclaim "16,000,000 acres of the geological cream of the earth" which "are awaiting the magic touch to spring into fields of waving [illegible]." Further it is estimated that the reclaimed land will produce $7[illegible]

worth of cotton a year. The soil is alluvial, and Mr. HUMPHREYS and his followers grow enthusiastic about its quality. It is an American Nile valley, but more fertile and of wider extent than the Nile.

All this can be accomplished, it is argued, by the paltry expenditure of $45,000,000 on levees. Its advocates can draw a picture of flood and destruction on the one hand and incredible prosperity on the other.

It is desirable to prevent floods in the Mississippi River, and it is also desirable to reclaim the 16,000,000 acres. It is those 16,000,000 acres of rich land which are the prize Mr. HUMPHREYS'S backers want him to get for them. They will be worth conservatively a billion and a half dollars, probably two billions, and possibly much more. They are privately owned. The Government is asked to donate $45,000,000 to make the land of these syndicates—for much of the land, Mr. FREAR asserts, is held by syndicates already—worth many times what it is worth to-day.

It is not a flood-prevention bill, but a reclamation bill, and it will be recalled that our Government has refused in the case of the irrigable lands in the West to donate money for reclamation. That would be Government finance of private speculation. In Western States the landholders must pay back to the Government the cost of irrigation systems. That principle was established back in 1902. The Government loans the money but does not give it in irrigation projects.

Once this theory is broken down the Government Treasury will be used to enrich private persons and to finance private speculations. Dwellers on any river in the country which suffers from flood can fairly ask under the guise of flood protection the reclamation of private lands.

There are other objections to Mr. HUMPHREYS'S bill. One is that $45,000,000 will not do the work. Government engineers estimate the cost of building levees all along the river at about $200,000,000. Another is that levees may not do the work. By narrowing the river in order to reclaim land floods are made more dangerous. The water must rise if it can not spread out. It is not at all certain that levees are the answer to floods. Control of headwaters may be the way.

But one of the most significant comments on the bill is the manner of its making. A new committee was appointed in a rush in February, 1916, and the members traveled from Cairo to New Orleans to learn all about the Mississippi. Of course they were hand picked. Their appointment was dictated, of course, by the interests which will benefit, the interests which have conducted the widest and most powerful lobby in recent years. Taxes have even been levied by States, not to build levees but to build sentiment in favor of getting Federal money to build levees. The bill is pork and nothing else.

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[From the New Orleans Item, Oct. 21, 1913.]

BETRAYING WITH FALSEHOOD THE SAFETY AND DESTINY OF THE MISSISSIPPI VALLEY.

The "Mississippi Levee Association," creature of the railroad interests that want such manner of "flood protection" as shall permanently destroy real navigation on the Mississippi and its tributaries, works to betray the safety and destiny of the inhabitants of the Mississippi Valley as brazenly and shamelessly as treachery was ever brought to a Commonwealth.

Most recent and most flagrant instance of this organization's campaign of betrayal occurred in New Orleans on Thursday last, when by its submission of a resolution misinterpreted in its intended purport, bearing written into its face one bald misstatement and one misleading perversion of fact, the National Grain Dealers' Association was tricked into an apparent repudiation of its earlier indorsement of the Newlands river regulation bill and into an approval of the Humphreys-Ransdell "levees only" measure.

In the outcome it is well that the bit of treachery was perpetrated, for it develops that this resolution is but copy of thousands like it sent to every commercial organization in the United States by the agencies that would save to the north-and-south railroads the monopoly of the traffic of the Mississippi Valley—even at the cost of endless repetition down the ages of the flood disasters of 1912 and 1913.

Here is the story. It should bar from the councils of every self-respecting body working for the welfare of the people the agents and the arguments of the Mississippi Levee Association, should put upon its propaganda of betrayal the damning proof of treachery to the people of the region—treachery more brutal in effect, more ruthless in purpose even than that engineered by those transcontinental railroads which trafficked with foreign nations to defeat the building of the Panama Canal.

On Tuesday of last week George H. Maxwell, of the National Reclamation Association, appearing before the first informal gathering of the National Grain Dealers' Association, set forth the plea for comprehensive Federal control, explained the Newlands bill, and when he finished the gathering approved unanimously, on motion and second of two of its leading members, a resolution sweepingly indorsing Federal control and the Newlands measure.

Mr. Maxwell that night took the train for Washington.

At a subsequent meeting of the grain dealers John A. Fox, secretary-manager of the Mississippi Levee Association, talked to the grain dealers along general lines of need for Federal aid in flood protection. His address in no sense conflicted with Mr. Maxwell's. When he concluded the audience believed he had merely added to and strengthened the cause of a broad plea to the Federal Government.

Then Mr. Fox turned over to the resolutions committee of the Grain Dealers' Association one of the stock resolutions that the Mississippi Levee Association is sending throughout the country in a printed form, with a blank space left for the name of the organization. In the convention's closing moment this was adopted:

"Whereas the Mississippi River is the main outlet for the drainage of two-fifths of the area of the Union, embracing 31 States, whose waters subject the alluvial lands of the lower Mississippi Valley to destructive overflows; and

"Whereas the great political parties in their 1912 platforms declared that flood protection of the waters is a national duty; and

"Whereas the Engineering Department of the United States Government, after thorough investigation, has declared that a system of levees, with adequate bank revetment, is the only feasible method of flood control; and

"Whereas a measure known as the Ransdell-Humphreys bill has been introduced into both branches of the Federal Congress, appropriating $60,000,000, to be distributed over a period of five years, so that this great work may be undertaken at once and pushed rapidly to completion: Therefore be it

"Resolved by the Grain Dealers' National Association of the United States in meeting assembled this 16th day of October, 1913, That this subject is of such magnitude and importance to the whole Nation as to justify its immediate recognition by Congress in accordance with the plans already provided by the Corps of Engineers of the United States: Be it further

"*Resolved*, That we ask the Members from our several States in both Houses of Congress to support said Ransdell-Humphreys bill and that we solicit the aid and cooperation of all commercial organizations throughout the entire United States in its behalf."

Read this resolution carefully. Note that it says the "Engineering Department of the Government" has approved "levees only," plus revetments. Consider that this resolution is being sent to hundreds of organizations throughout the country where no local acute interest in flood control has impelled to knowledge of the truth and to investigation.

Note, further, that the resolution reads as though the Humphreys-Ransdell bill was intended to effect flood prevention throughout the Mississippi Valley.

The first statement is a falsehood. The second statement must be a deliberate attempt at deception, for the Humphreys-Ransdell bill ignores every part of the valley save that below Cape Girardeau. Its effect is to trick into approval every commercial organization where the members have not found out the truth.

It trafficks upon the Nation-wide willingness to lend a hand to obtain adequate Federal aid to effect flood prevention in order to win approval of a measure that will defeat that end.

We take up first the effort to persuade the commercial organizations of the Nation that the Humphreys-Ransdell bill provides for general flood protection.

Read anew the phrases in the resolution:

"Whereas the great political parties in their 1912 platforms declared that flood protection of the waters is a national duty * * * whereas * * * the Humphreys-Ransdell bill—appropriation $60,000,000—so that this great work may be undertaken at once and pushed rapidly to completion."

This is what the resolution says.

Here is what the Humphreys-Ransdell bill says:

"* * * For continuing the improvement of the Mississippi River from the Head of the Passes to the mouth of the Ohio * * * for the building of levees between the Head of the Passes and Cape Girardeau."

Thus it will be seen that the Humphreys-Ransdell bill is limited to the lower Mississippi and is therefore limited to "levees only" plus revetments, thus thrusting outside the range of protection every flood basin on any Mississippi tributary above the mouth of the Ohio.

And thus the resolution tricks every commercial organization that indorses it into the appearance of opposition to the Newlands bill, which seeks to establish a broad, national, comprehensive program of Federal control of streams, flood prevention, and navigation maintenance.

Next we take up the simple untruth in the resolution.

Read anew this clause therein:

"Whereas the engineering department of the United States Government, after thorough investigation, has declared that a system of levees, with adequate bank revetment, is the only feasible method of flood control."

Let us ascertain the facts. Here we show you a reproduction of the latest bulletin of the United States Geological Survey—one engineering branch of the Federal Government—which declares that "levees and reservoirs" are "unquestionably the best and most reliable" "means of preventing flood damage."

[Department of the Interior, United States Geological Survey; George Otis Smith, Director; Water-Supply Paper 304.]

THE OHIO VALLEY FLOOD OF MARCH-APRIL, 1913.

"The two means of preventing damage by floods that have received the most attention and that are unquestionably the best and most reliable are levees and reservoirs. For full discussion and rational and conclusive consideration of either of these proposed means, as applied to the Ohio Valley, data more complete than those at present available are necessary. (P. 87.)

* * * * * * *

"The best solution may prove to be a combination of reservoirs and levees, the function of the reservoirs in extreme floods being, as pointed out above, to hold back the last straw that breaks the levee's back. (P. 90.)

* * * * * * *

"Whatever may be the merits of the respective schemes there can be no doubt of the absolute necessity for a comprehensive plan of action. To be effective any system of control must treat Ohio River and its tributaries as a unit, with due regard to the effect of such control of the Ohio on the Mississippi below Cairo. To make such a comprehensive system of control practicable, efficient, and successful, a central organization for the control of rivers is needed. Such a central organization would necessarily have to be Federal." (P. 91.)

This accounts for one "engineering department" of the Government. We leave aside the fact that the engineers of the Department of the Interior and the Department of Agriculture have indorsed the Newlands bill, which provides for the construction of any means of flood prevention that full investigation finds advisable, and come to the last word from the Army engineers.

Below we print a reproduction of an account in the Times-Democrat of the report of the Army engineers who have been investigating the last year's floods in the Ohio Valley. Read that picture carefully:

"The report, written by Lieut. Col. Francis Shunk and transmitted through Brig. Gen. Rossell, Chief of the Army Engineers, was given general approval by both Secretary Garrison and Gen. Rossell.

* * * * * * *

"The board was much impressed in its examinations," said the report, "by the evils of divided control of the watercourses."

* * * * * * *

"The board approved flood prevention plans tentatively worked out from Columbus, Ohio, but pointed out that, unless a means of escape for water delivered to the lower reaches were provided, the flood merely would be transferred from one point to another.

* * * * * * *

"A site for a reservoir near Kenton, Ohio, was examined, but the engineers believe prospects for sites in other parts of the Ohio Basin, notably Pennsylvania, West Virginia, and Kentucky, are better and recommends further investigation. They also recommend that the work

of formulating a plan of flood control be intrusted to the Army engineers at Pittsburgh, who already have taken up the problem.

"In transmitting the report Gen. Rossell suggested that the entire bridge matter could be handled by the Army engineers with a very small addition to their present forces. He also recommended greater cooperation with the Interior and Agricultural Departments."

Note that this account tells of the desire of the Army engineers to end "divided control." The Humphreys-Ransdell bill continues "divided control"; the Newlands bill ends it. The engineers urge that care be taken for the flood problem all down the rivers. The Humphreys-Ransdell bill does not do this; the Newlands bill does do it.

The engineers urge investigation of reservoir sites. The Humphreys-Ransdell bill renders that impossible. The Newlands bill provides for this investigation.

The engineers urge cooperation with the Departments of the Interior and Agriculture. The Humphreys-Ransdell bill does not provide for that. The Newlands bill goes provide for it.

Thus will be seen with what means and with what bold and daring falsification of the entire record the "Mississippi Levee Association" seeks to defeat genuine flood prevention, which carries with it establishment of navigation on the inland rivers.

Thus will be seen how the National Association of Grain Dealers were tricked and deceived into a position where the "Mississippi Levee Association" could quote them against the one broad program which promises to the people of the valley both protection against floods and against railroad monopoly and rapacity.

United States Senator ASHURST summed up the situation a few weeks ago, speaking upon the flood problem and for the Newlands bill to the United States Senate, when he said:

"It is known to every well-informed person that the transcontinental railroads prevented an Isthmian Canal for nearly a quarter of a century. These same and other railroads fear the water competition that undoubtedly would follow systematic development of the rivers. If anyone should doubt that the railroads of the country fear waterway competition, or should doubt that the railroads are actively supporting the policy which proposes simply to levee against floods without doing anything else, because that method of protection will not result in waterway improvement, let him read the report of the Commissioner of Corporations on Transportation by water in the United States, part 4, issued December 23, 1912, especially that chapter entitled 'Railroad control of water carriers,' and he will be convinced that in lending no support whatever to the Newlands river-regulation bill the railroads of the country are fighting to prevent waterway transportation competition just as they fought the construction of the Isthmian Canal. * * *"

Those of us who have been in the heat of the fighting for effective Federal organization and effort to control the streams, use their waters, restore navigation, and prevent floods, know how absolutely true is the statement of Senator ASHURST.

We know how the railroad influence throughout the valley has been thrown against the Newlands bill, which provides for restored navigation, and for the Humphreys-Ransdell bill, which provides only for levees.

Not only do we know this, but we have the proof.

Here is one bit of it—a photographic reproduction of a typewritten statement made by Secretary-Manager John A. Fox, of the Mississippi Levee Association, himself. The reader will note that the north and south railroads founded the movement with eight thousand of the thirty that Mr. Fox declares is necessary each year:

"It has been estimated that a minimum fund of $30,000 per annum is necessary for this organization to do its work in a complete and thorough manner, and already a considerable portion of this sum has been pledged annually for five years. The subscriptions are as follows:

Southern Ry. Co	$1,000
Mobile & Ohio R. R	1,000
Frisco R. R	1,000
Missouri Pacific Ry	1,000
Chicago, Rock Island & Pacific Ry	1,000
St. Louis Southwestern Ry	1,000
Illinois Central R. R	1,000
Yazoo & Mississippi Valley R. R	1,000
Chicago Mill & Lumber Co	1,000
Caldwell & Smith, Memphis, Tenn	1,000
International Harvester Co	1,000

This is the story, briefly told.

The National Grain Dealers' Association was tricked into appearing an enemy to restored navigation on the Ohio, the Missouri, the upper Mississippi, under guise of indorsing flood relief.

The trick played upon them—and played skillfully—is being played upon commercial organizations throughout the country.

It is part of the railroad conspiracy, not only to prevent maintenance of navigation on the inland rivers but absolutely to establish such a system as will forever destroy the chance of restoring navigation.

In its phraseology, of course, the Humphreys-Ransdell bill has smug reference to navigation, but its scope of operation is below the mouth of the Ohio, and the Nation knows that the only means of restored effective waterway transportation in the valley is by standardized stream flow on the great tributaries of the Mississippi that will render it possible to trade and travel by water the year round from the great centers of freight origin down to the sea.

For this means the Humphreys-Ransdell bill does not provide.

And the railroads are for the Humphreys-Ransdell bill and against the Newlands bill, just exactly as they were against the Panama Canal.

It rests with the people of the valley—

Will they permit the north and south railroads to destroy the Mississippi and its tributaries as transportation factors in the economic life of the valley and the Nation? No less than that is the aim of the railroads. No less than that will be the effect of such legislation as the Humphreys-Ransdell bill, which, while destroying all chance for restored navigation, by the record of the past will not protect against floods.

Mr. RAKER. Mr. Chairman, originally the Sacramento River was navigable by ocean-going vessels up to the city of Sacramento and Marysville and Red Bluff from the earliest pioneer days down to 1864 and 1867. Hydraulic mining was permitted in the mountains by the Government, and débris from the land filled up the channel to such an extent that when the floods came they filled up the bed of the river from 2 to 10 feet deep, thereby causing the overflow of the adjacent and adjoining country.

The original report made to the House by the Army engineers shows that the estimated cost was about $33,800,000. One-third of that, which was exclusively for improving the river for navigation, was to be paid by the Government. The other two-thirds was to be paid by landowners for the purpose of joining up and connecting with the levees on the river, so as to prevent floods over the valley of the Sacramento and to protect the lands.

The report of the engineers contains the statement that when the matter was presented to the Committee on Rivers and Harbors in the House and Senate it was held up for a year, and the Committee on Rivers and Harbors then asked the Board of Engineers to make a supplemental report, which they did, which is Report No. 5, referred to in the bill, which is favorable, showing that, as a matter of fact, a great part of the reclamation had been done by the private owners and would be completed; and to the end that the private interests of California should put the river in the state it was in from 1849 to 1867 for navigation, and navigation alone, and that the State of California should pay one-half of this expense, the Committee on Rivers and Harbors of the House two years ago reported favorably upon this project, and the House passed the bill. The Senate committee also reported favorably upon the project, and we know the bill was defeated by virtue of a filibuster, and these provisions were not then carried out.

The amount of money, the $5,600,000 to be paid by the Government, is only one-half of the actual cost of putting the river, its banks, and its bed in the shape it was in before the Government permitted hydraulic mining to such an extent that the river was made nonnavigable.

Mr. GARD. Mr. Chairman, will the gentleman yield?

Mr. RAKER. In just a moment. The people of the State of California, knowing the value of the navigation of that river, knowing what it means to the State of California and to the West and to the country generally, are willing to go side by side with the Government and pay one-half of this legitimate improvement to place the Sacramento River in shape fit for navigation and for navigation alone, the remainder is for flood control and reclamation. This part is paid by the private landowners, which will cost them about $22,000,000.

The question of drainage, the question of drainage districts, is cared for by the people themselves, and the expense incident to that drainage system is paid by the people, amounting to something over $22,000,000 or $25,000,000; and that system simply joins up and adds to the Government work, so that it will not do the extra damage. The money expended here will put the river in shape and create a by-pass so that the floods will not destroy the banks of the river, and so that the river will not be filled up with débris, but will remain in proper shape and be washed out and thereby permit navigation the year round.

The CHAIRMAN. The time of the gentleman from California has expired.

Mr. RAKER. Mr. Chairman, I ask unanimous consent to extend my remarks in the RECORD.

The CHAIRMAN. Is there objection to the request of the gentleman from California?

There was no objection.

Mr. RAKER. I will add here, under permission granted me to extend my remarks, that part of the report of the Committee on Flood Control that relates to the Sacramento River, Cal., which is as follows:

FLOOD CONTROL OF THE SACRAMENTO RIVER.

1. The name California carries with it to the mind of the intelligent and reading world the spirit of romance. It is surrounded and colored with kaleidoscopic pictures of proud hidalgos, of Spanish padres, and tile-covered missions, of sea adventurers, of gold seekers, and prairie schooners and Indian ambush, of vaqueros, of fruits and flowers, and warm sunshiny days. But of all these pictures the most vivid and those which have left most impress upon the fortunes of the country, upon the minds of its people, and upon the very configuration of the hills and valleys of the State, are those which tell of the work of the gold miner.

2. The California miner has dug out of the earth and added to the country's wealth since 1848 gold valued at $1,631,601,990, which is about one-sixth the value of all the gold coinage and bullion in the world to-day available for circulation, and within 3 per cent of the total within the United States as reported by the Secretary of the Treasury this month. The gold produced by California was, during the Civil War, the basis of the credit of the Nation when she most needed credit. The State is still the greatest gold producer in the Union, her annual output of $22,860,590 exceeding that of Alaska; but gold production is now one of the minor industries of the State. Even the alfalfa crop amounts to $23,000,000 yearly.

3. The gold in California is found in many forms in nature. It is most abundant, however, in the free state in small particles in the sands which have borne it down from the mountains through countless ages of the world's history. Deposits of this character are made by mountain streams, particularly where they drop their heavy grade and reach the floor of the valley. These deposits are found close to the surface or on the bedrock and covered by mountain layers of 100 to 400 feet in thickness, according to the number of years or the ages of

time which have elapsed since the deposit was made. The eastern and northeastern edge of the Sacramento Valley and the slopes adjoining are particularly rich in these deposits.

4. Various methods have been employed to secure this gold, including the hand pan and rocker washing the sands of the surface stream; the drift tunnel working into the sidehill on top of the bedrock; the hydraulic "monitor," which washes down the entire mountain in order to reach the layer of gold-bearing sand far below; and the modern gold dredge, which costs as high as $500,000 and brings gold-bearing material to the surface in its endless-ladder buckets from an extreme depth of 90 feet. Of these methods, hydraulicking was that responsible for most of California's output during the Civil War and for 15 years thereafter.

5. The State and the Nation, however, paid an enormous price for this gold in permanent injury to great natural resources and to varied interests—a price which is not only being paid now but will continue to be paid through all the generations of civilization yet to come. It is seriously questioned by those who have given careful study to the subject whether the entire amount of gold which has been and can be recovered from the hills and stream beds of California, great as it is, is adequate compensation for the permanent injury done by hydraulic mining to the navigable streams and rich arable lands of the valley, and for the losses which must continuously result therefrom to commerce and wealth in retarded development and decreased production.

6. It is the purpose of this report to give a faint idea of that damage and to call attention to the means suggested by the Corps of Engineers of the United States Army for correcting, so far as possible, the injury already done and for preventing in the future some of the injury which must otherwise ensue. The plan proposed has been recommended after 17 years of investigation and experiment, and receives general indorsement as the only one economically feasible which will accomplish the ends sought. It has already met the approval of the Board of Engineers for Rivers and Harbors and of the various congressional committees which have examined it, has been adopted by the State of California, and is steadily progressing to completion under cooperation of Nation, State, and property owners.

THE STORY IN BRIEF WITH REFERENCE TO THE MORE COMPLETE REPORT AND AUTHORITIES.

7. Sacramento River floods: The maximum floods of the Sacramento River are greater than those of any river in the United States, except the Mississippi below its junction with the Missouri, the Ohio, and the Columbia. In proportion to territory drained its floods are from 4 to 15 times as great as those of the three rivers named. The volume of water which may be precipitated, in extreme flood, into different sections of the river is from four to eight times as great as the capacity of the channel in those sections, respectively. The problem of flood control of the stream is still further complicated by immense deposits of débris washed down by hydraulic mining and by reclamation of lands in the low basins which formely served as relief reservoirs. These basins have been accepted from the Federal Government and sold to private parties as swamp lands under obligation to reclaim. (Secs. 53 to 60.)

8. Navigation in the fifties: When California was admitted into the Union in 1850, the Sacramento River throughout its entire length was a stream of clear water, free from silt of any character. For 15 years thereafter, at all seasons of the year, seagoing vessels drawing as much as 13 feet discharged at Sacramento City, 125 miles from the sea, cargoes brought around Cape Horn. Seagoing vessels even went as far as Marysville, on the Feather River, 60 miles above Sacramento. Light-draft craft plied all the year up to Red Bluff, on the Sacramento River, 323 miles from the sea. (Secs. 61 to 71, 101.)

9. Changed by hydraulic mining: With the advent of hydraulic mining this condition gradually changed, the silt, sand, gravel, and cobbles from the mines being washed through tributary streams into the main channel, where it deposited in bars and shoals, gradually raising the bed, and causing frequent overflow, with destruction of banks and injury to cultivated lands, as well as to navigation. (Secs. 72 to 80.)

10. Federal tolerance: Hydraulic mining was conducted practically under Federal license, certainly under Federal tolerance, and usually on Government land. At no time up to 1893 did the Government exercise its right of protection over the navigable stream to the extent of forbidding or regulating the hydraulic mining which was destroying navigability. (Secs. 129 to 144.)

11. Injury by flood: Disastrous floods (induced in part by the conditions referred to), commencing in 1861–62 and occurring at irregular intervals since, caused great injury to navigation and to property. Through breaks, or crevasses, in the levees the flood was diverted from the channel, cutting out soil on orchards and farm lands and depositing thereon sand and gravel. In the channel itself, below each break of the kind, there was caused slack water, with a deposit of débris in the form of shoal or sand bar. (Secs. 80 to 92; also Exhibit A.)

12. Navigation crippled: In time the river shoaled so that boats of even 6-foot draft could not reach Sacramento in the summer and fall months, but were compelled to lighter for 6 to 30 miles of the distance at great expense (Sacramento City is only 64 miles from the river's mouth). Navigation above Chico Landing (147 miles above Sacramento) even for boats drawing 20 to 24 inches ceased; and above Colusa (90 miles from Sacramento) no attempt is now made to furnish regular service by boat. Portions of the Bay of San Francisco were shoaled and access to the Mare Island Navy Yard threatened. (Secs. 93 to 120.)

13. Rise of flood plane: In the attempt to protect river lands and towns from inundation levees were constructed by private interests along or near the river bank in places, and this work, in connection with the deposit of the débris in the channel, caused in time a steady rise in flood plane, which in turn necessitated still further increase in levees. At Sacramento City the flood plane rose 8 feet in 40 years. With the gradual withdrawal, by reclamation, of the reservoir capacity in the various basins, the time was apparently approaching when the cost of levees, high enough and strong enough to keep above the rising flood plane, would exceed the value of the lands which the levees sought to protect. (Sec 98.)

14. The courts forbid hydraulicking: As soon as the valley and river interests realized the injury being done to navigation and to valley interests by hydraulic mining, protests were made, but without avail. (Secs. 129 to 140.) Litigation commenced in the courts was not concluded until 1884, when Judge Sawyer, of the United States circuit court, decided in effect that such mining must cease unless the mine tailings could be so impounded as not to cause injury to the navigable streams or to private lands. (Secs. 121 to 128.)

15. Stopped by injunction: Following this decision, and in the course of some years, hydraulic mining on the tributaries of the Sacramento River, save behind dams which would hold back the débris, was gradually stopped through the vigilance of valley associations and because of fines inflicted on the miners for contempt of court in running in defiance of the court's injunction. (Secs. 145, 146.)

16. Conditions in 1893: At this time not only had the navigation of the river been in great part practically destroyed and much orchard and farming land rendered permanently worthless, but a condition had been created which made certain the recurrence of disastrous floods. And there had been washed into the tributaries of the Sacramento hundreds of millions of cubic yards of sand, gravel, and cobble which would move with each freshet, and all of which must ultimately find its way into the main channel unless some way could be found of holding the material back. (Secs. 76, 77, 147; also Exhibit D.)

17. Congress seeks to repair the damage: These conditions were brought to the attention of Congress in 1893 by the various interests concerned, and an act (known as the Caminetti Act) was passed creating the California Débris Commission, to be composed of three United States Army engineers, which act is still in force. The principal duties of the commission as therein described are: To provide for the resumption of hydraulic mining so far as can be done without injury to navigation and without damage from overflow; to restore as near as practicable the degree of navigability of the Sacramento and San Joaquin Rivers which obtained in 1860; to afford relief in flood time and to provide sufficient water to maintain scouring force in summer. Cooperation with the State was provided for by empowering the commission to confer with such body of engineers as might be appointed by the State, and the expenses of barriers, dams, dredging, etc., done by the commission in pursuance of its duties were to be shared half and half by Congress and California. (Exhibit B; also secs. 149, 150, of this report.)

18. A mutual contract: The act of 1893 was practically a business proposition made by Congress to the State of California. That State by legislation promptly accepted and ratified the proposition, making it in effect a contract, and has since that time promptly paid into the United States Treasury such sums as were called for under the act as her one-half of the necessary expense involved. She has paid those amounts in good faith on the assumption that when the necessary plan had been matured it would be carried out, so that the injury done to navigation could be corrected and so that future loss from floods might be prevented. (Secs. 158 to 167.)

19. What California paid United States: Under the terms of the act of 1893 California has already paid $1,000,000 into the United States Treasury, to be expended on the Sacramento River by the California Débris Commission, as agent of the Federal Government. Of this amount $400,000 was for impounding débris and $600,000 for improvement of the river by dredging; $250,000 additional is in the State treasury, subject to call of the débris commission. Over $350,000 more has been spent for rights of way, most of it subscribed by landowners. (Sec. 175.)

20. Additional amounts spent for navigation: In addition the State has spent independently, under its State engineering department and river boards, since 1897, for rectification of navigable river channels, etc., $1,275,000. Landowners have already spent in river levee construction along the Sacramento, San Joaquin, American, and Feather Rivers up to date, it is estimated $12,000,000. The amount is undoubtedly two or three times larger than would have been necessary but for the injury done the river by hydraulic mining. All of this expenditure has been partly in the interest of navigation, since the integrity of the channel can not be preserved, particularly when partly choked by débris, unless levees be maintained. (Secs. 186, 187.)

21. Hydraulic mining regulated: The California Débris Commission, in compliance with the terms of the act, regulated hydraulic mining by providing that no mines might operate unless they could hold back their débris behind safely constructed dams, built under Government supervision and subject to Government inspection. Very few hydraulic mines could comply with this condition and make a profit, and that kind of mining has, in consequence, almost entirely ceased on the tributaries of the Sacramento. (Sec. 148.)

22. Storage reservoirs rejected: The débris commission, in the course of its investigations, rejected storage reservoirs as a means of flood control for the Sacramento (1) because of lack of sufficient available storage, (2) because the available storage is uneconomical. The investigations of the United States Reclamation Service and of the California State engineering department have since fully corroborated this conclusion and even demonstration that it is physically impossible to secure flood control of the Sacramento through storage. (Secs. 223, 224, 225; also Exhibit G.)

23. Main channel plan inadequate: The débris commission rejected also the main channel plan of major and minor levees, confining the floods to a wide strip on each side of the main channel. This plan was proposed on the theory that the maximum flood of the river is 250,000 second-feet. The floods of 1907 and 1909 showed that not less than 600,000 second-feet should be figured on, while the record of drainage into the valley in one season was 823,000 second-feet. (Exhibit D; secs. 11, 12, 13.)

24. Minor project for flood control: In 1907 the débris commission reported that, having satisfactorily regulated hydraulic mining as called for by the act of 1893, it recommended, in further pursuance of its duties, that dredging operations be inaugurated to care for débris deposits and incidentally assist in flood control. The report recommended 56 months' operation of two large suction dredges. No details were given but the intimation was made that there would be forthcoming "well-matured plans, in the preparation of which all elements of the problem will be taken into account." That project (known in California as the minor project) was adopted in 1910, and the dredging operations have been going on since, the work done being principally at the river's mouth. Nation and State have been cooperating in good faith in carrying out the project suggested in the report of 1907, the State having already appropriated for the purpose $850,000 and Congress $600,000. (Secs. 153, 154, 182.)

25. The major project: In 1910 the Débris Commission presented "the well-matured plans in the preparation of which all elements of the problem will be taken into account," as referred to in the report of 1907. These plans, embodying what is termed in California the major project, provide for entire flood control of the river, serving not only the cause of navigation, but also that of reclamation and of débris control, and in effect include the minor project of the 1907 report now in progress. (Secs. 155, 156, 157.)

26. Reapportionment of expense: In 1913 the Débris Commission offered a report modifying the report of 1910, not as to engineering

detail but only as to method of financing, and making the expense to the National Government about half of the amount contemplated in the original report. The project as thus outlined was approved by the Board of Engineers for Rivers and Harbors, by the Chief of Engineers, United States Army, and by the Secretary of War, was favorably reported by the Rivers and Harbors Committee (in the 1914 rivers and harbors bill), was passed without dissenting voice by the House of Representatives, and was favorably reported by the Senate Committee on Commerce. The rivers and harbors bill which contained this project, however, failed in the Senate, and was replaced by a substitute bill providing a lump appropriation to be expended at the discretion of the Chief of Engineers, United States Army, in the interest of existing projects only. The Sacramento and all other projects classed as unapproved were thus excluded from the bill. (Secs. 155, 156, 157.)

27. California creates an active agent: The State of California, by legislative acts of 1911 (special session), 1913, and 1915, formally approved the project, adopted the reports of the Débris Commission as in effect a contract between the State and the Nation, and pledged herself to carry out her portion of the contract. In discharging the obligations thus placed upon her the State created the State reclamation board, with jurisdiction over the entire area of the Sacramento and San Joaquin Valleys below the flood plane, with full power to force all reclamation work therein to conform to the project, to order project work done or to do it itself, and to levy the necessary assessment for river levees and by-pass construction on the lands which would receive benefit therefrom. (Secs. 179, 180.)

28. Cooperation between State and Nation: The State, as represented by the reclamation board, has kept in close touch with the California Débris Commission, has seen that all plans for levees, bridges, embankments, and cuts met with the commission's approval as being in accord with the project, has faithfully discharged all obligations laid upon her by the mutual understanding, and has pushed, as rapidly as conditions justified, that portion of the project under her charge. (Secs. 172, 180.)

29. The only plan feasible: The plan outlined in these reports is declared therein to be in effect the only one economically feasible which will secure flood control of the Sacramento River; and without flood control, it is stated, there can be no permanent restoration of navigability for the rivers. It is explained that on the Sacramento River the interests of flood control, navigation, reclamation, and débris control are so interwoven that a plan which seeks to care efficiently for one must care incidentally for the others. For this reason an apportionment of expense is suggested among Nation, State, and property owners. (Secs. 218, 219, 220.)

30. Principles of plan: The plan contemplates the retention in the river channel of so much of the flood as the channel, guarded on each side by strong levees, can safely carry. This utilizes current action in clearing the channel of deposits. The excess volume, in flood season, is to be diverted over concrete weirs, and into by-passes, through which it will be conducted over the adjacent basins and turned into the river again at Rio Vista, 15 miles from the mouth. From this point to the mouth, the channel is to be enlarged and deepened to accommodate the full volume of flood. (Secs. 168–172.)

31. A permanent flood plane: The plan will make unnecessary, after standard construction has been completed, any future raising of levees such as has been continually resorted to for many years past. The crests of the weirs will fix the flood planes in the river channel in their respective districts; and floods which would raise the plane under present conditions will be automatically turned into the by-passes. (Secs. 168 to 172.)

32. The Government's work: The California Débris Commission is to have sole charge of those portions of the project which are supposed to be peculiarly in the interests of navigation, including enlargement of the river's mouth, dredging in the channel, and construction of the four weirs. The cost of these elements is to be shared equally between the Nation and the State, the estimates in the report fixing the Nation's share at $5,860,000. (Since those estimates were made Congress, in caring for the minor project, has appropriated $200,000 for part of the work covered by them.) All rights of way must be paid for by the State or by private parties. (Sec. 173.)

33. The State's responsibility: The State, through the State reclamation board, assumed responsibility for completion of the remaining elements of the project, including 503 miles of river levee and 186 miles of by-pass levees and the securing of the necessary rights of way (about 85,000 acres). The cost of this work is to be assessed by the reclamation board on lands benefited by the project in proportion to benefits received. In some cases the completion of the project will incidentally reclaim private lands; in others it will insure conditions under which the owners can go on with reclamation work; in all cases it will afford reasonable assurance of safety against future floods. In no event will any of the expense for this portion of the project be borne by the United States. (Secs. 173, 174.)

34. Work at the river's mouth: Work on that portion of the project in charge of the California Débris Commission has been confined to dredging at the river's mouth under "minor project" appropriations. Some 13,000,000 cubic yards have been removed by the hydraulic dredgers, the new cut thrown open to the action of the current, and an appreciable improvement in run-off of flood waters already secured. (Secs. 181, 182.)

35. Progress in weir preliminaries: There has been, necessarily, no work done by the débris commission in weir construction, in the absence of the adoption of the major project and the inapplicability of minor project appropriations thereto. Sites for three of the four weirs have already been secured, however, and Sacramento city has in her treasury the money necessary for building the Sacramento Weir, construction of which she will undertake because of the protection it will afford her. Her citizens voted to advance $594,000 for the purpose, fearing that Federal appropriations therefor might come too late. (Secs. 183, 184.)

36. Progress in the State's portion: Since the presentation of the débris commission report of 1910, and particularly since the adoption (December, 1911) by the State of the project therein recommended and the creation of the State reclamation board, private capital has, in response to the State's invitation, spent many millions of dollars in reclamation works which form incidentally integral portions of units of the great flood-control project. In this way the completion of river and by-pass levees, as called for by the plans and on standards fixed by the reclamation board, is rapidly progressing. The entire Sacramento by-pass and weir, it is expected, will be commenced within the next few months and pushed steadily to completion.

In securing material for construction and betterment of river levees, private reclamation districts have dredged out of the navigable channels millions of cubic yards of débris deposit, the removal of which is contemplated in the major project. (Secs. 185, 186.)

37. Losses due to lack of flood control: While the State is steadily pushing her share of the project, the work she is doing will lose its value unless Congress adopts the major project and makes such appropriations as will enable the engineers to complete those portions having to do with the navigable channel over which the Federal Government exercises exclusive jurisdiction. Delay in securing flood control, which can be had only through completion of this project, means great loss of property, and perhaps life, as well as serious injury to navigation.

The reports of the Chief of Engineers, United States Army, 1910, show that the loss in the Sacramento Valley in the floods of 1907 and 1909 was $11,000,000, and that Marysville was without railroad service for 10 days and San Francisco practically isolated for over one week by failure of bridges and railroad beds. Two transcontinental lines—the Southern Pacific and Western Pacific—run through the valley, as well as a number of local lines, and the interruption to mail service and business under such conditions is serious. (Secs. 80 to 93.)

38. An obligation of Congress: The clear intent of Congress, expressed in the act of 1893, to restore the navigation of the Sacramento and San Joaquin Rivers as near as practicable to the conditions existing in 1860; California's prompt compliance with the conditions of the act and the appropriations which she has made for prosecution of the work; the methods of the Débris Commission in discharging one after another the duties imposed on it by the act; its regulation of hydraulic mining and report on the accomplishment thereof; its attempts at débris control, with varying success up to its report of 1907, which recommended dredging as the final resort; its failure to outline therein any plan for such work save the construction of two dredges, and its reference to "well-matured plans in the preparation of which all elements of the problem will be taken into consideration"; its final presentation in 1910 of those well-matured plans covering flood control and all elements of the problem, and its suggestion that this was the last of the duties assigned it; the readiness with which appropriations were recommended and made as called for by each progressive step toward the accomplishment of the purpose clearly set forth in the act of 1893—all are strongest indications of the belief on both sides that a contract had been entered into in good faith between the Nation and the State, and that the injury to the Sacramento River done by hydraulic mining under national tolerance was to be remedied so far as practicable by cordial cooperation between State and Nation. This is apparently the view of the United States Army Engineers, as it certainly is that of the State, for in the hearing before the Rivers and Harbors Committee, February 7, 1912, Col. John Biddle, United States Army, senior officer at that time of the California Débris Commission, expressed, in effect, the opinion that undoubtedly the State of California would not have appropriated $400,000 for the minor project unless it had understood that the improvement of the river would be completed under a matured plan, since otherwise the $400,000 would have been practically thrown away. (Secs. 158 to 167.)

39. A business investment for the United States: Aside from the weight which may be given to the apparent understanding in this matter—the necessity for speedy completion of the Sacramento flood-control project, the benefits, National and State, which will flow therefrom, and the widespread disaster which must follow a failure on the part of the Federal Government to cooperate should be sufficient to secure its prompt indorsement at the hands of Congress. In the following statement of the results which will be accomplished by the completion of the project will be found sufficient justification for the Nation to regard it as a good business investment on its part.

40. It is the only plan through which flood control of the Sacramento River can be secured; and only through that flood control can the following results be attained:

41. (a) Restoration and maintenance of the navigability of the Sacramento River, injured through hydraulic mining. Ocean freighters drawing 13 feet used to deliver cargoes at Sacramento city, 125 miles from the sea, at all seasons of the year. Light-draft craft formerly carried freight and passengers all the year around to Red Bluff, 323 miles from the sea.

42. (b) Protection of the San Joaquin River, which has a common delta with the Sacramento and which is affected by floods of the Sacramento as far as the city of Stockton, 45 miles from the river's mouth.

43. (c) Transportation for passengers and freight from the lower stretches of the two rivers, which, because of the physical conditions, are not accessible to railroads.

44. (d) Maintenance of low freight rates for the products of the two valleys. Ninety per cent of all freight between Sacramento and San Francisco and between Stockton and San Francisco is carried by river boat, at about one-third the expense of rail transportation. Improvement of river conditions above Sacramento City would tend to induce similar conditions in the upper valley.

45. (e) Maintenance of an inland waterway system of which the two navigable rivers must be necessarily the main arteries. Upon such a waterway system depends in large measure future development of the Sacramento and San Joaquin Valleys and the commerce of the State, since without cheap water freights to tidewater products of the valleys can not secure profitable access to the markets of the world. The history of inland waterways in Europe will make this point very clear.

46. These two valleys, comprising about 10,000,000 acres, will grow to advantage any product called for by the necessities or desires of the Nation. Properly developed and under intensive cultivation the year round they could furnish a large portion of the supplies demanded by the country in time of stress. They would become under such conditions a national economic asset, which might be invaluable and which, it would seem, Congress at this time can not afford to ignore.

47. (f) Safety from disastrous floods for a million and a quarter acres of rich alluvial lands. The annual crop on so much thereof as is now reclaimed, or partly reclaimed, is valued at $30,000,000. Included in the district are the cities of Sacramento and Stockton, with population of 120,000 and property assessment of over $100,000,000.

48. (g) Creation of permanent wealth in lands now subject to overflow and which can not be reclaimed or used for any purpose in the absence of flood control of the Sacramento. If these lands were re-

claimed and under intensive cultivation under protection of the completed flood-control project the present value of the annual crop in the river districts would be easily doubled (Secs. 188 to 215.)

THE PROJECT AND ITS HISTORY IN DETAIL.

THE GREAT INTERIOR VALLEY.

49. The greater portion of the arable section of California is comprised in an immense valley about 400 miles long and 40 miles wide. It is inclosed on the east and west by the Sierra Nevada and Coast Range Mountains, respectively. The two converge above Red Bluff in the north, while the southern boundary is formed by the Techachipa Range, joining the Coast Range and the Sierra Nevada below Bakersfield. On the earlier maps of the United States Geological Survey this valley is called "The Great Interior Valley." To-day it is known in its northern part as the Sacramento and in its southern part as the San Joaquin Valley, the first containing about 3,000,000 acres and the latter about 7,000,000 acres. There is no distinguishable dividing line between the two, though the Cosumne River is usually accepted as such line.

50. In prehistoric ages the entire valley was an arm of the sea. It was gradually filled up by material washed down from the mountains, until eventually there was left only San Francisco Bay, with its arms and estuaries and a narrow opening—the Golden Gate—through the Coast Range to the sea.

51. The upper portion of the Great Valley is drained by the Sacramento River, flowing south, and the lower portion by the San Joaquin, flowing north. The two rivers have a common delta, and their main streams, flowing on opposite sides of Sherman Island, empty side by side into Suisun Bay, an arm of San Francisco Bay, 61 miles from the sea. Because of their common delta and the difference in volume of their floods, the San Joaquin in the lower 45 miles of its course is subject to flood and injury from the Sacramento.

52. When California was admitted into the Union, in 1850, and for many years afterwards, both streams were particularly valuable for navigation. On the San Joaquin ocean boats navigated to Stockton and light-draft craft ran for half of the year as far as Hills Ferry, 129 miles from the mouth of the river, and for a few weeks at high water they ran to Firebaugh, 79 miles farther. Navigation on the San Joaquin to-day is limited practically to that stretch of the river lying between its mouth and the city of Stockton, a distance of 45 miles, the Government maintaining therein, under existing project, a channel depth of 9 feet. The river is navigable, however, for 15 miles above Stockton. The navigability of the upper river has been practically destroyed by the demands made upon its sources of supply for water for irrigation. In the San Joaquin Valley the volume of available water is less and the quantity of land to be irrigated much greater than in the Sacramento Valley. The maximum flood volume of the river is 155,000 second-feet. (See statement G. A Atherton, hearing Rivers and Harbors Committee, July 23, pp. 7 and 8 (Exhibit H); also Report Chief of Engineers, 1915, pp. 1461 and following.)

THE SACRAMENTO RIVER FLOODS.

53. It is with the Sacramento River that this report has more particularly to do. This river has a flood volume exceeded only by three rivers in the United States—the Mississippi below its confluence with the Missouri, the Ohio, and the Columbia. In comparison to the area of territory drained, its flood volume is over four times as great as that of either of the latter two streams and 15 times as great as that of the Mississippi. Its maximum flood is now usually estimated at 660,000 second-feet, though the records show a flow into its basin in 1907 of 823,000 second-feet.

54. It had been assumed, as late as 1906, due to lack of data concerning earlier floods, that the maximum flood of the Sacramento did not exceed 250,000 second-feet. In 1881 it was thought to be 100,000 second-feet "and perhaps more for a short time." (Rept. Chief of Engineers, 1881, p. 2517.) If the Columbia and Ohio carried floods equal in proportion to the territory drained to those of the Sacramento, the maximum discharge of each would be about 5,000,000 second-feet, instead of the 1,390,000 and the 1,233,000, respectively, with which they are now credited, while the Mississippi's discharge under similar conditions would be about 25,000,000 second-feet instead of 1,777,000 second-feet. (H. Doc. No. 81, 62d Cong., 1st sess. (Exhibit D), p. 19.)

55. The records show that at Iron Canyon, where the Sacramento River enters the valley, it carried, on February 3, 1909, a flood of 276,000 second-feet. This point is 109 miles above Colusa. The maximum capacity of the river channel below Colusa and down to the Tisdale Weir, is 65,000 second-feet, while below the Tisdale Weir and to the mouth of the Feather, a distance of 34 miles, the maximum capacity is only 35,000 feet. (See map.)

56. The Feather River, carrying with it the floods of the Bear and Yuba and smaller tributaries, has, at its mouth, an estimated maximum flood of 250,000 second-feet (in 1907 this was exceeded), while the channel of the Sacramento, from this point down to the city of Sacramento, 20 miles, has at present a maximum capacity of only 75,000 or 80,000 second-feet

57. The American River enters the Sacramento a half mile above Sacramento city, its maximum flood volume being estimated at 180,000 second-feet, while the maximum capacity of the Sacramento River channel from Sacramento city down to Suisun Bay is but 110,000 second-feet.

58. Because of the difference in length of streams, the floods reach Sacramento city from the headwaters of the Sacramento River approximately in 96 hours, from the Feather and Yuba in 48 hours, and from the American in 9 hours. The gravest danger to the valley is created when, because of difference in time of storm in the drainage areas of the respective streams, or because of long continuance of storm, the floods from the three sources, or from two of them, crest together at Sacramento.

60. These conditions in themselves create, it is seen, a serious flood-control problem. That problem is greatly complicated by the hydraulic-mining deposits and by the reclamation of basin and river lands accepted from the Federal Government under obligation to reclaim.

EARLY NAVIGATION ON THE SACRAMENTO.

61. In the early pioneer days the Sacramento River was a perfectly clear stream with pebbly bottom. From 1850 to perhaps 1865 it was navigable at all seasons of the year for seagoing craft drawing from 9 to 13 feet of water up as far as Sacramento and, for the earlier part of the period named, some little distance beyond Sacramento. Indeed, most of the steamers which plied on the river in those days had to be seagoing craft, for they made their way to California from east Atlantic ports around Cape Horn or through the Straits of Magellan. Tidal influence was felt in 1849 at the mouth of the Feather River and at Sacramento was fully 2 feet. The records on these points are conclusive and interesting.

62. In the transcript of the hearing, held in California July 23, 1915, before the Rivers and Harbors Committee, appears, at page 15, the following statement made by A. E. Anderson, president of the California Transportation Co., which for many years has operated steamboats on the Sacramento and San Joaquin Rivers:

"Prior to the time when the river was damaged by hydraulic mining and up to 1865, seagoing ships drawing from 9½ to 13 feet made regular trips to Sacramento at all seasons of the year—spring, summer, autumn, and winter. One steamboat, the *Senator*, drew 13 feet of water."

The steamer *Senator* referred to by Mr. Anderson was a boat of 755 tons, built to run from New York to Portland, Me. She came to California, reaching Sacramento November 6, 1849, and thereafter plied regularly for many years between Sacramento and San Francisco. The *New World*, a very much larger boat, which was placed on the river many years afterwards to run between the same points, was built to run out of New York to Atlantic ports, and, like the *Senator* and other steamers, came to California by sea. (Judge Sawyer's decision, Exhibit A.)

63. Seagoing craft went up the Sacramento beyond Sacramento City and 30 miles up the Feather River to Marysville. In 1849 the steamer *Linda* came to California round Cape Horn, went up the Sacramento and Feather, and beyond Marysville up the Yuba 4 miles. The township within which she landed still bears the name Linda.

64. During the fifties several lines of steamers were regularly running to Marysville The Sacramento Bee on February 16, 1862, recorded the fact that the *Defiance*, drawing 2 feet, had gone up the Feather 30 miles above Marysville to Oroville.

65. In "The History of Sacramento County," by Winfield J. Davis, published 1880, from pages 60 to 66, are interesting details as to early navigation, from which the following facts are briefed:

66. The Alta California (a San Francisco newspaper) in its issue of January 4, 1850, refers to the bark *Whiton* (which arrived at Sacramento May 4, 1849, with cargo from the Atlantic) as a comparatively small craft. She drew 8 feet. The first big steamboat to be seen at Sacramento was the steam-propeller *McKim*, which reached there from New Orleans in September, 1849, and thereafter made regular trips on the river. Her passengers paid in fares on her first river trip $16,000, the fare being $30 apiece. The steamer *Senator's* first trip to Sacramento is mentioned.

67. The Alta California of August 31, 1849, published a list of 45 vessels plying up the rivers Sacramento and San Joaquin, the sizes of which are not given, but most, if not all, of which must have come by sea from east Atlantic ports.

68. One day in 1850 a list of steam and sailing vessels at the wharves of Sacramento numbered 65.

69. A list of 25 steamers, large and small, is given which regularly ran in and out of Sacramento in 1853, the *Senator* being the largest. The total value of the steamers was $1,086,000. Fares had been reduced in 1851 to $1

70. In 1854 one of the new river boats, the *Queen City*, built by the citizens of Marysville, 200 feet long with 9-foot hold, carried on her first trip 919 passengers.

71. The Sacramento River steamers increased in size and improved in appointments steadily for some years, the largest making regular trips to Sacramento being the *Capital*, 1,625 tons, which appeared first in March, 1866.

HYDRAULIC MINING AND ITS DÉBRIS.

72. Gold was discovered in California in 1848, following which came the rush of gold seekers to the State and the prosecution of mining as the leading industry for a number of years. About 1856 the hydraulic method of mining came into use in the State. The method consists in sluicing away the top soil and lower strata of clay, sand, gravel, and cobbles that overlie the bedrock on which the gold is usually found and catching the gold in sluices and riffles. The débris is carried down by the stream of water, finding temporary lodgment in the creeks and small tributaries, but pushed eventually by the freshets into the navigable river channels.

73. The sluicing was done originally by water carried under pressure in canvas pipes and delivered through nozzles, such as are found on fire hose. The hydraulic "monitor," invented in 1865, was soon afterwards generally adopted, and, within 10 years thereafter, the hydraulic mining industry had enormously increased. With the use of a monitor with an 8-inch nozzle and a water pressure, such as was usually used, of 250 to 500 feet, 185,000 cubic feet of water could be discharged in an hour with a velocity of 150 feet per second. Against this force immense mountains, 300 or 400 feet high, melted like sugar. One monitor would use as much as 1,500 miner's inches of water, equivalent to a discharge of 25,000,000 gallons, in 24 hours. As the mines worked without cessation, using electric light at night and blasts of powder of 30 and 40 tons were utilized to assist in breaking up the mountains, the amount of material washed down in a comparatively few years by a large number of mines assumed enormous proportions. It requires, however, the sight of the immense craters, 300 and 400 feet deep, left in the mountains to properly appreciate the force of this agency and the quantity of débris sent into the streams. (Woodruff *v.* N. Bloomfield G. M. Co., 18 Fed. Rept., 757.)

74. In 40 days, using 3,000 miner's inches of water, the Miocene mine discharged into the Feather River above Oroville no less than 300,000 cubic yards (52,500 railroad carloads) of débris. Up to 1878 the Excelsior Co. alone had washed into the Yuba 8,000,000 cubic yards (14,000,000 tons). (Wm. A. Lawson, Sacramento Bee, Sept. 28, 1915.)

75. The official reports of William Ham. Hall, State engineer of California, declare that the hydraulic mines operating upon the streams draining into the Sacramento Basin were using in 1879 an annual supply of 15,000,000 miner's 24-hour inches of water (60,000,000,000 gallons), and that they were annually washing into the streams and canyons 53,000,000 cubic yards of material. The Yuba River alone, he estimated, received annually 22,362,500 cubic yards, a quantity which would have filled the entire length of the Erie Canal, as it then existed, to two-thirds of its extreme capacity.

76. In addition to the enormous quantities of this material which had been brought down by floods in the 60 years preceding 1912 and deposited in the basins and on agricultural lands and in the lower bay, or carried out to sea, it was estimated in the year named that there was then in the navigable channel of the Sacramento between the mouth of the Feather River and the mouth of the Sacramento (a distance of 84 miles) from 80,000,000 to 120,000,000 cubic yards of the material (biennial report State engineering department, California, 1912, p. 103); that there was in the lower channels of the Feather

and the American, in addition, not less than 300,000,000 cubic yards, which must in time find its way into the Sacramento (H. Doc. 81; Exhibit D, p. 5); that in the Yuba Débris Basin at the mouth of the Yuba was a deposit, covering 25 square miles, from 8 to 26 feet deep, and estimated to contain from 360,000,000 to 600,000,000 cubic yards (State engineering report, 1912, p. 111), and that this deposit, while losing each year an amount washed by the floods into the Feather, still received an annual net increase of 3,000,000 cubic yards.

77. In the report, February, 1891, of a board of engineers, United States Army (Lieut. Col. Benyaurd, Maj. Heuer, and Maj. Hanbury), appointed in accordance with act of Congress October 1, 1888, to investigate the mining débris question (H. Ex. Doc. 267, 51st Cong., 2d sess., p. 12) are given estimates of the amount of débris at that time in the upper streams, aside from that which had already gone down into the navigable channels. This estimate included 66,000,000 cubic yards for the canyons of the Bear and its tributaries, and 36,000,000 in the stream bed above its junction with the Feather; and in the canyons of the American (two forks) 49,000,000 cubic yards. The report states that "the amount now remaining in the canyons and beds of the streams is but a small portion of that taken from the mines," and estimates the amount mined out of the basin of the Yuba alone at 444,640,000 cubic yards.

78. The State engineer of California reported to the California Legislature in 1880 (Pt. III)—

"That at the rate of March 6, 1879, under a discharge of 25,750 cubic feet per second, 207,645 cubic yards of sediment was discharged every 24 hours by the Yuba River at Marysville."

79. In the report of the California commissioner of public works, 1904 (known as the "Dabney Commission" report), page 19, appears this:

"At a point about 4 miles east of Marysville the sand deposits have been built up in the bed of the Yuba to a height of 13 feet above the farming land on the opposite of the levee."

DAMAGE TO LANDS.

80. Most of the hydraulic mining was done on the Yuba, the principal tributary of the Feather, the débris from this source amounting to more than that from all other tributaries of the Sacramento combined. The American River furnished the next largest quantity. On the Sacramento itself and its tributaries above the mouth of the Feather there was no hydraulicking and that portion of the river continued clear, save for such injury as it received from floods of the Feather coming across the Sutter Basin. The amount of débris deposited in the navigable channels of the Feather and Sacramento became, in time, so great as to raise the bed of the stream in places from 5 to 16 feet. (State Eng. Rept., 1912.) With decreased capacity the stream was no longer able to carry ordinary floods and inundation of river lands followed. Levees were broken by force of the water, deep depressions cut in the river banks by the current, the floods diverted through such cuts or crevasses, and immense quantities of sand and gravel deposited on orchard and agricultural land, destroying its value for cultivation. Gentle floods, which do not cut the land and carry only the silt from the top inches of surface soil, act as fertilizer, as they do on the Nile; but the sand and gravel from lower strata of the mountains, washed down by hydraulicking, covered the rich lands with a worthless layer which could be transformed into soil only after many years' action of the elements.

81. Below each crevasse in the river levee and bank caused by the floods, there was created slack water in the river channel and a deposit of débris in the shape of shoal or sand bar, which served to impair or possibly entirely block navigation until it was removed. These conditions, both as to injury to navigation and destruction of private lands, steadily grew worse, not only while hydraulic mining continued, but after it had ceased, because of the immense deposits in the Yuba, Feather, and American Rivers, some portions of which were washed into the Sacramento by each freshet.

82. From the syllabus of the court's decision in Woodruff *v.* North Bloomfield Mining Co., tried in the United States Circuit Court Northern District of California (18 Fed. Rep., 753), the following quotation is made. It concerns conditions in 1884. (See also Exhibit A.)

"The débris thus discharged has produced the following effects: It has filled up the natural channel of the Yuba above the level of its banks and of the surrounding country and also of the Feather, below the mouth of the Yuba, to the depth of 15 feet or more. It has buried with sand and gravel and destroyed all the farms of the riparian owners on either side of the Yuba, over a space of 2 miles wide and 12 miles long. It is only restrained from working a similar destruction to a much larger extent of farming country on both sides of the river, and from in like manner destroying or injuring the city of Marysville, by means of a system of levees, erected at great public expense by the property owners of the county and inhabitants of the city, which levees continually and yearly require to be enlarged and strengthened to keep pace with the increase in the mass of débris thus sent down, at a great annual cost, defrayed by means of special taxation."

83. In the decision itself (which is full of interesting detail as to damage done by débris) it is stated that the citizens of Marysville paid as high as 7 per cent annual tax because of the necessity for levee protection created by this débris. As a matter of fact, the taxes per $100 of assessed valuation collected by Marysville for the five years commencing 1906 were $4.50, $7.05, $4.85, $6.12, and $5.65, respectively. Of the 1907 tax ($7.05) $3.25 was for levee work. The city of Marysville, with 5,000 population, has paid out approximately $1,000,000 for levee construction.

84. The nature of damage indicated as inflicted on the lands adjoining the Yuba was later inflicted on the lands along the Feather, the American, and the Sacramento, as the débris deposits were forced down into those streams and produced similar results.

85. On the American River at Folsom, 22 miles from Sacramento, there was built in 1890, at an expense of about $1,000,000, a dam with diverting canal and power plant which transmitted electric energy to Sacramento City. This was the first long-distance transmission for lighting purposes in the world, while priority for power purposes was due to one other plant only, in Italy. Within a comparatively few years after this dam was built the reservoir became worthless for storage because it was filled up by mining débris, and the entire plant became practically useless save during flood stages of the river.

86. In 1880 William Ham. Hall, State engineer, reported that upon the Yuba, Feather, and Bear Rivers and Auburn Ravine and Dry Creek 43,000 acres of valuable land had been covered by débris, with a loss to the owners estimated at $2,597,000. This did not include actual damage to lands along the Sacramento and American, nor the expense occasioned other lands in leveeing for protection.

87. Subsequently a more detailed estimate of this damage was prepared by Dr. M. M. Chipman, of San Francisco, chairman of the committee on medical topography of the Medical Association of California. He showed that over 40,000 acres of rich fruit and garden land had been entirely ruined and that 270,000 acres had been greatly damaged. He estimated the total visible loss and depreciation of value from hydraulic mining at that time at $15,922,000, distributed among five counties, as follows: Yuba, $6,527,000; Butte, $170,000; Sutter, $6,799,000; Sacramento, $2,340,000; Placer, $86,000.

88. Since that time the loss has multiplied in the direct injury to other lands through deposit thereon of débris and in the constantly increasing expense of levee construction to keep out the steadily rising flood plane.

89. Up to and including the year 1907 the two counties of Sutter and Yuba (including the city of Marysville) had paid out for levee construction, necessitated in large part by the results of hydraulic mining, $5,747,329.59. (Statement county supervisors to Board of Engineers for Rivers and Harbors, United States Army, at Marysville, Aug. 15, 1914.)

90. Up to July 1, 1909, reports from 41 reclamation districts out of 48 in the Sacramento Valley showed that such districts had expended for protection against floods $15,039,525. (Doc. 81, Exhibit D, p. 7.) This did not include Sacramento city. Since that date several more millions have been spent.

91. Sacramento city has expended on her levee system in the neighborhood of $5,000,000, and is now about to construct, under plans already approved by the Chief of Engineers, United States Army, a half million dollar weir in the Sacramento by-pass. The city is providing funds for the construction in advance of Federal appropriation, because of the grave danger threatening the city until that weir and its by-pass furnish easement for American River floods.

92. When the great floods come the amount of damage done in the absence of flood control is very great. From the report of the California Débris Commission of 1910 (Doc. 81, Exhibit D, p. 7), it is learned that the damage done by the floods of 1904, 1907, and 1909 amounted to $11,000,000. It is estimated that the Southern Pacific Co. was injured to the extent of nearly $1,000,000 by washouts and interruption to traffic. Sacramento and San Francisco in 1907 were practically cut off for nearly 10 days, with corresponding interruption in mail service and general business.

INJURY TO NAVIGATION.

93. The deposits of mining débris, moving down the channels of the navigable rivers with each flood, acted in manner similar to that noted on the Yuba, gradually choking the channel, forming sand bars, and decreasing the available depth until in time it became impossible for even the lightest-draft craft to navigate the Feather during the greater part of the year, while on the lower Sacramento the large seagoing craft were in time replaced by flat-bottom stern-wheelers of light draft, and even these could not load to capacity in the summer and fall months, and often had to lighter cargo below Sacramento.

94. In 1875 the low-water depth in the Feather had been reduced to 2 feet, and one small steamer made a weekly trip between Marysville and San Francisco. In 1890 boats ceased running on the Feather, the débris conditions having become so bad that one steamer and one barge with full cargoes were sunk and insurance companies declined to write risks on the river traffic. Navigation of the river has not been practicable since then, save at flood stage. (Statement of Marysville Levee Commission to Board of Engineers for Rivers and Harbors, Aug. 15, 1914, p. 27.)

95. In the latter part of 1859 and spring of 1860 a bar formed in the Sacramento River across the mouth of the American (which then entered the Sacramento a half mile below the present location) and extended down to the Sacramento city drawbridge, forming an obstacle to upriver navigation. In 1866 the large river steamers could no longer reach their landing at Sacramento city, and the city levied a tax to clear out the channel. (History of Sacramento County, by Winfield J. Davis, pp. 60 to 66.) Dredging of this kind, however, could not stay the flood of débris, and gradually the deeper-draft steamers, such as the *Senator, New World, Capitol, Chrysopolis, Yosemite,* and others, were withdrawn from the river and used exclusively on the Bay of San Francisco and its salt-water estuaries.

96. These deposits of débris in the stream were always greatest after heavy flood, and particularly below crevasses in the levees which had permitted a diversion of the current and a deposit in the channel below each break where slack water was produced.

97. Opposite Sacramento city in many seasons at low-water stage there was a bar on which one might walk dry-shod across the greater portion of the river. In 1910 the channel itself in front of the bridge draw was thus closed, and the United States Army engineers used a clam-shell dredge to clear a channel so that up-river traffic might be resumed. They deposited the material, through necessity, at one side in the middle of the river, where it formed an immense mound, which gradually disappeared during succeeding flood seasons. In 1913, the engineers dredged through a similar shoal in front of Sacramento city, moving 27,000 cubic yards of material, and through another deposit at the mouth of the Feather, moving 25,000 cubic yards. (Report of Chief of Engineers, 1914, p. 3169.)

98. The low-water gauge readings at Sacramento city offer a striking illustration of the steady filling up of the river from mining débris and resultant injury to navigation, because the reading on the gauge rose as the débris raised the bottom of the channel. According to the 1914 report of the California Débris Commission (Report of Chief of Engineers, 1914, p. 3315) the water reached zero on this gauge in 1849 and again in 1856. The peak of the débris effect appears to have been reached in 1896, at a reading of 8.5, though in 1890 a reading of 9.3 occurred. The average readings of this gauge at low water, in periods of five years each, show a steady increase in height from zero in 1849 to 8 in the period of 1896, and then a steady decrease down to 2.6 in 1913, then an increase to 4.2 feet in 1914 and 4 feet in 1915. It should be explained that since 1909 there has been no great flood, the levees below Sacramento city have held intact, and there has been in consequence a gradual scouring of the channel. The gauge readings from 1849 to 1915 follow:

Average low water at Sacramento for 5-year periods, 1849 to 1913.

Average gauge reading:	Feet.
1849–1853, five observed years	0.6
1854–1858, five observed years	1.2
1859–1863, three observed years	2.2
1862–1873, no records.	
1874–1878, five observed years	5.5
1879–1883, five observed years	6.5
1884–1888, five observed years	7.3

Average gauge reading—Continued.	Feet.
1889–1893, four observed years	7.8
1894–1898, five observed years	8.0
1899–1903, five observed years	7.2
1904–1908, five observed years	6.8
1909–1913, five observed years	4.7
1913, one observed year	2.5
1914, one observed year	4.2
1915	4.0

99. In 1869 the Central Pacific Railroad commenced operating in connection with other railroads a through overland service to New York. Its western terminus at the time and for several years was Sacramento city, from which point passengers were transferred to San Francisco by the company's boats. In April, 1869, the Central Pacific bought out the California Steam Navigation Co. and its river boats, and thereafter for many years competition on the river practically ceased. Whenever an opposition boat made its appearance the railroad company reduced the fare to 25 cents and the freight rate accordingly, and the opposition soon died. In time the commerce of the river became sufficiently great to justify competition even against a railroad company, and in time, too, the State passed laws which did not permit the throttling of competitive public-service corporations through temporary cutting of rates.

100. During this period of stagnation in navigation the condition in regard to navigability of the stream grew steadily worse, and the floods of 1904, 1907, and 1909, which brought down great quantities of débris from the Yuba, Feather, and American, added to a situation already very bad. Boats drawing 6 feet of water with light load could not reach Sacramento city and had to lighter cargo for 30 miles. Sacramento city is only 61 miles from the mouth of the river. Note the statement of Capt. A. E. Anderson, president of the California Transportation Co., before the Rivers and Harbors Committee, February 7, 1912, as appears in the published document at page 46, as follows:

"Capt. ANDERSON. I was compelled to maintain a steam-barge service in the year 1911 from the 1st of September to about the 5th or 6th of January, 1912, to lighter cargo of these steamers in and out of Sacramento, not having over a 5 foot 6 inch channel; that did not permit me to go into Sacramento with over 120 tons of cargo.

"Mr. KENNEDY. That is just a short distance, though.

"Capt. ANDERSON. That was a distance of 30 miles, the lightering. The bad reaches of this Sacramento River, from Sacramento down the first 30 miles, have been largely due to the floods of 1904 and 1907, which washed so much of the material into the river from the American and the streams above; and it was stated by one other member of the committee that right at this point, where a railroad bridge crosses the river, the department was compelled to hire dredges two years ago and take material from the river and deposit it in another part of the river and to make a small gutter to permit the boats to go upstream. Until they did that there was absolutely no connection between Sacramento and the river above."

101. The commission of three United States Army engineers appointed under request of Congress to find means for adjusting the conflict between miners and farmers—Lieut. Col. Benyaurd, Maj. Heuer, and Maj. Hanbury—reported in 1891, in speaking of the results of mining débris on the river channel between Sacramento city and Suisun Bay (Report of Chief of Engineers, p. 3014):

"It is therefore evident that in 40 years the effective depth of water in the river has been reduced from 12 feet to depths of 5½ feet and, during one year at one locality, to 3 feet 10 inches."

(Lest there should seem a discrepancy between the effective depth of 12 feet referred to in this report and the fact that the steamer *Senator*, drawing 13 feet, regularly plied to Sacramento in the early days at all seasons of the year, it is explained that in the early days and for many years the trip to Sacramento was made via Steamboat Slough, a branch of the river on the west side of Grand Island, providing a shorter and deeper channel than Old River, on the east side of the island; that, subsequently, and before the report of 1891, navigation was diverted to Old River; and that the original depth of 12 feet used in comparison with existing conditions in 1891 was the minimum depth in early days in Old River and not in Steamboat Slough.)

INJURY TO THE BAY.

102. The masses of débris put in motion by the freshets not only deposited material all along the Sacramento River channel, raising the bed and making shoals and bars therein and creating islands of size at the river's mouth, but necessarily added enormously to the deposits in San Francisco Bay.

103. The Government surveys indicate that the filling from this cause in certain parts of the bay has been most serious, and that it must continue while the Sacramento floods carry down that portion of the débris which can not be held back in the canyons and tributaries. The situation assumes additional gravity, because the deposits have been large in the channel, which serves as an approach to the Mare Island Navy Yard, making more difficult and expensive the maintenance of depth sufficient to safely accommodate large warships.

104. San Francisco Bay in its northern portion is called San Pablo Bay, and this is connected by the Carquinez Strait with the upper bay—Suisun Bay—into which the Sacramento and San Joaquin Rivers empty. The Mare Island Navy Yard is located on a channel connecting with the strait. Suisun Bay naturally serves as settling basin for much of the débris brought down by the Sacramento, but San Francisco and San Pablo Bays are also being shoaled by it.

105. What the débris has done in shoaling the approaches to the Mare Island Navy Yard is plainly indicated in the reports made to the Chief of Engineers, United States Army, in connection therewith. In House Document 1103, Sixtieth Congress, second session, is presented the report (1908) of a board of engineers commissioned to investigate the approaches to the navy yard with a view of providing floatage for deepest draft warships. The report states that, notwithstanding dredging, there has been in 56 years a shoaling of about 9 feet between Mare Island and Vallejo and about 16 feet on the bar. Comparisons of surveys at various dates showed at the entrance to the strait in 1851 no sign of a bar with a controlling depth of 34.5 feet; in 1856 there was a bar with controlling depth of 28.5 feet; in 1864 it was 25.5 feet, while the inner channel in the same time had shoaled from 27 feet (the least depth, which obtained in only a small area) to 21 feet. There were no soundings of record between 1876 and 1896. In 1898 the minimum depth on the bar was 21 feet and in the channel 15 feet. In 1900 a depth of 28 feet was obtained in a channel by dredging and thereafter until 1905 there was steady filling over channel and bar.

106. The report doubts the absolute accuracy of the earlier charts, but says there can be no doubt that rapid shoaling has taken place since the establishment of the navy yard. "It has been thought," says the report, "that the débris brought down from hydraulic mining has been one of the main causes; there is, however, no evidence to that effect. Moreover, the material brought down from hydraulic mines will in future be an almost negligible quantity, as hydraulic mining is controlled under the present laws."

107. In making the latter statement the engineers apparently lost sight of the amount of débris in the upper streams. The floods of 1907 and 1909 clearly demonstrated that each great flood must be expected to bring down a mass of débris, while every freshet will carry some.

108. The character of the material causing the shoaling in the Navy Yard Channel, too, was clearly established by surveys made 12 years before by Maj. Charles E. L. B. Davis, Engineer Corps, United States Army, and reported by him November 19, 1896, in House Document 134, Fifty-fourth Congress, second session. He says "the character of the bottom revealed by the lead and determined by the borings seems to indicate that most of the deposited material is 'slickens' brought down by the Sacramento River from the mines on its upper tributaries."

109. Lieut. Col. Mendell, United States Army, in an earlier report, February 1, 1881 (Report of Chief of Engineers, 1881, p. 2518, on causes producing decrease of depth in San Francisco Bay), said that at that time the influence of mining débris in producing this effect had not been measured, and he added:

"It may be remarked that mining detritus is easily recognized, being quite different from the natural alluvial deposits, so that there will be no particular difficulty in tracing this influence wherever it may be found."

It is extremely unlikely, therefore, that Maj. Davis was mistaken in reporting the deposit as "slickens" (the clay silt from mining débris). It is probable, too, that the commission of engineers who made the 1908 report was not aware of the Davis survey.

110. The Navy Department, in the fall of 1915, completed dredging the Navy Yard Channel to a depth of 30 feet at low water. The department engineers estimated that this depth can be maintained under existing conditions at a yearly expense of $40,000 to $80,000. There is a tide at Mare Island of 6 feet.

The War Department, under an existing project authorized by Congress, maintains a channel 600 feet wide and 30 feet deep at low water through Pinole Shoals, such channel serving as approach to the Navy Yard Channel. The department recently finished the construction of a large suction dredge, which will be operated continuously in these channels and on the bay.

PRESENT CONDITION OF NAVIGATION.

111. In the San Joaquin, due largely to the comparative absence of mining débris in the stream and its tributaries, and to tidal influence, conditions are fairly good and with proper work will steadily improve. The existing project contemplates a 9-foot channel to Stockton (45 miles from the river's mouth), which is practically the head of navigation, though the river is really navigable for 15 miles above Stockton. The San Joaquin could be easily cared for in the absence of complications which are caused by its common delta with the Sacramento and the danger from floods in that stream. (See statement of G. A. Atherton, of State reclamation board, in hearing of Rivers and Harbors Committee, July 23, 1915, and Report Chief of Engineers, 1914, p. 1342.)

112. In the Feather River there has been no navigation for many years, except at flood stage.

113. In the Sacramento above Sacramento city conditions grew steadily worse for a great many years, though now perhaps they may be said to be at a standstill.

114. Red Bluff, 200 miles above Sacramento, many years ago had regular service by light-draft boats at all seasons. In time that service could be given only during high stages of the river. No boat has reached that town from Sacramento at any season of the year since 1911, when the last boat that attempted it took 30 days for the trip, and had to stop 13 miles south of Red Bluff and transfer its cargo by team to the nearest railroad. The condition on this stretch of the river, however, was not caused by hydraulic mining.

115. In the last three years no transportation company has been able to operate higher than Chico Landing, 147 miles from Sacramento, while even to this point and beyond Colusa (90 miles above Sacramento) there is apparently little incentive for navigation, as there is no regular service.

116. Up to Colusa the river is in fair shape for light-draft craft, and the completion of the flood-control project will insure maintenance of those conditions and a gradual improvement toward the better conditions that obtained many years ago. There are two companies operating to Colusa throughout the year, each of which runs two boats, making one round trip a week between Sacramento (or San Francisco) and Colusa and hauling barges when necessary. (See Rivers and Harbors Committee hearing, July 23, 1915, pp. 20, 21, Exhibit H.)

117. Below Sacramento city and to the mouth of the river there has been generally during the last few years a gradual improvement, though the depth of channel at low stage is, of course, very much less than that which obtained up to, say, 1860. This improvement is indicated in the low-water readings of the gauge at Sacramento showing how the débris deposits, at that point at least, are gradually scouring out. This is due to the fact that there has been no big flood since 1909, while the river levees below Sacramento city have held intact since then. In consequence, the current has been forced to scour the bed, while there has been no unusual accretion of débris from above. With a lower stage of water in the late fall there has been a greater depth of channel than for a number of years, a striking indication of the steady improvement that may be anticipated when the completion of the flood-control project will have secured permanent operation of similar forces. There is now at Sacramento once again a marked tide (about 12 inches at low water).

118. The first big flood, however, under existing conditions, will undoubtedly destroy in large part, if not entirely, the improvement made in this portion of the channel during the past few years. (Rpts. Chief Engineers, 1915, p. 1458; 1914, p. 1338.)

119. In the hearing before the Rivers and Harbors Committee July 23, 1915, at page 7, Capt. Anderson, president of the California Transportation Co., said:

"Three years ago during low water, from July to September, my company maintained a steam barge to lighter our boats in and out; but each year during the last three years the channel has been scouring a little better each year, and with the lower gauge we notice a little better channel. I contend that we would not have had this channel if we had had any floods in the past few years."

Again, at page 15, he said:

"At the present time the greatest draft steamer on the river is 6 feet loaded to capacity. During low water that steamer can not load to capacity. These boats are the *Fort Sutter* and the *Capital City*."

120. Up to 1914, for 50 years prior thereto, no ocean-going craft had brought a sea cargo to Sacramento city. Such traffic was stopped by the mining débris deposits in the river. In 1914, however, following the scouring of channel referred to above, the *Grace Dollar*, drawing 13 feet, brought three cargoes of lumber (between 600,000 and 1,000,000 feet in each cargo) from Puget Sound to the Sacramento wharf during flood season. Last year the *Robert Dollar*, drawing 15 feet, made a similar trip with like cargo. The river will have to be very greatly improved, however, before a 13-foot-draft boat can come up to Sacramento at all seasons of the year, as did the steamer *Senator* in the fifties.

PROTESTS AND LITIGATION.

121. Hydraulicking had been prosecuted for a number of years before even the interests most directly affected awoke to a realization of the damage it was causing and the destruction that must ensue if it continued. And when that realization came the industry had grown to such proportions, the amount invested therein was so great, and the influence wielded by those concerned so widespread, that individual effort was powerless to accomplish results looking toward restriction of the evil. A crusade was inaugurated by the antidébris association of the Sacramento Valley, composed originally in large part of residents of Yuba and Sutter Counties. It was later succeeded by the State antidébris association under the same leadership and with the same aims and purposes, but with increased membership and wider scope. Funds for the work of this organization were regularly supplied by private subscription and by boards of supervisors from the county funds of the five counties most immediately affected, Yuba, Sutter, Colusa, Yolo, and Sacramento. For many years George Ohleyer, of Yuba City, was president and manager of the organization, and Robert T. Devlin, of Sacramento, its attorney. It disbanded August 18, 1915.

122. It is estimated that these two organizations spent not less than $250,000 in prosecuting the fight against hydraulic mining, though that amount represents only a small portion of the cost of the crusade. For instance, in a statement prepared for submission to the Board of Engineers for Rivers and Harbors, at Marysville, August 15, 1914, the boards of supervisors of the two counties of Yuba and Sutter declare that the legal expenses of those two counties in connection with suits against hydraulic mining up to and including 1907 aggregated $294,987.63.

123. For many years protests were made to Congress in various forms against the continued and steadily increasing injury inflicted on the river and the valley lands by the operation of the hydraulic mines. While Congress repeatedly investigated and in other ways acquired information on the subject, it did nothing in the way of remedial legislation until 1893.

124. Meanwhile the navigation and valley interests had resorted to the courts for protection. The first suit was brought before the superior court of Sutter County, Judge Phil. W. Keyser, in 1878—James H. Keyes *v.* The Little York and other mining companies. The court decided for the plaintiff, invoking the principle, "So use your own as not to injure the property of others." The decision was afterwards set aside by the State supreme court on the technical ground that there was a misjoinder of defendants, a point on which in other cases the court subsequently reversed itself.

125. A number of other suits were brought by the antidébris association. A notable one was that of the Gold Run Mining Co., in which the attorney general permitted the name of the State to be used. This was tried before Judge Jackson Temple, sitting temporarily in the superior court of Sacramento County. Judgment was given for plaintiff, and afterwards affirmed by unanimous opinion of the State supreme court, November 25, 1884 (66 Cal. Repts., 138). This decision was the beginning of the end.

126. The final coup to the legal standing of hydraulic mining as conducted in California was delivered by Judge Lorenzo Sawyer, in the United States Circuit Court, Northern District of California, in his decision, October 5, 1892, in the case of Woodruff *v.* North Bloomfield Gravel Mining Co. (18 Fed. Repts., 753–815). This decision, filled with facts and law, was so broad and so unanswerable that it was never appealed. (See extract, Exhibit A.)

127. Another decision will be found in the case of United States *v.* North Bloomfield Mining Co. (53 Fed. Rept., 625), in which, while the court denied an injunction because the mine was impounding its débris, he clearly defined the law.

128. In all these decisions it is made very clear that hydraulic mining, as generally conducted in California, is a public and a private nuisance; that it does an enormous amount of damage to navigation and to private property; that the United States in permitting mining on these streams or in selling lands for mining purposes could not legally authorize the prosecution of any business which would cause the injuries recited; that Congress has no power, even by statute, to authorize a public nuisance destroying or materially obstructing the navigability and navigation of navigable streams within a State for purposes wholly unconnected with commerce or post roads; that a statute of the State authorizing such a nuisance would be in violation of the fourteenth amendment of the Federal Constitution; and that those who suffer from the results of such mining are entitled to injunction.

INVESTIGATIONS BY CONGRESS.

129. From the time that the Sacramento Valley interests realized the results following hydraulic mining, and continuously thereafter, up to the time that it took definite action thereon, in 1893, Congress was kept fully advised of the situation and petitioned to exert its authority to stop the injury. The antidébris association was the most active factor in this direction, sending delegations at times to Washington, headed by its manager, George Ohleyer, and accompanied once by its attorney, R. T. Devlin. There have not been found, for purposes of this report, transcript or reference to any hearings had in the matter, but the official records of Congress and the War Department bear the unmistakable marks of the association's efforts in the frequent investigations ordered and the reports made. There can be no question that Congress had full knowledge of the damage being done to navigation, as well as to the agricultural lands of the valley.

130. It is evident that the attention of Congress was called to the matter in 1870, if not before, for in that year there appeared in the rivers and harbors bill provision "For survey or examination of the bar of the Sacramento River, Cal., known as the 'Hogs Back,' for the purpose of removing the same." The Hogs Back was one of the first obstacles to navigation created in the lower portion of the Sacramento River by hydraulic mining, and one of the evidences of such inquiry which first brought it to the attention of the public. The Hogs Back was a series of shoals extending across the channel of the river, about 3½ miles long, located about 35 miles below Sacramento City. Results of the survey called for by Congress in this matter appear in the report of January 28, 1871 (Report Chief of Engineers, 1871, p. 915), of Maj. R. S. Williamson, United States Army, and the detailed report of his assistant, Lieut. W. H. Heuer, United States Army This report referred to shoals between Sacramento City and Suisun Bay, at Eagles Nest, Heacock Shoals, and shoals near Sutterville (5 miles below Sacramento City), as well as the Hogs Back, and recommended an appropriation of $7,500 for dredging. The engineers reported that there was on these shoals, at lowest stage, only 7 feet of water. The report says, among other things:

"Some of the rivermen attribute the formation of these shoals to the placer mining which was carried on in the streams emptying into the Sacramento. Immense quantities of débris would be carried downstream and deposited here and there along the bottom of the river."

These shoals are repeatedly thereafter referred to in the annual reports of the Chief of Engineers. In 1878 the condition of the Hogs Back and Heacock Shoals is reported as being about the same as in 1871.

131. In 1875 (Report of Chief of Engineers, 1875, p. 705), Maj. George H. Mendell, United States Army, in charge of rivers and harbors in California, calling attention to the results caused by mining débris in the Feather River, said that the water of the river in 1849 had been clear, and that the river consisted of a succession of pools separated by shallow bars, and added:

"An idea of the extent to which this filling has taken place can be appreciated when I state that the bottom of the river to-day is on a level with the tule lands inclosed by the levees. These same pools in 1849 contained fully 30 feet of water, where now there is a scant 2 feet, and the bars have also been covered with sand, so as no longer to be seen."

It was undoubtedly, in view of the situation thus outlined, that the engineer in charge was instructed to use part of the appropriation for work in the Feather River.

132. Again, in 1876, Maj. Mendell, in his report (Report Chief of Engineers, p. 620) called attention to the increasing damage being done by hydraulic mining in the Feather, declaring that the brush dams then being used only induced sour in sections of the channel to deposit material farther down, and recommended that $20,000 be appropriated for a thorough investigation of the matter and discovery of some remedy. He said "mining operations not only continue to exist but their magnitude grows under the application of new and tremendous appliances."

133. July 5, 1878, Maj. Mendell, in his annual report (at pp. 1294 and following, Report of Secretary of War, 1878, Appendix H H) gives interesting and convincing evidence as to the great injury being done by débris. He suggests therein, that to determine the exact results of these deposits in raising the beds of the river, obstructing the channels, building up any shoals in the Bay of San Francisco, influencing height of floods in the lower rivers and affecting the navigability of the rivers, and "to counteract or remedy these evils when determined, is a problem of great perplexity and one in which the great interests of California are deeply concerned." He calls attention to the fact that the State of California, through its State engineer, is investigating the subject, and suggests that cooperation with the State will be a judicious policy.

134. In 1879, the annual report of Lieut. Col. Mendell, and the report of his assistant, L. J. Le Conte, furnish interesting information as to the knowledge at that time concerning the injury already done and that in prospect from débris deposits. In that report Col. Mendell says (Report of Chief of Engineers, 1879, p. 1751):

"When we undertake by engineering constructions to restore as nearly as may be the conditions that existed 30 years ago, reestablishing the low-water slope of that epoch, so as to permit the tide to ebb and flow as far as Sacramento and in this way restore a good channel, the immense quantity of movable material that encumbers the channels becomes a serious embarrassment to any system of improvement."

135. In 1880, undoubtedly inspired by the efforts of the antidébris association, Congress, in the rivers and harbors bill, inserted this provision:

"The Secretary of War is hereby directed to cause to be made such examination and surveys as may be necessary to devise a system of works to prevent the further injury to the navigable waters of California from the débris from the mines and the estimates on the cost of such works and report the result of such examinations, surveys, and estimates of cost of proposed works made in pursuance hereof to Congress at its next session."

In accordance with the above requirement of Congress, a preliminary report was made thereon January 31, 1881, but as it could not cover the full field of inquiry, final report was made by Lieut. Col. Mendell, the officer of engineers in charge, and transmitted to Congress March 6, 1882. (H. Ex. Doc. 98, 47th Cong., 1st sess.; Report of Chief of Engineers, 1882, pp. 2546 to 2640.)

136. This report, with its accompanying reports from Lieut. A. H. Payson, United States Army, assistant to Col. Mendell, and other engineers who acted with him in the matter, is most exhaustive and furnishes information as to every phase of the hydraulic-mining question. It was very liberally quoted by Judge Sawyer, of the United States Circuit Court, Northern District of California, in his decision referred to in section 126 of this report. In suggesting remedial measures, he says, as to the necessity of restricting hydraulic mining itself: "Under all circumstances restraint is the first essential step of any project, whether of alleviation, conservation, or improvement. (P. 2578.)

137. In 1886 the rivers and harbors bill, in making appropriation for the Sacramento and Feather Rivers, specifically provided that the balance of unexpended moneys was "not to be used until the Secretary of War be satisfied that hydraulic mining hurtful to navigation has ceased on said rivers and their tributaries. If he be not so satisfied, he is hereby instructed to institute such legal proceedings as may be necessary to prevent the washing, sluicing, dumping, or discharging detritus, débris, or slickens caused by or arising from such hydraulic mining into either of said rivers, or any of its tributaries, or into the San Joaquin River or any of its tributaries."

138. It was in pursuance of the intent of this direction to the Secretary of War that Capt. A. H. Payson, United States Army (see Report Chief of Engineers, 1887, p. 2444), reported first on October 26, 1886, that under instructions he had made certain examinations of the

mining field and was convinced that hydraulic mining was being carried on contrary to law, but in a small way, and that he had advised the United States district attorney, by letter, of the facts. Capt. Payson reported as his opinion that legal proceedings could not prevent the evils, but that the appearance of the United States as an applicant for injunction would have a good moral effect and be in accord with the will of Congress as expressed above. These views were approved by the department

139. Subsequently, under date of February 28, 1887, Capt. Payson reported that there was practically a deadlock between the office of the district attorney and himself, since the former insisted on being supplied with information on which could be based at the same time action against all hydraulic mines operating, while Capt. Payson's instructions did not cover such elaborate investigations and his appropriations did not provide therefor. The records, so far as secured for this report, do not indicate what, if anything, further was done in this matter.

140. In 1888, October 1, Congress passed an act (ch. 1057) "For the investigation of the mining-débris question in the State of California," authorizing the Secretary of War to detail three officers from the Engineering Corps to ascertain "whether some plan can be devised whereby the present conflict between the mining and farming sections may be adjusted and the mining industry rehabilitated, and for a complete examination of the injured navigable river channels, their tributaries, and lands adjacent thereto, with a view to the improvement and rectification of said rivers, * * * said commission to report as early as practicable."

141. It was in compliance with the instructions thus given that a commission consisting of Lieut. Col. W. H. H. Benyaurd, Maj. W. H. Heuer, and Maj. Thomas H. Handbury was appointed and made exhaustive investigations (in the course of which frequent meetings were held with both parties to the controversy) and submitted a report of 123 pages (Report of Chief of Engineers, 1891, p. 2996). This report, too, contains very much valuable information on the matter. In its conclusions the report stated that hydraulic mining was then practically suppressed and must cease; that in isolated cases it was possible for mines operating to impound their débris without injury; that dams could retain some of the débris and permit other mines to work for a period of time; that the navigation of the river and the lands in Sacramento Valley had been seriously injured by hydraulic mining; that there were heavy deposits in the streams and also in the canyons. The report recommended as remedial measures that the deposits in the canyons of the Yuba and Bear Rivers be held back by restraining barriers and in the streams on the plains by dams and other works and that the flow of material through the navigable channels to tidal waters be accelerated by contracting the width of the river by wing dams.

142. In 1893, following 20 years of protest and investigation and reports of the kind indicated, Congress passed the Caminetti Act.

143. In 1905, included within the rivers and harbors bill, was a provision directing the Secretary of War to appoint a board consisting of three engineers of the United States Army, one having had experience on the Sacramento River and two on the Mississippi, to make a general examination of the Sacramento, San Joaquin, and Feather Rivers and their tributaries and consult with commissioners or engineers appointed by the State of California, to determine a method of controlling the overflow of said rivers and their tributaries, with a view of considering what, if anything, the United States can or should do in conjunction with said State to improve the navigation of said rivers and their tributaries, and the probable cost to the United States of such improvement.

144. It was in accordance with instructions contained in this act that a commission consisting of Col. W. H. Heuer, Col. Thomas H. Handbury, and Capt. William H. Harts made a report September 25, 1905 (H. Doc. 262, 59th Cong., 1st sess.), in which it was suggested that such assistance as Congress might determine to afford in this matter should not be based on the needs of navigation; that any work in the interests of navigation should be done independently of reclamation or flood control, as in that way could economy of funds be best secured. (It will be noticed that subsequent investigations following the floods of 1907 and 1909 induced a precisely opposite recommendation from the engineers commissioned to report thereon, as indicated in the report of the California Débris Commission, 1910, Exhibit D.)

HYDRAULIC MINING STOPPED BY CONGRESS.

145. It might be supposed that with the enormous damage done by hydraulic mining thus clearly established and its illegal character determined by the courts, further prosecution of the business would cease. As a matter of fact, the court decisions obtained against a few of the mines operating had for years practically no effect on the numberless other mines, and sometimes none on those enjoined. The industry had grown to enormous proportions, one report of the California Débris Commission estimating the amount invested therein at $100,000,000; entire communities had been created by it and depended on it for existence; it enlisted generally the sympathy and support of the mountain sections and because of its great expenditures for material and supplies it had wide influence with the merchant class in Sacramento and San Francisco; and there was a sentimental force working for it in the generally accepted public belief that the gold which it produced was more or less necessary to the prosperity of the country.

146. Under these conditions the industry proved sufficiently powerful with the biennial legislature to block all attempts to curb it by State legislation. It became necessary for the valley interests, represented by the Anti-Débris Association, to maintain a corps of detectives to secure information as to the operation of mines whose débris was washed into the streams; to present this evidence to the court and secure injunction; and afterwards to obtain additional evidence showing that the injunction had been violated, when the court would fine the offending mine for contempt of court. It became quite difficult, however, to secure effective results in this way, for the miners adopted protective measures by maintaining a force of lookouts who gave advance notice of the approach of antidébris detectives, when the mine under surveillance would shut down for a few hours. The antidébris agent, if permitted to approach the mine, could see plainly that operations had only just ceased, but he had no evidence that material had been actually washed down; and to obtain a court injunction the mine operator must be caught red-handed. The feeling between mountains and valleys became very bitter, and it was at one time unsafe for a man of pronounced antidébris sentiments to venture into certain mountain districts.

147. The valley defense organization persevered, however, and it became more and more difficult for a mine to operate illegally without being heavily fined therefor, while gradually a public sentiment was created against the industry because of the enormous injury done to permanent interests of the State. The more intelligent and fairer of the miners ceased operation; the others found their efforts at relief before the legislature blocked; and, finally, Congress, by the act of 1893, made such mining illegal, save with permission of the California Débris Commission and under conditions which would safeguard the streams. Soon afterwards the further washing down by monitors of material that might reach such streams ceased. But there was already in the navigable channels and in their tributaries, and piled in the mountain canyons, as before stated, an immense amount of material which, in the absence of remedial measures, must continue to inflict great injury to navigation and other interests.

148. The investigations of the California Débris Commission established conclusively the impossibility of permitting such hydraulic mining as would directly (or even indirectly, after the lapse of years) send down the débris into the navigable channel, unless the navigability of the rivers was to be destroyed, and the lands on the floor of the valley ruined for agricultural use. The obvious condition imposed by the commission upon the hydraulic mines for operating—that is, the impounding of their débris so that it could not reach the streams—was the same condition previously imposed by the courts, State and Federal. But to comply with this condition in most cases meant a prohibitive initial investment, even where it was physically possible. And as the commission rigidly enforced the law, and this kind of mining could be carried on only under its permit, operations gradually ceased as available débris reservoir capacity became exhausted. The few mines which can still operate under this process on tributaries of the Sacramento are very rapidly reaching the time when they must cease.

WORK OF THE CALIFORNIA DÉBRIS COMMISSION.

149. The Federal act, still in force, under which illegal hydraulic mining was finally stopped, is known as the Caminetti Act, its sponsor being Congressman A. Caminetti, who represented then one of the mining districts of California. The title of the act is "An act to create the California Débris Commission and regulate hydraulic mining in the State of California," approved March 1, 1893. (Exhibit B.)

150. The measure was introduced in response to the demand of the hydraulic miners and to afford them, if possible, some relief. It created the California Débris Commission, composed of three United States Army engineers, and placed upon the commission the broad responsibility of maturing and adopting a plan to restore the navigability of the rivers of the Sacramento and San Joaquin system, if practicable, to care for mining débris and floods and to provide conditions under which hydraulic mining might be prosecuted without injury to the navigability of the rivers or injury to adjacent lands. Full power was given to the commission to act, under supervision of the Chief of Engineers, United States Army; provision was made for cooperation with the State; and the expense of necessary work under any plans adopted was to be shared equally by the Federal Government and the State of California.

151. Having performed, under the act of 1893, that part of its duty having to do with the regulation of hydraulic mining as indicated above in section 148 of this report, the Débris Commission set about maturing plans to care for the mining débris already in the canyons and river channels, and incidentally to assist in securing flood control. It sought to hold back in the Yuba River Canyon, by barriers and dams of different description, the immense deposits of débris which otherwise must come down into the Yuba débris basin and out into the Feather and Sacramento Rivers. Various works attempted from 1902 to 1907 were washed out by succeeding floods, and after the flood of 1907, which entirely destroyed a massive dam, the attempt was finally abandoned.

152. The commission then attempted to retain in the Yuba débris basin itself, below the canyon, so much as possible of the enormous deposit already in the basin, as well as to hold there some at least of the material washed out of the canyon by each flood. It planned to accomplish this by cutting a narrow outlet through Daguerre Point and creating behind it and inclosed in retaining walls of cobbles, a basin large enough to hold about 60,000,000 cubic yards of débris. In addition it sought to hold in the basin below Daguerre Point the greater part of the deposit already there (estimated at from 360,000,000 to 600,000,000 cubic yards) by forcing the floods to pass through a narrow channel formed by two retaining walls of cobble behind which the old débris deposits would be safe from wash by the floods. These retaining walls, 22,000 feet long, 300 feet wide at the base, and 30 feet high, were to be constructed by one of the gold-dredging companies in consideration of the privilege of dredging the basin for gold. The plan is fully described in the report of the State engineering department, 1912, at page 112 and following, and also in the annual reports of the Débris Commission, published by the Chief of Engineers, United States Army. The retaining walls are now almost entirely completed, serving the purpose intended, and the Government has saved through its arrangement with the gold-dredging company about $450,000, the estimated cost of constructing the retaining walls. California's appropriation for this work of impounding débris was the same as that of Congress, $400,000.

THE MINOR AND MAJOR PROJECTS.

153. In addition to this plan for holding back débris in the Yuba débris basin, the commission, in pursuance of the duties imposed upon it and to care particularly for that portion of the débris already in the navigable channel of the Sacramento River and that which must yet come into it from the Feather and American, turned its attention to dredging on a large scale. Its report of 1907 (Exhibit C) recommended the operation for 56 months of two large hydraulic dredges "for the direct improvement of navigation on the Feather and Sacramento Rivers and toward the controlling of débris and floods." No plans of any description were offered, but there was added the statement that "Whatever work is done on the Sacramento and its tributaries must and will be done upon well-matured plans, in the preparation of which all elements of the problem will be taken into account." It recommended that the State of California, as usual, and as called for by the Caminetti Act, pay half the cost and provide the rights of way necessary.

154. The project thus recommended (known in California as the "minor project") was regularly approved by Congress and became in 1910 an existing project with a preliminary appropriation of $400,000. California in the meanwhile had accepted its provisions and made her preliminary appropriation of $400,000 (act of 1909). Work has progressed under this project with additional appropriations as explained in section 182 of this report.

155. In 1910 the Débris Commission presented in its report of that year the complete plans forecasted in the report of 1907—the "well-matured plans in the preparation of which all elements of the problem will be taken into account." The plans appear in House Document No. 81, Sixty-second Congress, first session (Exhibit D), outlining what is known in California as the major project, and providing for flood control, care of débris, and permanent protection to navigation.

These plans were subsequently modified, not as to engineering features but only as to financing and the division of responsibility and expense, by the report of 1913, House Rivers and Harbors Document No. 5, Sixty-third Congress, first session. (Exhibit E.)

156. The major project thus outlined was approved by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers, United States Army, was reported favorably by the Rivers and Harbors Committee, passed by the House of Representatives in the 1914 rivers and harbors bill, and favorably reported by the Senate Commerce Committee. The bill failed of passage in the Senate, and there was substituted therefor a bill appropriating a lump sum, to be expended in the discretion of the Chief of Engineers, United States Army, in aid of projects technically classed as "existing." The major Sacramento project, not having been passed by Congress (although formulated in compliance with act of Congress of 1893), is not in this category—the minor project is.

157. The major project received prior thereto exhaustive hearings before the Rivers and Harbors Committee February 7, 1912, December 8, 1913, and July 23, 1915, and before the Senate Commerce Committee February 8, 1912. The project has been personally inspected on the ground by the Rivers and Harbors Committee and by the Board of Engineers for Rivers and Harbors.

CONTRACT BETWEEN NATION AND STATE.

158. The major project includes really the minor project, and embodies the final plans for completion of the several duties assigned the California Débris Commission, as clearly set forth in the opening statement of the 1910 report. (Doc. No. 81, Exhibit D.) The minor project fits into and becomes a part of the major project on adoption of the latter. It was intended as the forerunner of the latter, and money expended on it will become more or less useless unless the larger project be adopted and carried out.

159. In its report of 1913 (H. R. and H. Doc. No. 5, Exhibit E), at pages 9 and 10, the Débris Commission says:

"The commission understands that the act creating the commission directed the preparation of a plan for flood and débris control. Congress, in making the appropriation of $800,000 in the act of June 25, 1910, apparently realized that flood control was a necessity; that sooner or later works for flood control would be undertaken; and that any work done for the improvement or maintenance of navigability should be part of a plan intended to accomplish the three objects of flood control, débris control, and improvement of navigability.

"We believe that the execution of the plan prepared by the commission, revised as described in this report, is necessary for the accomplishment of these three objects. The difficult question is what proportional part of the cost the United States should pay.

"In making its present recommendations the commission has sought to eliminate from the project those features which are more intimately associated with reclamation and to confine the work of the Federal Government to the river channels and weirs, which features have a more direct bearing upon the navigability of the river."

160. Other and subsequent statements of the California Débris Commission make very plain its understanding—which is the understanding of California—that the minor project is only a step in the work ordered by Congress and participated in by California under practical contract. In the report of 1914 (Report of Chief of Engineers, United States Army, 1914), at pages 1472 and 1473, occurs this language:

"The project now in force, however, is based on report printed in the Annual Report of the Chief of Engineers for 1907, pages 2262–2269, inclusive, and provides for dredging, for the improvement of navigation, and the control of débris and floods, and work thereunder is adopted without loss into and made part of the more complete and general proposed project just mentioned."

161. Again, at page 1476 of the same report:

"The work now in progress along the lower portion of the Sacramento River with two suction-dredging plants is along the lines of work proposed in the Annual Report of the Chief of Engineers for 1907, as approved by Congress in the act of June 25, 1910, appropriating $400,000 therefor, while at the same time it would become, without change, a part of the work included in the reports published in House Document No. 81, Sixty-second Congress, first session, and Rivers and Harbors Committee Document No. 5, Sixty-third Congress, first session, should Congress later adopt these."

162. The reports of 1910 and 1913, offering for approval the major project, are simply the culmination of the contract entered into by Congress and the State of California to secure, at as early date as possible, the restoration of navigability, the control of floods, and the care of débris in the Sacramento River. This contract is evidenced clearly by the Caminetti Act of 1893; by California's acceptance thereof; by the prosecution by the Federal Government, through the California Débris Commission, of work to accomplish the intent thereof; by the cheerful payment by California of her one-half of the expense as Congress called upon her therefor; by the gradual development by the Débris Commission of the plans and work necessary to solve the complicated problem through successive stages, namely, (1) the regulation of hydraulic mining; (2) the attempt to hold back in the canyons the débris not yet washed into the streams, and after enforced abandonment of this plan; (3) the retaining in the Yuba Débris Basin of immense deposits which otherwise would wash into the Feather and Sacramento; (4) the care of débris now in the navigable channel and that which must still come into it by dredging (the minor project upon which work is still in progress); and (5) the presentation of the final comprehensive plan for flood control, the major project now before Congress, without the completion of which work already done and moneys expended by the Congress and by the State will be in large part wasted, while irretrievable damage must result to interests, national, State, and private.

163. It is quite certain that California would not have turned over $1,000,000 to the War Department for the work of the California Débris Commission and appropriated $250,000 more subject to call if she had not understood that the Nation and the State had jointly inaugurated under the general terms of the Caminetti Act and supervision of the Chief of Engineers of the United States Army, the prosecution of work which was to secure flood control of the Sacramento River, restoration of navigability, and protection for the valley.

164. On February 7, 1912, Col. John Biddle, United States Army, senior officer of the California Débris Commission at the time its report of 1910 was presented, made a lengthy statement before the Rivers and Harbors Committee on the Sacramento project, pages 47 to 65. In the course thereof he made a clear and comprehensive explanation of the duties required of the commission by the Caminetti Act and the way in which such duties had been and were being performed. He frankly stated therein that it was understood the work was not to cease short of flood control, and that in his opinion California would not have been justified in appropriating her initial subscription of $400,000 under any other understanding. Expressions and answers in point will be found on pages 48, 49, 55, 57, 60, 61, 63, and 64. A few only are quoted here:

165. From page 55:

"Mr. DAVIDSON. Do you think the interests of commerce and navigation require an expenditure of $11,000,000 on the part of the Government for the improvement of those streams?

"Col. BIDDLE. As I have stated before, if you left out the responsibility called for by the Caminetti Act, I do not think so; but that responsibility was given by that act, and money has been already appropriated for that purpose to the extent of about $2,000,000, supplemented by the same amount by the State of California.

"Mr. DAVIDSON. The appropriation of $400,000, with a like sum by the State of California, was simply to restore navigation by dredging process, without reference to any expenditure of any $11,000,000 or any other large sum, but it was to restore or maintain a reasonable stage of navigation, say 7 feet, to Sacramento.

"Col. BIDDLE. That $400,000 was not intended to complete the work; it was just simply intended to start it. The total cost might grow into millions for dredging out all that débris."

166. From page 57:

"Mr. DONOHOE. Would you now recommend the expenditure of $11,000,000 by the Government except for the fact you believe the Government is obligated to go on with this plan?

"Col. BIDDLE. Pardon me to say, I think the Government is not obligated to anything; but if the Government intends to carry out the provisions of the Caminetti Act I think this is the best plan.

"The CHAIRMAN. How far would you suggest the Government was obligated to go?

"Col. BIDDLE. To get rid, practically, of all the débris that was in the river and that could be considered as having been brought down from the hydraulic mines."

167. From pages 60 and 61:

"Mr. SMALL. Now, with this $400,000 that California appropriated a few years ago, and which was expended, together with $400,000 appropriated by the Government, would that be a useless expenditure if this project is now abandoned, or has that accomplished good results?

"Col. BIDDLE. * * * On the other hand, I do not think the State of California would ever have appropriated this $400,000 if it had not thought it would be followed by more.

"Mr. SMALL. It would not have been a wise or provident appropriation or expenditure of money, except having this larger project in view?

"Col. BIDDLE. In my mind, not at all, except in view of this larger project or some similar project for taking care of the débris." * * *

DESCRIPTION OF THE MAJOR PROJECT.

168. The reports of the California Débris Commission for 1910 and 1913, approved by the Board of Engineers for Rivers and Harbors and by the Chief of Engineers, state very clearly that the major project for flood control of the Sacramento River follows the only plan economically feasible, which will secure control of floods, restore navigation, care for débris deposits, and allow permanent reclamation, and that the interests named are so interwoven on this stream that they can not be separately treated. (Doc. No. 81, Ex. D, p. 2, and also p. 4, sec. 5; Doc. No. 5, Ex. E, p. 9, sec. 12.)

169. The plan contemplates retaining within the river channel all the waters which it can safely carry, by the maintenance of strong levees on or near the river banks, and caring for the excess flow in flood season by conducting it over easements, or weirs, and through by-passes (strips of land protected on each side by levee) to a junction with the river, 15 miles above its mouth, whence a widened and deepened channel will discharge the entire floods into the upper arm of San Francisco Bay. The sills of the weirs fix automatically a flood plane for each station of the river, beyond which the water can not rise in the channel, while constant improvement of the channel itself will be secured by the scouring of the current and by dredging operations necessary to maintain levees. The plan calls for four weirs, located, respectively, two in Yolo County, one in Sutter, and one in Butte, and 90 miles of by-passes, varying in width from 1,000 to 14,000 feet. The section of channel at the river's mouth is to be straightened and widened to 3,000 feet (about four times the present width in places) and deepened to 35 feet at extreme flood.

170. This plan as applied to the problem of the Sacramento will be better understood by the following explanation, with reference to the map and to the article of this report on floods of the river. (Secs. 53 to 60.)

171. Above Colusa the Sacramento River brings down from Iron Canyon an extreme flood of 276,000 second-feet. At present the excess is carried out over the river banks into the Butte Basin, and will ultimately be provided for by a by-pass system there, unless a storage reservoir in the Iron Canyon shall provide therefor. The river channel will carry down to Tisdale Weir 65,000 second-feet, about half of which will be diverted here into the Tisdale by-pass and turned into the main Sutter by-pass, which carries the floods from the Butte Basin. The Sacramento River Channel below the Tisdale has a capacity of only 30,000 or 35,000 second-feet. The Sutter by-pass at Nelsons Bend joins its waters with the floods of the Feather River, which carries in maximum flood 250,000 second-feet. The Sacramento River Channel below the mouth of the Feather has a present capacity of 85,000 second-feet, but will be increased under the project to 107,000 second-feet. The excess from the upper Sacramento River and the Feather will be diverted over the Fremont Weir (8,000 feet long) into the Yolo by-pass. Just above Sacramento city the American River comes into the Sacramento with a maximum flood of 180,000 second-feet, while the channel capacity of the river from this point to Suisun Bay is only 110,000 second-feet. The excess will be carried out over the Sacramento Weir and through the Sacramento by-pass into the Yolo by-pass. The entire excess floods thus find their way into the Yolo by-pass and through it to the enlarged channel at the mouth of the river and into the bay.

172. In this plan, as originally outlined in the maps accompanying the report of 1910, various minor modifications have been and will be necessary, as plainly indicated in that report (Exhibit D) on page 3 and in the report of 1913 (Doc. No. 5, Exhibit E), on page 5, section 4, and the last paragraph of section 5. Such modifications have been necessary or desirable, because the plans of 1910 were, to a certain extent, tentative, because of lack of complete survey and data. There was also, prior to the creation of the State reclamation board, no authority with power to prevent private reclamation constructing works which would interfere with the plans of 1910, and, in consequence, it has been necessary to make modifications thereof because of reclamation work constructed thereafter. The plans as now approved

by the State reclamation board, under recommendation or consent of the California Débris Commission and the State engineering department, are practically complete, save as to that portion of the project which cares for floods in the Butte Basin.

173. The plan provides that the California Débris Commission shall have charge of all work in the channel of the river, including the widening of the river's mouth, and in the construction of the four weirs, the estimated expense thereof, $12,600,000, to be divided equally between Congress and the State of California. It is assumed that these features have to do more particularly and exclusively with navigation interests. The construction of all river levees (503 miles) and of all by-pass levees (180 miles) and purchase of rights of way (about 85,000 acres) are to be under the direction of the State and to be paid for by the lands benefited through the fact that completion of the project will make permanent reclamation of these lands possible. The original estimates of 1910 indicated a cost of about $21,000,000 for the elements of the work to be paid for by the landowners. Improved standards of levees since adopted and the necessity of extensive revetment and drainage will perhaps increase the cost to upward of $35,000,000, though it is ordinarily estimated at about $30,000,000.

174. Under this plan the State of California and the landowners, therefore, will pay together about six-sevenths and the United States about one-seventh of the cost of a project which, while of great value to reclamation and flood control, is also indispensable for preservation of the navigability of the two great waterways of the State. It should be borne in mind, too, that Congress is called upon to pay only one-half of the expense involved in works in the river channel connected particularly with the interests of navigation, while the property owners, in paying the entire cost of river levees, are paying for works absolutely necessary to navigability, since only thereby can the integrity of the channel be maintained.

THE COOPERATION OF CALIFORNIA.

175. Following the enactment of the law of 1893, in which Congress clearly indicated its intent, with the cooperation of California, to mature a plan and push it to completion, by which the navigability of the river could be restored, the débris cared for, and flood control secured, the State has cheerfully done her share, and even more. In making the first appropriation called for by the California Débris Commission under that act, California formally accepted the terms of the act and in effect pledged herself to carry out her share of the contract. Since that time she has promptly fulfilled all conditions and made appropriations usually in advance of Congress. She has already paid into the United States Treasury, to be expended by the California Débris Commission as agent of the Federal Government in carrying out the terms of the Caminetti Act, $1,000,000. These appropriations were made as follows:

1897	$250,000
1909	150,000
1911	400,000
1913	200,000

Of these appropriations $400,000 was for impounding débris and $600,000 for improvement of navigation. In addition, $250,000 was appropriated in 1915 and is now awaiting requisition from the California Débris Commission. Over $350,000 more has been spent for rights of way, some of it from State appropriations, but most of it subscribed by landowners, and all necessary for carrying on operation of the California Débris Commission under the Caminetti Act. In addition, the State has spent independently, under its State engineering department and river boards, since 1897, all for rectification of navigable river channels and in direct interest of navigation, $1,275,000.

176. This is entirely aside from the work done by private landowners in dredging and construction of river levees, all valuable for and necessary to the preservation of navigation, as elsewhere referred to.

177. With each new appropriation the State formally renewed its approval of the plan and intent of Congress, as indicated in the Caminetti Act, and when that plan was finally perfected by presentation of the completed project in the report of 1910, transmitted to Congress by the Secretary of War June 27, 1911, the California State Legislature had adjourned and would not again meet until January, 1913. A special session, however, was called in December, 1911, for consideration of vital matters, and Gov. Hiram W. Johnson, realizing the overshadowing importance of this matter to the State, made it one of the few subjects in his special call to be considered at that session.

178. By legislative act the plan as presented by the California Débris Commission in Document No. 81 (Exhibit D) was formally adopted as the State plan for flood control of the Sacramento River; the State's aid, cooperation, and appropriations pledged thereto; and the State reclamation board created, in order that the duties imposed upon the State under the plan might be fully and promptly executed. In addition, State Senator A. Caminetti, who, as Congressman in 1893, had introduced the Federal act creating the California Débris Commission, introduced and had passed by the State legislature December 15, 1911, senate joint resolution No. 13, calling the attention of Congress to the fact that the legislature in extraordinary session assembled had formally adopted the project and recommendations of the California Débris Commission, and had provided for cooperation on the part of the State in putting the project into effect, and asked that Congress, on its part, give favorable consideration thereto.

179. The act of December, 1911, did not become effective under the State referendum law until March 23, 1912, and in the interim a special flood-control committee, consisting of a commissioner appointed by the governor and representatives of the Chambers of Commerce of San Francisco and the Sacramento Valley, presented the matter to the River and Harbors Committee. The legislature, in the subsequent sessions of 1913 and 1915, fully confirmed its previous acts in this matter by making additional appropriations and by increasing the powers of the State reclamation board, so that it might fully perform the obligations accepted by the State in connection with the project.

180. The duties and powers of the State reclamation board, as defined by the legislature of 1911 (special session), 1913, and 1915, will be found fully set forth in the reclamation board act. (Exhibit F attached hereto.) They include very broad and arbitrary police power under which the board is given exclusive control of all private reclamation within the area subject to flood in the Sacramento and San Joaquin Valleys (1,726,553 acres), with power and duty to pass upon all plans for reclamation therein and to withhold approval in event any such plan shall interfere in any way with the project of the California Débris Commission or the interests of flood control. The board has power to remove levees and obstructions from any by-pass or overflow channel; to order property owners and reclamation districts to construct levees which may be necessary under the flood-control project or to the safety of districts; to construct itself any necessary levees or works, in the event that owners and districts refuse or fail, to comply with the orders of the board in such matter; and to levy and collect on the lands within the Sacramento and San Joaquin drainage district, comprising the 1,726,553 acres referred to, assessments necessary in the construction of levees and works called for by the flood-control project.

PROGRESS OF THE WORK.

181. There has been notable progress made toward completion of the project, and, for reasons which will be indicated, very much more in that portion for which the State is responsible than in that apportioned to the California Débris Commission. As outlined in the project, the work to be under exclusive control of the California Débris Commission and to be paid for, half and half, by Congress and California, includes enlargement of the river channel below the mouth of Cache Slough, estimated cost, $9,075,420; construction of four diverting weirs, $1,617,560; and rectification and enlargement of river channels, $191,375, with 15 per cent added for contingencies and administration and $800,000 subtracted as already appropriated, half by the State and half by Congress, at the time of the report. This leaves a total of $11,717,008 as the estimated remaining cost of those portions of the project, such amount to be assumed, half and half, by the United States and California. The amount to be paid, therefore, by each would be $5,858,504, which has been decreased since then $200,000 by appropriations of that amount made by each. (Doc. No. 5, Exhibit E, p. 9.)

182. The California Débris Commission has been able to make only such progress as permissible under the terms of the minor project and with appropriations made therefor. Such project provides for the use of two suction dredges for a term of 56 months, and the work already done thereunder is indicated at length in the report of the State reclamation board of 1916, attached hereto as Exhibit G. Briefly, the two dredges have worked under this project up to January 1, 1916, for a term of 36 months and have moved about 13,000,000 cubic yards of material and expended about $1,200,000, appropriated half by Congress and half by the State. The channel at the mouth of the river in the course of this work has been straightened and widened and a material improvement in run-off of flood already secured thereby. There is, therefore, work yet to be done in connection with opening the mouth of the river, the estimated cost of which would be in the neighborhood of $8,000,000.

183. The Débris Commission has not been able to do any work in connection with the construction of weirs, such work not being included within the minor project. Preliminary preparations, however, have been made by the securing of the necessary sites for three of the weirs, that of the Tisdale Weir having been in possession of the State for a number of years; that for the Fremont Weir having recently been acquired by the reclamation board; and that for Sacramento Weir having been purchased by the city of Sacramento. In the case of the Moulton Weir no steps have been taken toward securing a site therefor, for several reasons: Because the location of the by-passes in the Butte Basin has not been definitely determined by the Débris Commission; because the landowners in the basin are divided in opinion as to whether they would prefer reclamation, with a by-pass system, or the running of the floods over their lands, through the basin and into the Butte Slough and Sutter by-pass; and because of the possibility that an early completion by the United States Reclamation Service of the Iron Canyon project, with a storage reservoir, would make unnecessary the use of by-passes in the Butte Basin.

184. It is also fairly certain that construction of the Sacramento Weir will be commenced during the present season, and perhaps completed before the winter of 1917–18. The city of Sacramento, in view of the grave menace existing for the city in the absence of completion of this weir and the easement which it offers for the floods of the American River, has voted $594,000 for the purpose; has perfected plans which have already been approved by the Chief of Engineers United States Army; and is preparing, with the cooperation of the State reclamation board, to construct this weir and open the Sacramento by-pass.

185. In that portion of the project under supervision of the State reclamation board and for which the property owners are to pay, material progress has been made and is steadily being made, under the reclamation board act, which invites cooperation on the part of landowners and reclamation districts in constructing units of the project, and provides machinery whereby it can be accomplished. The project was so outlined by the California Débris Commission as to utilize, so far as possible, the existing river levees constructed by landowners and reclamation districts; and also to take advantage for by-pass purposes of existing levees which might be made to serve therefor. (See State reclamation board report, Exhibit G.)

186. It is estimated that the river levees already constructed on the Sacramento, Feather, American, and San Joaquin Rivers, and necessary for the interests of navigation, because they preserve the integrity of the river channel in flood season, have cost $12,000,000. This does not include the cost of levees for Sacramento city, $5,000,000, and for the city of Marysville, $1,000,000.

187. It will cost upward of $6,000,000 more to improve these levees to standards fixed by the reclamation board, while the ultimate cost of by-pass levees, rights of way for by-passes, and drainage plant necessitated by by-pass construction, will make the total, which the property owners will pay as their portion, in excess of $35,000,000, of which about half is yet to be expended.

188. In addition, the dredging done by landowners and reclamation districts in the construction of these levees has removed from the navigable channels an amount of mining débris which would have cost the Government, if it had done the work, $3,950,000, as appears in the report of the Chief of Engineers, United States Army, 1915, at page 1459.

BENEFITS TO STATE AND NATION.

189. What the completion of the Sacramento River flood-control project means to the State and the Nation is indicated by the statement that only through this plan can flood control of the Sacramento River be secured; and that only through flood control thereof can the following results be attained:

190. (a) Restoration and maintenance of navigability of the Sacramento River, on which, in earlier days, ocean freighters drawing 13 feet of water use to deliver their cargoes at Sacramento city, 125 miles from the sea, at all seasons of the year.

191. (b) Protection of the San Joaquin River, which has a common delta with the Sacramento and which is threatened by floods from the

Sacramento up to and including the city of Stockton, at the practical head of navigation, 45 miles from the river's mouth, 106 miles from the sea.

192. (c) Maintenance of an inland waterway system, of which the two navigable rivers must be necessarily main arteries. Upon such a waterway system depends in large measure future development of the Sacramento and San Joaquin Valleys and the commerce of the State, since, without cheap water freights to tidewater, products of the valleys can not secure profitable access to the markets of the world. In the absence of such markets the valleys will not produce their possible crops and can not develop in either wealth or population. The history of inland waterways in Europe so clearly establishes the truth of these principles that it is not necessary to enlarge upon them.

193. (d) Safety from disastrous floods for nearly 1,300,000 acres of rich alluvial lands and for communities in the district, including the cities of Sacramento and Stockton, with aggregate population of 120,000 and assessed valuations exceeding $100,000,000.

194. (e) Insurance on the crops of 750,000 acres reclaimed and in process of reclamation, but subject to flood in absence of flood control. These crops are worth annually upward of $30,000,000.

195. (f) The creation of permanent wealth in the lands now overflowed and which can not be reclaimed in the absence of flood control, together with assurance of annual crops thereon to the value of many millions of dollars.

196. As concerns the lands now subject to flood and which can secure safety only through flood control of the Sacramento River as promised by this project:

In Water-Supply Paper No. 251, Department of the Interior, United States Geological Survey, Part XI, California, at page 154, the total area of the Sacramento Valley is stated to be about 4,250 square miles, divided approximately as follows:

	Square miles.
High lands not subject to overflow	2,510
Lower lands occasionally overflowed	450
Low lands overflowed periodically and submerged for a considerable part of the year	1,250
Perennial stream surface	38

The document calls attention to the fact that about 40 per cent of the valley suffers from floods.

197. The Sacramento flood-control project is a measure of immediate safety not only to those lands included within the Sacramento Valley as above indicated, but also to those in the contiguous portion of the San Joaquin, the whole totaling 1,291,027 acres. Included in this total are low river lands, reclaimed or in process of reclamation, 595,731 acres; lands entirely unreclaimed and not possible of reclamation in absence of flood control, 160,600 acres; higher lands, partly protected, over which floods would pass in absence of protection, but on which they would not remain, 149,600 acres; similar higher lands entirely unprotected and for whose protection flood control is absolutely necessary, 182,785 acres; in by-pass and overflow channels, lands rich in character but now practically useless for revenue, 202,311 acres. Even the lands embraced within the last category can be, to a great extent, made valuable and productive by the carrying out of the flood-control project, while the acreage embraced in the other categories is dependent, for present or prospective value and productiveness, upon the completion of the project, as is particularly explained in the report of the State reclamation board, 1916 (Exhibit G), under the head "Scope of the Sacramento project."

198. While actual safety of farms, communities, and cities located in a district of 1,291,027 acres is dependent on the flood-control project, the balance of the total acreage in the Sacramento and San Joaquin Valleys, about 10,000,000 acres, is dependent on the project for that development which comes from intensive cultivation and the growth of the highest grade of crops on every available acre of soil. Such development can only follow the creation of markets for the products, through low water rates to tidewater all the year around (there is no interference with water transportation because of ice in these valleys); and such rates will depend on the maintenance of navigability on the two great streams which must be the main arteries of any inland waterway system for the State. It would seem to be a wise enterprise on the part of the Nation to encourage in every possible way the development of the conditions in these valleys which will enable them to produce during the entire year a succession of the most valuable products, which only the peculiar combinations of soil and climate to be found here can produce. The Nation has in these valleys an economic asset which ought to be fully utilized.

199. Some faint idea of the possibilities of the Sacramento and San Joaquin Valleys as all-the-year-round producers of those things which would be most needed in time of necessity to supply the Nation's wants, may be gathered from consideration of what those valleys now produce, bearing in mind that, because of flood conditions and because of deficiency in cheap water transportation, there is but a very small portion of the available acreage devoted to intensive cultivation. Much of that used could be devoted to crops of more value to the country but for the present uncertainties as to conditions.

200. In the San Joaquin Valley last year the orchard and dairy products, with grains, honey, and eggs, totaled 75,270 carloads. To this must be added 1,200,000 tons of hay, worth $10,000,000, and vegetables worth $3,200,000, the carload figures for which are not available. The output in farm animals can not be given, but the number of cattle, sheep, hogs, horses, and mules on the farms was 1,541,627.

201. In the Sacramento Valley, whose acreage is less than one-third as large as that of the San Joaquin Valley, but where certain incentives for increased production are greater, the output is still larger, though it is only a fraction of that which could and would be produced in time under favorable conditions. The estimated output of the valley last year in all products, including live stock, was 102,251 carloads. The shipments of deciduous fruits alone amounted to 10,300 carloads, and of green vegetables, 1,360 carloads (a carload is 26,000 pounds). Five-sevenths of all the California deciduous fruits that come to eastern markets are shipped from the Sacramento Valley. The vegetables include potatoes, beans, onions, asparagus, celery, sugar beets, etc. The valley produces 65,000 bales of hops.

202. There is a great increase in tree planting. The almond crop, now 3,800 tons, will jump to 10,000 tons when new orchards are in bearing. The acreage in olives has been enormously increased.

203. In 1911 there were in the valley 150 acres in rice; in 1912, 1,400 acres, with an average yield of 50 bushels, and a production of 70,000 pounds, worth $64,000. In 1915 the acreage had so increased that the crop was 720,000 sacks, worth $1,500,000. This year the crop is estimated at 2,500,000 sacks, valued at $5,000,000, while the indications are that in the near future the crop will jump to 15,000,000 sacks.

204. The rice crop strikingly illustrates the great necessity for insuring permanent navigability of the Sacramento River through completion of the flood-control project. The crop is late and must be moved fast to avoid the rains. (In California there are no summer rains.) There are not available cars to move such a crop at once, and the crop last year was saved by transporting it to the river, where it was loaded on barges and carried to market. That can not be done if a flood shall have even temporarily destroyed navigation.

PRESENT COMMERCE OF THE RIVERS.

205. The official reports on the commerce of the Sacramento and San Joaquin Rivers for the last year available give the following figures (Report of Chief of Engineers, 1915, pp. 1466–3347):

206. Sacramento River: Freight, 720,000 tons; valuation, $38,000,000; passengers, 175,485.

207. San Joaquin River: Freight, 772,000 tons; valuation, $35,479,000; passengers, 189,667.

208. These figures do not include the tonnage of the large mosquito fleet of gasoline boats and their barges, which is not available.

At the hearing before the Flood Control Committee April 5, 1916, at page 8, Col. Harry Taylor, United States Army, Assistant Chief of Engineers, United States Army, referred to the mosquito fleet and difficulty of securing statistics thereof, and said: "We know the published statistics are far short of the commerce carried on the river."

209. Through Sacramento city's lower or M Street Drawbridge (Northern Electric Railway) there passed during the year 3,054 steamboats, 1,005 barges, 969 gas boats, 73 sailing vessels, 30 dredges, and 29 pile drivers. Through the upper or H Street Drawbridge (Southern Pacific Railway) there passed in the same time 895 steamboats, 799 barges, 867 gas boats, 31 sailboats, 27 dredges, and 20 pile drivers. (This indicates traffic above Sacramento city; the downriver traffic goes through the M Street draw.)

210. On the Sacramento River most of this freight and practically all of the passenger traffic was between Sacramento and San Francisco and intermediate points. Present conditions in portions of the river above Sacramento city do not permit the use of boats thereon during the greater part of the year and there is in consequence no incentive for investment of capital in steamers giving the frequent and rapid service to induce a large patronage and no opportunity for shippers to secure the most advantageous water transportation rates. On the San Joaquin all of the tonnage and passenger traffic indicated was between San Francisco and Stockton and intermediate points.

211. The high class of freight handled on the two rivers is a noticeable feature, the value averaging $50 per ton, almost the highest, if not the highest, reported on any river in the United States. It includes fruit, alfalfa, hops, beans, asparagus, rice, potatoes, onions, celery, cabbage, dairy products, etc.

212. Ninety per cent of all freight between Sacramento and San Francisco and between Stockton and San Francisco is handled by boat, the average rate being 35 per cent less than by rail, while on certain classes of freight it is 66 per cent less. Between Sacramento and San Francisco is a daily merchants' express service by boat (overnight), the rates for which are between 7 and 10 per cent cheaper than for ordinary freight by rail.

213. This is a somewhat striking condition in view of the fact that there are five different rail routes between Sacramento and San Francisco giving service many times during the 24 hours for both freight and passengers. There is the Southern Pacific with two through lines, one by Benicia on the west side of the river and one by Stockton on the east side; the Western Pacific via Stockton; the Oakland, Antioch & Eastern (electric); and the Central Traction (electric) from Sacramento to Stockton and connecting at the latter point with the Santa Fe for San Francisco.

214. From docks on the Sacramento River as far up as Colusa, 90 miles above Sacramento city, grain, alfalfa, rice, vegetables, and other freight, gathered by the river transportation companies' trucks from points 8 and 10 miles distant from the river, are loaded on barges, towed by steamers, and delivered at the warehouses at Sacramento city or at the tidewater docks at Port Costa or San Francisco for 20 per cent less than the railroad rate. The improvement of the river, with the development of the valley and the increased production certain to follow, would produce conditions which would insure shippers even better service and probably lower rates.

215. On the Sacramento there are four companies operating, owning 26 steamboats and a large number of barges. There are about 200 boats of all kinds, including schooners and barges, employed in the traffic. Handsomely equipped passenger steamers ply every day between the two interior cities and San Francisco. The best of these are 260 feet long, 6 feet draft, 1,200 tons gross, and are fitted with all hotel conveniences. (See Annual Report of Chief of Engineers, 1915, pp. 3346–3353; also hearing before Rivers and Harbors Committee, Dec. 8, 1913, statement A. E. Anderson at a previous hearing; also hearing before same committee July 23, 1915, pp. 20 to 23. Exhibit H.)

216. The value to the State and Nation of a permanent restoration of navigability to these rivers is not fairly gauged, however, by their present commerce. Its proper measure of value is the commerce which will ultimately be handled by water if the original river conditions of 1860 are restored and an inland waterway system developed. Some conception of the prospective commerce of the river under such conditions may be formed by considering the wonderful possibilities of soil and climate, the fact that crops grow all the year around, and waterways are navigable at all seasons, the wonderful present yield under unfavorable conditions, and the millions of acres available, much of it not now used, and very little of it intensively cultivated. Note in this connection sections 197 to 203.

CRITICISM OF THE PROJECT.

217. There have been offered three main criticisms of the project, which are here dealt with:

(a) Navigation's interest: It is declared that the project is not necessary in the interests of navigation, that declaration having received its inspiration originally from language to that effect found in the report of the Board of Engineers for Rivers and Harbors, in discussing the project as originally submitted by the California Débris Commission. Because of a misunderstanding as to the exact import of this language, and because of other considerations, the matter was referred back to the Board of Engineers for Rivers and Harbors by the Rivers and Harbors Committee, December 2, 1912, with a request for examination and review and their subsequent information and conclusions thereon. This brought forth the California Débris Commission report of February 8, 1913 (Doc. No. 5, Exhibit E), approved by the Board of Engineers June 17, 1913, and by the Chief of Engineers July

17, 1913. From that and other documents the following facts are gathered:

218. The evident idea in the mind of the Board of Engineers when it said (Doc. No. 81, Exhibit D) "the execution of the project is not necessary in the interests of navigation," was that a measure of navigability could be secured by dredging the channel of the river, without carrying out the major project. This expedient of dredging, however, could not, as a matter of fact, "maintain" a navigable channel of any depth desired or necessary, but could only restore it after the winter's floods had partly filled it with mining débris; and as the dredges can not commence to operate to advantage until the flood stage has passed, there would be months in the summer and fall when the river is most valuable for transportation, when navigation would be crippled. To dredge the river without flood control would simply mean the destruction or serious impairment of navigation each year, until the expensive and tedious dredging operations had cleared the channel of the deposits left by the floods. It may be added that in a large portion of the stretch of the river below Sacramento city this plan of dredging is not feasible, because there is no place on which the dredged material could be deposited, the top of the finished levees being used usually for district roads, and in places for railroads, and the land immediately behind the levees being under intensive cultivation.

219. The Débris Commission report of 1913 (Exhibit E), as approved by the Board of Engineers, makes the situation very clear when it declares in section 12 of such report as follows:

"It is thought that the Board of Engineers for Rivers and Harbors, in stating that the execution of the original plan was not necessary in the interests of navigation, meant to imply that a sufficient degree of navigability could be maintained at less cost. This commission knows of no way of maintaining navigability with certainty and permanence, except under a plan which is part of a plan for flood and débris control, nor does it seem possible to estimate with certainty the cost of maintaining navigability apart from flood and débris control.

"Should nothing be done to control floods, there is every probability that from time to time navigability will be temporarily destroyed.

"To the cost of restoring navigability should then be added the damage done to navigation interests during the periods of nonnavigability.

"The commission understands that the act creating the commission directed the preparation of a plan for flood and débris control. Congress in making the appropriation of $800,000 in the act of June 25, 1910, apparently realized that flood control was a necessity; that sooner or later works for flood control would be undertaken; and that any work done for the improvement or maintenance of navigability should be part of a plan intended to accomplish the three objects of flood control, débris control, and improvement of navigability.

"We believe that the execution of the plan prepared by the commission, revised as described in this report, is necessary for the accomplishment of these three objects. The difficult question is what proportional part of the cost the United States should pay.

"In making its present recommendation the commission has sought to eliminate from the project those features which are more intimately associated with reclamation and to confine the work of the Federal Government to the river channels and weirs, which features have a more direct bearing upon the navigability of the river."

It is noticed that the commission declares very positively that it knows no way of maintaining navigability with certainty and permanence except under a plan which is part of a plan for flood control.

220. In its report of 1910, too, the commission uses this language, page 4, section 5:

"The interests of navigation, débris control, and flood control in the case of this river are so inseparably connected that it is thought that they should be considered under one general project, thus utilizing to the fullest extent and for the common good any work done under projects for improvement of navigation, control of débris, or the control of the floods."

221. And the Chief of Engineers in approving the project (Doc. No. 81, Ex. D, p. 2), says:

"This report presents a project for control of floods, the third duty assigned the commission. Recognizing that the interests of navigation, débris control, and flood control are inseparably connected, the commission has considered these problems as one general project, thus utilizing for the common good to the fullest extent practicable the works for any one of the three projects."

222. (b) Reclamation's interest: The project has been criticized as a reclamation scheme. The project is undeniably of value to reclamation, since only through the flood control which it will insure can reclamation be made possible in some cases and permanent in all. But it is also true that navigation can not be fully protected by any other plan and that the interests of navigation, flood control, reclamation, and care of mining débris are so interwoven on the Sacramento River that they can not be separated in remedial measures. (See the Engineers' Reports 1910 and 1913, Exhibits D and E, as quoted above.) And, further, because of reclamation's interest in the project it is being assessed for five-sevenths of the cost thereof, including all that can fairly be construed as being exclusively in the interest of reclamation and also much—notably the construction of river levees—which is undeniably partly in the interests of navigation, and even as to that portion of the project which is admittedly in the interests of navigation and in the navigable channel over which the Federal Government exercises exclusive jurisdiction, Congress is asked to pay only half of the expense. There is not recalled any flood-control project in which the State proposes to deal more generously with the Federal Government than in the case of the Sacramento project. Certainly this project does not deserve in any objectionable sense the charge of being a reclamation scheme.

223. (c) Conservation's interest: The entire plan is declared to be opposed to conservation, since it proposes to waste, through by-passes to the sea, flood waters which can be, and should be, stored for, or otherwise adapted to, beneficial use. This statement is based on lack of knowledge of existing facts.

224. Flood control by storage: First, as to the practicability of securing control of the Sacramento River floods by storage:

225. The United States Army engineers, the engineers of the United States Reclamation Service, the California State department of engineering, and all competent engineers who have made the necessary investigation, agree that it is not only impractical but a physical impossibility to secure flood control of the Sacramento River by storage reservoirs, and that the very limited amount of storage available for its floods can be utilized only as an additional factor of safety, and will not justify any change in the by-pass system, save possibly in the Butte Basin. There will be found in the report of the California State reclamation board for 1916 (Exhibit G), under the subhead "Storage and flood control, Sacramento Valley," a statement of the facts and authorities which leaves no room for further question on this point.

226. Flood-water canals: As to the suggestion made to the Flood Control Committee of the House, in the hearing April 5, 1916, looking to the utilization of the excessive floods of the Sacramento by conveying them in great flood-water canals along the western slope of the Sierra Nevada Mountains to the south end of the San Joaquin Valley, and there utilizing them either through storage or by permitting them to soak into the ground so as to increase the subterranean water supply, reference was made in connection with this suggestion to a report made February 20, 1874, by Lieut. Col. B. S. Alexander, United States Army, Maj. G. H. Mendell, United States Army, and George Davidson, assistant, United States Coast Survey, and transmitted to Congress by President U. S. Grant.

227. The report in question does not deal in any way with the subject of flood control of the Sacramento River, and would have very little value if it did, for as late as 1881 the report of the Chief of Engineers shows that the maximum flood of this river was supposed to be about 100,000 second-feet, or less than one-sixth of the actual volume. The report deals with "the irrigation of the San Joaquin, Tulare, and Sacramento Valleys," and is full of valuable information and suggestion, as might be expected of the able engineers who prepared it.

228. For the purpose of irrigating the two great valleys the report suggests utilizing the waters of the two rivers by carrying them in canals along the east and the west side of the valleys, tapping the Sacramento for the purpose at Red Bluff on both sides, and carrying the west side canal down to tidewater at Cache Slough (near the mouth of the Sacramento River) and the east side canal down into San Joaquin Valley.

The plan is thus described at page 37:

"Each main river has two canals, one on either bank, extending to the right and left just below the base of the foothills until they meet similar canals from the adjacent rivers; the whole of them taken together, forming, as it were, a main exterior canal of large size extending from the Kern River in the south to the vicinity of Red Bluff on the east side of the Sacramento."

229. The Kern River drops into the San Joaquin Valley close to Bakersfield, and it has been apparently assumed by some from the above language that the engineers proposed to carry the waters of the Sacramento River by canal from Red Bluff to Bakersfield (about 400 miles in a straight line). It is probable that they had no such idea; for while they spoke of their lack of detailed topographical knowledge of the eastern side of the valley and said in consequence they could "only sketch a hypothetical system of canals on that side of the valley,' yet they must have known that Red Bluff is over 100 feet closer to sea level than Bakersfield (elevations, Red Bluff 304, Bakersfield 420). Their intent undoubtedly was to carry water from the Kern and other San Joaquin Valley rivers north and from the Sacramento and its tributaries south, as far as conditions permitted. They figured on a grade of 6 inches to the mile, which would have brought a canal started at Red Bluff to a junction with the San Joaquin somewhere south of Merced. The engineers figured on small canals—how small may be imagined when they estimated the cost of such canals to the land to be irrigated at $10 per acre.

230. The value of any such canal system in taking care of the floods of the Sacramento and its tributaries may be determined from these facts: A canal on a grade of eight-tenths of a foot to the mile, taking water from the Sacramento at Red Bluff would deliver it in the San Joaquin Valley no farther south than Dos Palos, near Merced, 250 miles in a straight line, perhaps 300 on grade. Such a canal would have to be 1,800 feet on the bottom and 20 feet deep to carry approximately 200,000 second-feet—only a little more than one-third of the excess maximum floods of the Sacramento which must be cared for outside of the river channel. Such a canal for the distance named and if the surveys were level would involve a total excavation of over 2,100,000,000 cubic yards, and if only a small proportion of that excavation were in rock and the rest in material easily excavated, the cost would run upward of $700,000,000, with the probability that the actual cost would double that amount.

231. To carry these waters to Bakersfield the source of supply would have to be tapped at a higher altitude than Red Bluff, with corresponding increase of difficulty and expense. If the canal were intended to save the valley and the river from injury by assuring control of floods, it would have to care for 550,000 second-feet (the amount the by-passes are designed to accommodate), and thus would necessitate a very much larger canal or a very much steeper grade. With a grade of 2 feet to the mile, there would be required a width of over 2,000 feet and a depth of 20 feet to accommodate the excess floods. Whether the increased capacity be secured by difference in grade or by increasing the size of the canal, it is quite certain that the difficulties and expense involved in construction would be so multiplied as to make the project practically impossible and, perhaps, physically impossible as well.

EXHIBIT A.

DAMAGES FROM HYDRAULIC MINING.

[Extract from the opinion of Judge Lorenzo Sawyer, United States Circuit Court, District of California, Jan. 7, 1884 (18 Fed. Rep., 753).]

Woodruff v. North Bloomfield Gravel Mining Co. and others. George Cadwalader, I. S. Belcher, and J. N. Pomeroy, for complainant. Stewart & Herrin, J. K. Byrne, and W. C. Belcher, for defendants.

Sawyer, J.: This is a bill in equity to restrain the defendants, being several mining companies engaged in hydraulic mining on the western slope of the Sierra Nevada Mountains, from discharging their mining débris into the affluents of the Yuba River and into the river itself, whence it is carried down by the current into Feather and Sacramento Rivers, filling up their channels and injuring their navigation, and sometimes, by overflowing and covering the neighboring lands with débris, injuring and threatening to injure and destroy the lands and property of the complainant and of other property owners situate on and adjacent to the banks of these watercourses. In March, 1882, the Secretary of War transmitted to Congress the official report of Lieut. Col. Mendell, of the Corps of Engineers, "upon examinations and surveys to devise a system of works to prevent the further injury to the navigable waters of California from the débris of mines, arising from hydraulic mining," which surveys and report were made in pursuance of the act of Congress relating to rivers and harbors of June 14, 1880. This report, made in January, 1882, was introduced in evidence, and it has been quoted and recognized by both sides in the case as showing the injurious results of hydraulic and other mining up to its

date and the remedies attempted and suggested. It is also fully confirmed by the other evidence in the case and by the condition of things as disclosed upon actual inspection and observation made by the judges who traversed and examined the country affected by the operations complained of, in the presence and with the consent of representatives of the respective parties and their counsel. Many of the facts in the general statement will therefore be taken in condensed form from that report.

Hydraulic mining, as used in this opinion, is the process by which a bank of gold-bearing earth and rock is excavated by a jet of water, discharged through the converging nozzle of a pipe, under great pressure, the earth and débris being carried away by the same water, through sluices, and discharged on lower levels into the natural streams and watercourses below. Where the gravel or other material of the bank is cemented, or where the bank is composed of masses of pipe clay, it is shattered by blasting with powder, sometimes from 15 to 20 tons of powder being used at one blast to break up a bank. In the early periods of hydraulic mining, as in 1855, the water was discharged through a rubber or canvas hose with nozzles of not more than an inch in diameter; but later, upon the invention of the "Little Giant" and the "Monitor" machines, the size of the nozzle and the pressure were largely increased, till now the nozzle is from 4 to 9 inches in diameter, discharging from 500 to 1,000 inches of water under a pressure of from three to four or five hundred feet. For example, an 8-inch nozzle at the North Bloomfield mine discharges 185,000 cubic feet of water in an hour with a velocity of 150 feet per second. The excavating power of such a body of water, discharged with such velocity, is enormous; and, unless the gravel is very heavy or firmly cemented, it is much in excess of its transporting power. At some of the mines, as at the North Bloomfield, several of these monitors are worked much of the time night and day, the several levels upon which they are at work being brilliantly illuminated by electric lights, the electricity being generated by water power. A night scene of the kind at the North Bloomfield mine is in the highest degree weird and startling, and it can not fail to strike strangers with wonder and admiration. The amount of débris discharged into the rivers by these operations can only be duly appreciated by actual observation.

The Yuba River is a tributary of Feather River, entering it at Marysville, 30 miles above the mouth of the Feather, where the latter joins the Sacramento. It is the fourth river in size in the Sacramento Valley, and drains about 1,330 square miles of the western slope of the Sierra Nevada Mountains, comprising portions of Sierra, Nevada, and Yuba Counties, its extreme breadth being about 36 miles and its extreme length about 60 miles, excluding the 12 miles of its lower course from the foothills to its junction with Feather River at Marysville. The elevation of the Yuba Basin above tidewater is from 200 feet at its lower parts to about 8,000 feet at the summit of the mountains; but the gold deposits of this basin only extend to an elevation of from four to five thousand feet, in a belt from 40 to 50 miles wide. The upper portion of the river is divided into five principal branches, the North, Middle, and South Yubas, and Deer and Dry Creeks. The first four—Deer Creek being nearly as large as the smallest main branch—unite in the mountains before reaching the valley; Deer Creek, not far from it; the last, Dry Creek, joining the main river in the valley shortly after it leaves the foothills. The débris complained of is mostly discharged into the Middle and South Yubas and Deer Creek and their numerous smaller tributaries.

The auriferous deposit on the San Juan Ridge, between the South and Middle Yubas, embracing most of the defendants' mines—and a larger part of the mines now actually worked being under their control—is much the largest and most important in the State and is favorably situated for working, the beds of the ancient channels in which it lies being elevated several hundred feet above the beds of the Yubas and their affluents, and the annual floods of the Yuba may be relied on to carry off a large portion of the débris resulting from mining. Says the report referred to:

"The linear extent of the gravel channel and its branches on this ridge is about 25 miles. Deducting liberally for the portion already worked, and for that too deeply covered by lava to be available for hydraulic mining, there remain, probably, not less than 14 miles of channel available for washing, from which only a comparatively small portion of the top gravel has been removed. Below San Juan the gravel body has a surface width of over 1,000 feet, and is, say, 140 feet deep. From Badger Hill to Bloomfield, it is for the greater portion very much wider and deeper. At Columbia Hill, its surface width varies from 3,000 or 4,000 to 8,000 feet, and it is from 300 to 600 feet deep. The gravel at Lake City is probably 300 or 400 feet deep. At North Bloomfield it is opened to the bedrock showing a depth of more than 300 feet. Roughly estimating the average width of the remaining gravel range at 400 yards, and, after allowing for the portion worked off, placing its average depth at 70 yards, the sum is an average of, say, 50,000,000 yards per mile, or, for 14 miles, say, 700,000,000 yards."

"Allowing for the amount washed since 1876, 100,000,000 yards, there remain 600,000,000 to be removed;" adding to this the estimated amount still remaining to be worked at Smartsville, lower down the river, and the amount remaining to be washed will appear. Says Col. Mendell: "Seven hundred million of cubic yards may be assumed to represent the amount of gravel remaining to be worked by hydraulic process, tributary to the Yuba." Approximately, then, according to the evidence, over 100,000,000 of cubic yards in these mines have been washed out by the hydraulic process, and the débris deposited in the Yuba and its affluents; and 700,000,000 more remain to be washed out, and its débris deposited in these watercourses in the same manner.

The following shows some of the results of former washings and unmistakably indicates what must result from a continuance of the work. The Yuba, with its branches and smaller affluents, were necessarily characterized by heavy grades, the waters falling about 8,000 feet in a distance of 90 or 100 miles from their extreme sources to the Feather River. They ran through deep, rocky canyons and gorges, over a rough, rocky bottom, with frequent rapids, and waterfalls of greater or less height, and there were many deep holes excavated by the action of the water at the foot of falls, rapids, and the like. The beds of all these streams, from the very dumps of the higher mines to the junction of the main Yuba with Feather River, a distance of 75 miles or more, have all been filled up many feet deep—at some places to the depth of 150 feet—and all the streams have regularly graded themselves, so that a railroad track might be laid upon their beds for the whole distance, the grade, of course, being steeper in the upper parts, but equally regular.

Thus the main branches of the Yuba and Deer Creek, Shady Creek, Bloody Run, Grizzly Canyon, Humbug Canyon, and the other smaller tributaries, all exhibit this result. There are many square miles, in the aggregate, in the beds of these streams, buried many feet deep with débris, and those channels are choked and clogged with it, the heavier material being deposited higher up and the lighter passing farther down. Most of it will from year to year be carried farther down, and ultimately find its way to the valley. The transporting capacity of the water, however, is unequal to the task of carrying off all the débris at once, as it is discharged into the stream. So, also, the ordinary floods, from year to year, are unable to carry off all the débris discharged into the streams during the year, and it consequently accumulates from year to year along the upper portions of the watercourses, within the mountains, till an extraordinary flood comes. When such a flood occurs it transports a much larger amount at once and precipitates it upon the valleys below. Vast amounts are now accumulated in the upper courses of the Yuba and its branches, which are liable to be precipitated in immense quantities into the valleys below by any extraordinary flood—such as that of 1862—that may hereafter occur. With reference to the amount of these deposits remaining in the Yuba above Marysville, Col. Mendell, in his report, says:

"The estimates by Mr. Manson, reported to the State engineer, give the estimated deposits in 1879 on the Yuba, above the foothills, as 46,462,100 cubic yards, the great bulk in 8 or 10 miles; and below, 23,284,000, a total of 71,746,100 cubic yards. In the light of later information, it seems probable that this estimate is altogether too low, the deposits in small tributaries not having been taken into account and the amount in the lower river having been much underestimated. The actual amount is not capable of being ascertained, and the statements are given merely for the purpose of illustration. At its escape from the mountains, where the foothills recede and give width to the plain, the Yuba spreads out its load of sand and gravel over a plain of 15,000 to 16,000 acres, which has risen until it now stands above the level of the adjoining country on either side. This plain has a slope of about 10 feet to the mile, varying above and below this limit as you ascend or descend, the slope of the river bed being 15 feet at the foothills and 5 feet at Marysville, 10 miles below. The sizes of material have some correspondence to the grades. Ascending the stream, one passes to a continually increasing average size of material. While it is nearly all sand below, above it becomes nearly all gravel, with, however, considerable admixture of different sizes everywhere. This irruption from the mountains has destroyed thousands of acres of alluvial land. The State engineer, in 1880 estimated that 15,220 acres had been seriously injured by these deposits from the Yuba. On the Yuba the great deposits of gravel are found on a grade of 30 feet to 20 feet to the mile. The sands predominate greatly in slopes of 10 feet and below."

The portion of the valley here referred to as covered with sand is that portion of the borders of the Yuba River extending across the Sacramento Valley from the foothills to its junction with Feather River at Marysville, a distance of about 12 miles. Formerly, before hydraulic mining operations commenced, the Yuba River ran through this part of its course in a deep channel, with gravelly bottom from 300 to 400 feet wide, on an average, with steep banks from 15 to 20 feet high at low water on either side. From the top of the banks on each side extended a strip of bottom lands of rich, black, alluvial soil, on an average a mile and a half wide, upon which were situate some of the finest farms, orchards, and vineyards in the State. Beyond this first bottom was a second bottom, which extended some distance to the ridge of higher lands, the whole constituting a basin between the higher lands on either side of from a mile and a half to 3 miles wide. Not only has the channel of the river through these bottoms been filled up to a depth of 25 feet and upward, but this entire strip of bottom land has been buried with sand and débris many feet deep, from ridge to ridge of high land, and utterly ruined for farming and other purposes to which it was before devoted, and it has consequently been abandoned for such uses.

Dr. Teegarden's lands afforded a very striking example of individual injuries inflicted by this mining débris. Dr. Teegarden is a prominent citizen of Yuba County, having for some years represented the county in the State senate. He owned 1,275 acres on the Yuba bottoms some 3 or 4 miles above Marysville, on the north side. All except the 75 acres now lying outside the levee have been buried from 3 to 5 feet deep with sand and utterly destroyed for farming purposes, for which injuries he has received no remuneration. He now lives in a small house near the levee, on the outside, which is liable to be swept away should the levee break opposite to him during an extraordinary flood. Dr. Teegarden testifies that the main filling up was in 1879 and 1880, but that there has been a constant addition to it ever since, and that during the last year it has filled up faster than at any other time; that he built 3 miles of levee to protect it, but it proved insufficient; and that the land is 5 to 6 feet higher with sand and sediment on the river, or inside of the levee, than on the outside, where he lives.

A considerable portion, but not all, of the lower bottoms of the Yuba was covered by the accumulated débris brought down by the great flood of 1862; but it has been extending and deepening ever since. Much, perhaps most of it, was more or less covered as early as 1868 or 1869. Since that time levees have been built by the citizens of Marysville and Yuba County along the ridge on either side for the purpose of preventing a further spread of the devastation and for the protection of Marysville and the adjacent country. In addition to the levees so erected, as O'Brien, who did the work, testifies, the miners themselves five years ago built a levee for the same purpose, being the levee on the south side of the Yuba, from the foothills to the Hedges grade, with which it connected at Hedges Station, a distance of 8 miles, at a cost of $86,000, of which sum the defendants in this suit paid 80 per cent. This is the levee which, connected with Hedges grade from its connection to the Feather River, protects the country from overflow on the south. It broke in three places in Linda Township in June last, when the English Dam gave way, and the country for a considerable distance below, extending to the Eliza tract, several miles distant, was flooded with some, though not great, damage, the flood from the reservoir having soon spent itself. Not only has all the space between these levees been filled with this débris to a level with the highlands upon which they are built, but for miles of the lower portion of the river the filling between the levees is several feet above the level of the surrounding country on the outside. The intervening space is grown up with young cottonwoods and willows. The river has now no definite channel within these bounds, but runs anywhere over the space between the levees, situate 2 to 3 miles apart, according to the obstructions its waters meet from time to time by growing trees or accumulations of driftwood or deposits made by itself, thereby raising the bed, where it actually for a time runs, to a higher level than the bed of such surrounding channel as it has.

This broad channel or bed, such as it is, is several feet higher than the lands of the surrounding country outside the levee, which outside lands have no protection from overflow of the waters of the Yuba, surcharged with débris, except the slender intervening artificial banks so erected by the people and the miners for that purpose. The lands

thus already buried and destroyed are over 15,000 acres, or 25 square miles; or, taking the average width, a tract from the foothills to Marysville, 12 miles long along the river by 2 miles wide. The filling in the river bed is generally 25 feet or more, and at its immediate junction with Feather River at Marysville is about 20 feet deep—some witnesses make it deeper—where it forms a bar of nearly that depth across Feather River. The depth of the filling is increasing year by year and raising the bed of the river within the levees higher and higher above the surrounding country outside the levees. The depth of the filling increases as the river is ascended, till at Squaw Flat, near Parks Bar, below Smartsville, at the entrance of the foothills, according to the testimony of O'Brien, a witness for defendants, it is *150 feet deep*. Opposite Sucker Flat ravine it is 90, and at the narrows above Smartsville, 60 feet deep. The deposits constituting the first 50 feet, at Squaw Flat, have been there 10 or 12 years, and the rest has accumulated since. At a point near this, at Roses Bar, where the channel was once but 100 to 300 feet wide in the bed of the canyon, it has now been raised by filling till it is 3,000 feet wide. But at these points no valuable lands are covered.

The result as affecting the navigability of the waters of the State, will be stated upon the authority of Mendell's report, which was made upon instrumental surveys and actual measurements, and is amply supported by other evidence. The low-water level of Feather River, at Marysville the head of navigation, at the date of his report, has been raised fully 15 feet—at this time it is more—indicating a rise of the bed of the river to that height above its former bed. The filling at the mouth of the Feather River is fully 5 feet. Says Mendell:

"Taking 15 feet at Marysville and 5 feet at the mouth, the difference, 10 feet, is to be added to the old fall. This increases the slope of the Feather, in its navigable part, 4 inches to the mile. This increase has impaired the depth of water and the practicability of navigation to a considerable extent. Applying to the navigable portion of the Feather the rule adopted for the minimum deposit in the Sacramento, namely, that the average filling is equal to the elevation of the plane of low water, we will have for the 30 miles from Marysville to the mouth, an average depth of 10 feet over the bed of the river. This estimate is thought to be here, as in the Sacramento, considerably below the fact."

Some witnesses say it is now 15 feet. Again:

"As a consequence of these changes, a higher flood line and greater exposure to overflow now exists for all riparian lands on both these rivers. This is an element of considerable loss to the country, but its description and discussion do not come within the limits of this investigation. * * * The elevation of the bed of the river is not accompanied by an equal rise in the level of the banks. The level of the beds approaches more and more the level of the banks. In the cases of the Yuba and Bear, nonnavigable streams, the level of the beds has risen from a depth a number of feet below the banks to an elevation of several feet above the banks. These instances may be taken to illustrate the ultimate condition of the Sacramento and Feather Rivers, under a continuance of the influences to which they are now subjected. The abandonment of existing channels is a consequence to be apprehended."

It is claimed by plaintiff, and the testimony on the point is conflicting, that there is danger of the Sacramento leaving its channel at Grays Bend and running some distance from Sacramento city to the west. In the Sacramento River a similar rise in its bed has taken place from similar causes. During the first 20 years of mining, from 1849 to 1869, the low-water plane in the river at Sacramento was raised 2.9 feet. During the next 10 years of hydraulic mining, from 1869 to 1879, the rise in this plane was doubled. It has been raised fully 6 feet from 1849 to 1881. Says Mendell:

"As a consequence of the elevation of the bed, the tidal influence which, in 1849, extended at least as high as the mouth of the Feather, 25 miles above Sacramento, and was quite 2 feet at Sacramento, is now no longer noticeable above Heacock Shoals, 9 miles below Sacramento. The tide, within the past 30 years, rose on these shoals as much as 3 feet. * * * Twenty-five miles below Sacramento the river divides into two delta channels, which unite below, the intermediate distance by the two channels being 18 miles by Old River and 12 miles by Steamboat Slough. In the earlier days of navigation, and until six or eight years ago (before 1881) Steamboat Slough was the channel used by all boats and vessels."

It is a part of the public history of the State, with which all the earlier settlers are familiar, that for years the comparatively deep-draft steamers, *Senator* and *New World*, the former built to run from New York to Portland, Me., and the latter to run on the Atlantic Ocean out of New York, both of which either came around Cape Horn or through the Straits, ran regularly through Steamboat Slough. This slough is now filled up, so as not to be navigable for the light-draft river boats in use at the present day, and its navigation abandoned, steamers going by the longer route of Old River. The beds of the river have not only been filled and raised for several feet, but the channels have been largely contracted in width. So, also, from similar causes, the shoal water in Suisun, San Pablo, and San Francisco Bays and in the Straits of Carquinez have largely increased, and the navigable channels of these waters have been considerably and materially contracted. The débris from Bear River and the American, of course, contribute their share to fill the Sacramento below the mouth of the American and Steamboat Slough, as do some of the southern rivers, to swell the amount of deposits in the Straits of Carquinez and Suisun, San Pablo, and San Francisco Bays, but the mines of the Yuba discharge a much larger amount of débris than all the other mines together.

In speaking of remedial means, Col. Mendell says:

"The statement of the case presented in the preceding pages seems to establish the necessity of measures of remedy or alleviation, even in the event that no further contribution be made to mining detritus in the beds of streams. * * * The preservation of river beds and routes of drainage requires that effective restraint be imposed upon mining detritus. Otherwise, these drainage lines may be expected to suffer the fate which overtook their prototypes, the Pliocene rivers, which were obliterated by enormous deposits brought down by their own currents. It may be added that the conservation of existing facilities for navigation equally requires restraint of the flow of sand and gravel; and that no important improvement of the channels can be expected until this result shall be secured. Under all circumstances, restraint is the first and essential step to any projects, whether of alleviation, conservation, or improvement. It has been shown that in the beds of the American, Bear, and Yuba there are now lying many millions of cubic yards of material in positions where it is comparatively harmless, and that each yard, as a rule, adds something to the volume of these deposits; but that, whether anything is added or anything subtracted, which is sometimes the case, depends upon the volume and power of the floods. As a rule the mines supply more material annually than the floods are able to transport over the grades in the lower portions of the rivers. If the floods were of sufficient duration, the accumulations would be found lower down and in more dangerous positions. Instead of lying in the bed of the Yuba, they would be in the Feather and Sacramento."

The waters of the Yuba are so charged with débris that they are wholly unfit for watering stock, or for any of the uses, domestic or otherwise, to which water is usually applied, without first being taken out of the stream and allowed to stand in some undisturbed place and settle. As it comes down to Marysville it is so heavily charged with sand as to render it unfit even for surface irrigation.

In pursuance of the provisions of the drainage act of 1880 (Stat. 1880, p. 130), the State, under the supervision of the State engineer and Col. Mendell, as consulting engineer, erected a brush dam for impounding débris about 2 miles in length across the Yuba River, from ridge to ridge of highlands, some 8 miles above Marysville. At the first ordinary flood in the following rainy season a large section on the northerly end and two other sections toward the south were swept away. According to the report of Hamilton Smith, its engineer, to the North Bloomfield Co., made in July, 1881, after the break by the floods, this dam was at its greatest height, 14 feet, "its cost being in the neighborhood of $120,000," and it broke in three places, as follows: "The east embankment at the northern end has been washed away, nearly down to the original level, from the end of the brushwork to the shore, a distance of 400 feet; the brush dam has been cut away entirely in two places, one 760 feet and the other 230 feet in length, measured on the crest. In two places there are small gaps, but the foundation is undisturbed. Out of a total length of 10,000 feet there has therefore been destroyed about one-seventh." Afterwards, during the dry season, the dam took fire, and a large portion of the remainder was burned. An impounding dam was also constructed by the State, under the same act, on Bear River, with similar results. These dams, with connecting and auxiliary levees built by the State, are understood to have cost over $500,000.

The North Bloomfield Mining Co., defendant, has constructed a dam to impound its débris 50 feet high near the junction of Humbug Canyon with the South Yuba. The dam, not having been carried higher as it filled up, is now full, and the débris that has passed over the dam has filled the canyon and the South Yuba below the dam to a level with the débris above, so that now the débris passes along down the canyon over the dam without obstruction, as though no dam at all existed at that point. A similar dam erected across Sucker Flat Ravine at Smartsville to impound the débris of the mines at that place is in a similar condition.

The complainant has owned in fee for more than 20 years, and he still owns, an undivided half of three parcels of land held under a patent of the United States issued upon a grant made by the Mexican Government to John A. Sutter and known as the New Helvetia grant. One is a city lot situated in Marysville, at the corner of D and Second Streets, near the business center of the town and about 500 feet from the levee on the Yuba, which lot is covered by a brick block of stores called the Empire Block, erected about 1854 or 1855, at a cost somewhere between $40,000 and $60,000. Formerly the steamboat landing was in the Yuba nearly opposite this block, just below the ferry, on the Sacramento Road, but now the Yuba is filled up and the steamboat landing is in Feather River, opposite Yuba City, which is in Sutter County, three-fourths of a mile distant. Another is a tract of farming land, consisting of 952 acres, situate on the east bank of Feather River a few miles below Marysville, known as the Eliza tract, upon which there was formerly a public steamboat landing, used for receiving and discharging freight and passengers, but by reason of the filling of the river in front to the depth of 12 to 15 feet it is now of little use. The third is a tract of land of 720.57 acres, known as the Hock farm tract, on the western bank of Feather River not far from the Eliza tract, but on the opposite side of the river. Of the Eliza tract 75 acres and of the Hock farm tract 50 acres of the bottom lands, being the best land on these tracts, were buried by débris in 1862 and subsequent years, and they are still covered from time to time with fresh deposits. These lands have become covered with cottonwood and willows, and they are now useless for agricultural purposes. Other portions of these tracts are still within the levees erected and liable to overflow.

About 1868 the people of Marysville found it necessary to build levees around the city and along the north bank of Yuba River to protect it from the rapid encroachment of the débris coming down the Yuba, and levees were built. It has been found necessary to increase these levees in height and thickness from year to year ever since. In 1875 the levee on the north side of the Yuba broke some 3 or 4 miles above the city and the city and other lands were not only flooded but a large amount of débris was deposited. This was the first time Marysville was ever flooded, although the amount of water that fell, or was in the valley at any one time, was much less than in the great flood of 1862. So in 1881, with much less water than at the great flood, it rose to a higher point at Marysville than ever before. This was doubtless owing in great part to the filling up of the channels and elevation of the beds of the rivers, and probably in part also to the general levee system adopted for the protection of the lands of the valleys. At the break of the levee and flooding of the city of Marysville in 1875 complainant's Empire Block in Marysville was materially injured. The water was over 4 feet deep in it and débris from the Yuba was deposited in it to a considerable depth. The underpinning of the center of the building was washed out and the roof fell in. It cost between $2,000 and $3,000 to put it in repair again. Not only this building but many others had valuable basements in use prior to 1875, which were filled at that time, and since then the owners of basements in Marysville have been compelled to abandon their use.

The level of the bed of the Yuba and the water flowing in it having been elevated by these mining deposits above the level of the floors of basements of the buildings in Marysville, the water in the basements rises and falls with the river, to a greater or less extent, from percolation, rendering them unfit for use, and compelling their abandonment. So, also, the sewerage of Marysville, and of Empire Block, has been greatly obstructed and injured by the same means. In 1881 the water is stated by some of the witnesses to have been 4 feet higher than in 1875, and 8 feet higher than the great flood of 1861–62. The trestle work of the D Street Bridge in 1876 was 10 to 12 feet above the ground. Now it is filled so that it is within 2 or 3 feet of the water, and one can step from the trestle work to the bed of the stream; and in 1881 the flood went over the bridge, depositing gravel on it. In 1881 the inhabitants were called out in the night to increase and strengthen the north levee, and only by the most strenuous exertions of those able to work in raising the levees several feet in places, by means of gunny sacks filled with sand, did they escape a break and inundation of water and sand.

The taxes of the citizens of Marysville from year to year amount to from 2 to 7 per cent upon the assessed value of their property, a large part of which is expended upon their levees, to widen and strengthen them and to increase their height as the height of the débris within the levees is increased. The levee tax alone in Marysville and in Sutter County, opposite, in some instances has been as high as 6 per cent. During the present year a large amount has been expended by the city on the levee on the north side of the Yuba. For some miles there have been thrown out jetties every few yards, at an angle downstream, by means of timbers and poles resting on supports fastened to the earth, covered with willow brush and packed with sacks filled with sand, the object being to check the flow of the current, turn it from the bank so as to prevent its cutting it away, and by deadening the current compel it to deposit its débris in the still water and thus aid in widening and strengthening the levee itself. For all these purposes and to protect his property complainant annually pays large taxes that would otherwise be unnecessary. This levee is the only barrier which prevents the waters of the Yuba within the levee, the bed of which is higher than the lands outside, at flood time from flowing over, loaded with sand to their full carrying capacity and depositing their débris in Marysville and from at all times flowing over and depositing their load of sand and other débris upon the surrounding country, which is now for some miles around below the level of the bed of what channel there is within the two levees. In 1881 the south levee broke in Linda Township, 7 miles above Marysville and ran down over the country for several miles, flooding complainant's Eliza tract, which was under water until June, preventing the raising of a crop for that year. Any breaking of the south levee during a flood sends the water down to the Eliza tract and overflows it unless the small private levee built by the occupant, the tenant of complainant, at his own expense, is sufficient to protect it.

In June last (1883) the English Dam, near the summit of the mountains, which forms the reservoir of one of the defendants, gave way and the accumulated waters came down the Yuba in a torrent, sweeping everything before them, a distance of 85 miles in about 10 hours, rising at some places in its canyons, it is said, to a height of 90 feet, and at Marysville, where the channel is broad, 2½ feet. At Linda, 7 miles above Marysville, meeting some obstruction, its current was turned against the south levee, which broke at three points, the water rushing through and down over a broad stretch of the lower plains outside, to and upon the Eliza tract again. The water having run out of the reservoir in an hour, the torrent soon spent itself, and no considerable damage was done to the Eliza tract, although considerable damage resulted to the intervening lands. In this case, however, the small private levee constructed by the tenant of Woodruff for the protection of this and other lands held by him would have protected this tract from this brief flood had there not been a culvert the gate of which the proprietor refused to have shut, giving as a reason that he desired to show his neighbors, who refused to contribute to the expense of building this private levee, that their lands were in danger without it. Had the rivers all been high and this torrent continued for several days, as sometimes happens from natural causes, there is no knowing what the result would have been. These torrents sometimes happen in nature on these mountain watercourses, as, for instance, in 1862, when the Sacramento River rose between 50 and 60 feet at Folsom, and in 1881 the Sacramento River cut its way down to its old bottom. And they sometimes continue for several days. So, in 1881, the Sutter Levee broke below the mouth of the Yuba River, at Shanghai Bend, 1 mile above Woodruff's land, and the river overflowed complainant's Hock farm tract, washing off its soil in many places as deep as it has been plowed and depositing sediment on it. One witness says gravel as large as hens' eggs passed through the break. The Hock farm tract was overflowed in 1862, 1867–68, 1871–72, and 1881—the later overflows being since the building of the levees. The Hock farm of complainant is one of the best in the county, producing large crops of grain, in which it has been cultivated for many years. A mile below is O'Neils Landing, at which large amounts of grain used to be shipped. This, like the Eliza Landing, has been destroyed, or nearly so, by the filling in front from mining débris.

The defendants have attempted to show that much of the danger from overflows results from the acts of the people themselves, in consequence of the improper system of leveeing adopted, and the cutting off by such means of some outlets of water, available at high water. There is, as might be expected, some conflict in the testimony of experts and others on these points; but it is probable that they have not in all instances adopted the wisest plan possible in their efforts to protect life and property. These works are always erected on the judgment of engineers, or other men presumed to be competent, and rarely without some difference of opinion, and it is scarcely possible that any plan wholly unobjectionable to all could be adopted. However this may be, there can be no possible doubt, not only that the deposit of mining débris has greatly augmented the injuries heretofore received, but that it largely enhances the danger for the future, and that it is the great source and cause of all or most of the evils which are suffered and threatened. The evils resulting from the occasional overflow of pure water, or water deteriorated only by natural erosions and causes, and which leaves no deleterious sediment behind to permanently destroy the land, are trifling compared with those resulting from the addition and deposit of the enormous amount of débris arising from hydraulic mining. At every break of the levees on the Yuba a heavy volume of water, charged to its full transporting capacity with sand and other deleterious material, is poured out and deposited on the lands over which it flows, where it remains, on the subsidence of the floods, to work out its destructive effects. If there were not a levee on the river, and not a slough cut-off, the mining débris deposited in the navigable and nonnavigable waters of the State, and burying the 25 square miles of land between the levees of the Yuba, would not only still be there, but many other square miles of the adjacent country would also be buried, but for the resistance interposed by the slender barriers erected by the people, including the complainant, at great, continuing, and ever-recurring expense, for their protection.

If the great and unexampled flood of 1862, by bringing down in one mass the accumulations of débris of previous years, did so much, as is claimed by defendants, to fill the channel of the Yuba and cover the lower portions of its bottom lands, what must be expected should there be a recurrence of such a flood, bringing down the vastly larger accumulations with which the watercourses of the mountains are now choked and gorged and precipitating it in a mass upon the deposits now between the levees which are already several feet higher than the surrounding country, and which levees constitute the only barrier upon which Marysville and the adjacent country can rely for protection? A concurrence of conditions which produced such an extraordinary flood as that of 1862, which has once happened, is liable to occur again. The concurrence of conditions was high water in the Sacramento and all its affluents on the 1st of January, 1862; immense deposits of snow already existing in the mountains along the whole watershed of the Sacramento and its tributaries; and a general rain warm enough to melt the snow on which it fell throughout the same region, continuing through many days, with only short intervals, whereby the rain that fell at the time, augmented by the water furnished by the rapidly melting snows, was precipitated into the valleys below, already full. Should there be a recurrence of such conditions in the present condition of the watercourses of the States, gorged with débris, no man can safely predict the result. To the most casual observer, even though but slightly acquainted with the operations of the forces of nature, the present condition of things and the dangers to the residents of the valleys that may reasonably be anticipated in the future must be anything but assuring.

Unless the acts of the defendants complained of, in view of all their necessary consequences, are legal—unless they are authorized by some valid law—it does not appear to us to admit of doubt or discussion that the results of those acts heretofore developed, still existing and operating, and certain to continue and increase in the future, as disclosed by the evidence and indicated by the preliminary statement of facts, constitute a grievous and far-reaching public nuisance, most destructive in its character, or, in the terse language of one of complainant's counsel, a nuisance, "destructive, continuous, increasing, and threatening to continue, increase, and be still more destructive. * * * After an examination of the great questions involved as careful and thorough as we are capable of giving them, with a painfully anxious appreciation of the responsibilities resting on us * * * we can come to no other conclusion than that complainant is entitled to a permanent injunction. * * * Let a decree be entered accordingly." Judge Deady wrote a concurring opinion.

EXHIBIT B.

[Extracts from ch. 183, Revised Statutes of the United States, approved Mar. 1, 1893 (known as the Caminetti Act).]

An act to create the California Débris Commission and regulate hydraulic mining in the State of California.

SECTION 1. *Be it enacted, etc.*, That a commission is hereby created, to be known as the California Débris Commission, consisting of three members.

The President of the United States shall, by and with the advice and consent of the Senate, appoint the commission from officers of the Corps of Engineers, United States Army. Vacancies occurring therein shall be filled in like manner.

It shall have the authority, and exercise the powers hereinafter set forth, under the supervision of the Chief of Engineers and direction of the Secretary of War.

SEC. 2. That said commission shall organize within 30 days after its appointment by the selection of such officers as may be required in the performance of its duties, the same to be selected from the members thereof.

The members of said commission shall receive no greater compensation than is now allowed by law to each, respectively, as an officer of said Corps of Engineers.

It shall also adopt rules and regulations, not inconsistent with law, to govern its deliberations and prescribe the method of procedure under the provisions of this act.

SEC. 3. That the jurisdiction of said commission, in so far as the same affects mining carried on by the hydraulic process, shall extend to all such mining in the territory drained by the Sacramento and San Joaquin River systems in the State of California.

Hydraulic mining, as defined in section 8 hereof, directly or indirectly injuring the navigability of said river systems carried on in said territory other than as permitted under the provisions of this act is hereby prohibited and declared unlawful.

SEC. 4. That it shall be the duty of said commission to mature and adopt such plan or plans for examination, and surveys already made and from such additional examinations and surveys as it may deem necessary as will improve the navigability of all the rivers comprising said systems, deepen their channels, and protect their banks.

Such plan or plans shall be matured with a view of making the same effective against the encroachment of and damage from débris resulting from mining operations, natural erosion, or other causes, with a view of restoring, as near as practicable and the necessities of commerce and navigation demand, the navigability of said rivers to the condition existing in 1860, and permitting mining by the hydraulic process, as the term is understood in said State, to be carried on, provided the same can be accomplished without injury to the navigability of said rivers or the lands adjacent thereto.

SEC. 5. That it shall further examine, survey, and determine the utility and practicability, for the purposes hereinafter indicated, of storage sites in the tributaries of said rivers and in the respective branches of said tributaries, or in the plains, basins, sloughs, and tule and swamp lands adjacent to or along the course of said rivers, for the storage of débris or water or as settling reservoirs, with the object of using the same by either or all of these methods to aid in the improvement and protection of said navigable rivers by preventing deposits therein of débris resulting from mining operations, natural erosion, or other causes, or for affording relief thereto in flood time and providing sufficient water to maintain scouring force therein in the summer season; and in connection therewith to investigate such hydraulic and other mines as are now or may have been worked by methods intended to restrain the débris and material moved in operating such mines by impounding dams, settling reservoirs, or otherwise, and in general to make such study of and researches in the hydraulic mining industry as science, experience, and engineering skill may suggest as practicable and useful in devising a method or methods whereby such mining may be carried on as aforesaid.

SEC. 6. That the said commission shall from time to time note the conditions of the navigable channels of said river systems, by cross-section surveys or otherwise, in order to ascertain the effect therein of such hydraulic mining operations as may be permitted by its orders and such as is caused by erosion, natural or otherwise.

SEC. 7. That said commission shall submit to the Chief of Engineers, for the information of the Secretary of War, on or before the 15th day of November of each year, a report of its labors and transactions, with plans for the construction, completion, and preservation of the public works outlined in this act, together with estimates of the cost thereof, stating what amounts can be profitably expended thereon each year.

The Secretary of War shall thereupon submit same to Congress on or before the meeting thereof.

SEC. 17. That at no time shall any more débris be permitted to be washed away from any hydraulic mine or mines situated on the tributaries of said rivers and the respective branches of each, worked under the provisions of this act, than can be impounded within the restraining works erected.

SEC. 24 That for the purpose of securing harmony of action and economy in expenditures in the work to be done by the United States and the State of California, respectively, the former in its plans for the improvement and protection of the navigable streams and to prevent the depositing of mining débris or other materials within the same, and the latter in its plans authorized by law for the reclamation, drainage, and protection of its lands, or relating to the working of hydraulic mines, the said commission is empowered to consult thereon with a commission of engineers of said State, if authorized by said State for said purpose, the result of such conference to be reported to the Chief of Engineers of the United States Army, and if by him approved shall be followed by said commission.

SEC. 25. That said commission, in order that such material as is now or may hereafter be lodged in the tributaries of the Sacramento and San Joaquin River systems resulting from mining operations, natural erosion, or other causes, shall be prevented from injuring the said navigable rivers or such of the tributaries of either as may be navigable and the land adjacent thereto, is hereby directed and empowered, when appropriations are made therefor by law, or sufficient money is deposited for that purpose in said débris fund, to build at such points above the head of navigation in said rivers and on the main tributaries thereof, or branches of such tributaries, or at any place adjacent to the same, which, in the judgment of said commission, will effect said object (the same to be of such material as will insure safety and permanency), such restraining or impounding dams and settling reservoirs, with such canals, locks, or other works adapted and required to complete same.

The recommendations contained in (1) Executive Document No. 267, Fifty-first Congress, second session, and Executive Document No. 98, Forty-seventh Congress, first session, as far as they refer to impounding dams, or other restraining works, are hereby adopted, and the same are directed to be made the basis of operations.

The sum of $15,000 is hereby appropriated, from moneys in the Treasury not otherwise appropriated, to be immediately available to defray the expenses of said commission.

NOTE.—(1) These are House Executive Document 98, Forty-seventh Congress, first session, and House Executive Document 267, Fifty-first Congress, second session

The former contains the report of Lieut. Col. G. H. Mendell, Corps of Engineers, United States Army, of January 26, 1882, prepared in accordance with a provision contained in the river and harbor appropriation act of 1880, June 14, chapter 211 (21 Stat. L., 196).

The latter contains the report of February 9, 1891, submitted by a board of engineer officers, constituted under the act of 1888, October 1, chapter 1057 (25 Stat. L., 498), "for the investigation of the mining débris question in the State of California."

EXHIBIT C.

[Annual Report of the Chief of Engineers, United States Army, 1907, pt. 3, pp. 2262–2269, inclusive.]

REPORT OF CALIFORNIA DÉBRIS COMMISSION WITH REGARD TO FUTURE OPERATIONS FOR CONTROL OF MINING DÉBRIS, IMPROVING NAVIGABILITY, AND PROVIDING FOR CONTROL OF FLOODS ON THE SACRAMENTO AND FEATHER RIVERS, CAL.

SAN FRANCISCO, CAL., *June 30, 1907.*

GENERAL: Under date of February 11, 1907, the California Débris Commission, consisting then of Col. W. H. Heuer, Maj. C. H. McKinstry, and Maj. William W. Harts, submitted a report recapitulating the work done and results obtained to that time and proposing future work. The following report is based upon that of February 11, 1907. The changes made by the present commission are not changes in principle, but only in details, and have been rendered advisable by events which have occurred since the date of the former report.

The principal duties of the commission, as prescribed by the Caminetti act, are:

First. To regulate hydraulic mining so as to permit the fullest resumption of this industry compatible with the protection and restoration of the navigability of the Sacramento, Feather, and San Joaquin Rivers and the prevention of damage from overflow, etc.

Second. To improve the navigability of all the rivers of this system, deepen their channels, and protect their banks, with a view of restoring, as near as practicable and the necessities of commerce and navigation demand, the navigability of said rivers to the condition existing in 1860, and, further, to afford relief in flood time and to provide sufficient water to maintain scouring force in the summer season.

The first of these objects may be said to have been accomplished.

The plan adopted was, in brief, to require each miner to impound the tailings resulting from his operations on land owned or controlled by him behind dams to be approved by the commission. The two types of dam found most useful were log crib dams filled with quarried rock and brush dams. For these types standard specifications are now authorized. Earth or gravel dams, with spillways excavated in the bedrock of the banks, were used where sites permitted.

Under this plan hydraulic mining is carried on at the present time under the supervision of the commission. While it is doubtless a fact that some illegal hydraulic mining is done and that occasionally restraining dams behind which tailings are stored fail under suspicious circumstances, it is nevertheless true that the work of the commission is preventing any considerable addition of débris to that already in the river beds. The downward movement of the débris which had already been dislodged at the time the commission was created has of course continued, except as checked by the commission's restraining works in the Yuba, to be presently described.

Before proceeding to the description of the investigations and work done under the second head, it is well to point out that while the ultimate object is the restoration of former conditions of navigability, direct operations looking to improvement of depths could not be undertaken until an effort had been made to check the influx of débris into navigable streams. The first of the débris-carrying tributaries to be investigated was the Yuba, because this stream contains more débris, the further movement of which would be injurious to navigation, than do all the other tributaries of the Sacramento combined. The commission's plan for the Yuba is well underway and bids fair to be successful. It is more particularly described below. The investigations made of the Bear and American indicate that while some dredging in the lower reaches may perhaps be desirable, restraining works will be too costly for the good accomplished. The facts on which this conclusion is based are given below:

Yuba River project: The project for the Yuba River contemplates (1) holding the great quantities of mining débris now in that stream and its tributaries by works built in the river bed at and above Daguerre Point, and (2) restricting the low-water channel below Daguerre Point within narrower, well-defined limits, in order to preserve in place as much as possible of the extensive deposits in the last few miles of the river.

These objects were to be accomplished (1) by the construction of four restraining barriers and a settling basin in the bed of the river, the structures to be provided with necessary weirs and conduits to regulate the inflow and outflow of water and to cause a deposition of the finer material carried in suspension, and (2) by the construction of two training walls. (See H. Doc. No. 431, 56th Cong., 1st sess.)

Work done under this project: The condition of the work under this project is as follows:

(a) Barrier No. 1: This barrier has been completed to a height of 14 feet and a contract had been entered into for adding a step 8 feet high and increasing the width of the spillway, and work under the same had been begun when about 600 feet of the barrier was destroyed by the flood of March, 1907.

A full report of the destruction of this structure was made to the Chief of Engineers on April 1, 1907.

It is not considered advisable to rebuild, and no further work on same is contemplated.

(b) Barrier No. 4: About 95 per cent of this barrier, known as the Daguerre Point barrier, has been completed, and the remainder will be completed as soon as the training walls below are constructed.

This barrier is a dredger embankment thrown up by the dredgers of the Yuba Consolidated Gold Fields under an agreement with that company and without cost to the United States.

In connection with this barrier and to serve as a spillway a cut has been made across Daguerre Point of sufficient capacity to take the flood discharge of the stream. It was completed in January, 1906.

(c) Settling basin: The entrance gates were completed in January, 1907. An agreement has been made with the Marysville Gold Dredging Co. to construct, without cost to the United States, about 4,400 feet of embankment on the south side of the basin, and work is underway. An agreement has been made with Mr. James O'Brien to raise, without cost to the United States, the present levee along the river side.

(d) Training works: Agreements have been made with the above gold-dredging companies to construct, without cost to the United States, the south training wall, and about 4,000 feet, or one-third of it, has been completed.

A contract is in force for the construction of the north training wall, and about 90 per cent of the work has been done.

The embankments referred to above as being constructed by the gold-dredging companies, without cost to the United States, are a portion of the embankments which they construct to "impound" themselves—that is, to prevent their tailings from working into the stream below and to permit operations at high stages of the river.

Work remaining to be done—(a) Barriers: No further work is contemplated on barrier No. 1. No work is contemplated on barrier No. 2. Barrier No. 4 will be completed without cost to the United States, and with an average height of 30 feet will furnish storage for about eight years. After the first storage season, however, the Daguerre Point Cut spillway and the entrance gates to the settling basin will have to be raised from time to time. About $100,000 are available for this work, which sum should be sufficient for about five years.

(b) Settling basin: The outlet gates of this basin and a portion of the levee on the south side, about 6,000 feet, remain to be constructed before the basin will be available for use.

To obtain the full capacity of this basin it will be necessary later to raise the west side levee to a height beyond that called for in the agreement with Mr. O'Brien.

It is estimated that this work can be done at a cost not exceeding $130,000.

(c) Training works: The south training wall will be completed to the length of about 2 miles without cost to the United States, and the north training wall to the same length at a cost of about $50,000.

It is thought that the funds available are sufficient for the completion of the works contemplated at present under the project and to maintain same for several years after they are put in use. On the other hand, it is not possible to state at the present moment whether it may not prove necessary to extend the training walls beyond the length now contemplated.

The following methods of protecting the navigable streams from the influx of mining débris have been investigated:

(a) The construction of storage reservoirs in the high canyons of the rivers into which mines might drain their tailings, thus storing the detritus in regions where land was cheap and material for dam construction easily obtainable.

(b) The diversion of the rivers into the "tule" lands along the Sacramento and Feather Rivers, thus raising these lands and reclaiming them for agricultural purposes.

(c) The construction of settling basins in the lower reaches of the streams.

(d) The dredging of the beds of the navigable and the nonnavigable streams, placing the excavated material on the banks to assist in flood control and land protection.

The last-named method is the one which it is the main object of this report to explain and recommend.

High sites for storage dams: Thorough investigation indicates that this method, though successful in other places, can not be satisfactorily applied in the high Sierras. Few capacious reservoir sites are available at which dams are practicable at reasonable expense or in locations where the reservoirs would serve many or large mines.

In some of the small tributaries several places were found where high dams might be erected, but the great cost of these dams compared with the amount of benefit to be derived therefrom and the prohibitive burden on the mines if taxed therefor as prescribed in the law, combined with the small capacity of the reservoirs, rendered their construction inadvisable. The method of using high dams, therefore, in any of these streams, or in their higher tributaries, was abandoned by the commission as impracticable.

Diversion into "tules": The only overflowed land that could be used for this purpose without carrying the entire flow of the Yuba or other of the débris-carrying streams entirely over or under the Feather or Sacramento Rivers, or both, is the area known as the "American Basin," lying east of the Sacramento between the Bear and American. It was manifestly impracticable to carry, at reasonable cost, even a small river like the Bear over or under the Sacramento.

In order to carry débris, surface slopes must be comparatively high. In the Yuba the finest material is deposited where the slopes are about 5 feet to the mile, fine gravel where the slope is about 10 feet to the mile, and coarse gravel and small bowlders on slopes from 14 to 15 feet to the mile. These figures result from examining the river bed at various places and of course are approximately only. In order, therefore, to carry fine material alone, the minimum slope of any diversion canal, to carry débris, should be at least 5 feet to the mile. The average miner's sluice has a fall of about 7 inches to the 12-foot box. This is equivalent to over 250 feet per mile.

Diversion of the Yuba: The lowest point in the Yuba River at which the flow could be diverted is in the vicinity of Daguerre Point. This is at an elevation of about 120 feet above the sea, to which possibly might be added a few feet by embankments in the river bed. The elevation of the American Basin is approximately 20 feet, and in order to make a deposit, say, 6 feet deep, the outlet of the canal should be at an elevation of, say, 30 feet. This would leave a fall of 90 feet or less, distributed over a distance of not less than 30 miles, giving an average slope of 3 feet per mile. A uniform slope would be impracticable, and the minimum would be far less than the average. It is thus plain that there is not sufficient fall to carry effectively even the very fine materials.

Furthermore, the right of way for such a plan would require probably 16,000 acres of land and would lie in valuable agricultural regions. The cost of the right of way might amount to $1,600,000. These two objections—lack of grade and high expense for right of way—render the adoption of this method of disposing of mining débris inadvisable at the present time for the Yuba.

Diversion of the Bear: A study of the Bear River leads to the same conclusions.

Diversion of the American: Applied to the American River the conditions are somewhat more favorable, but even here this plan was abandoned for similar reasons. This matter was examined at the time of the survey of 1906. The owners of the overflowed land demand about $50 an acre for it, even though the land would ultimately be benefited and would then be returned to them. A company has already been formed to reclaim this land and is not preparing plans for the work. After reclamation the land will be worth upward of $100 an acre; reclamation is said to cost approximately $10 an acre. The land has therefore a high prospective value. The cost of a right of way for a diversion project consequently is prohibitive.

Settling basins and low barriers: The application of this method of treatment to the Yuba has already been described.

The total available storage capacity in the Yuba River bed is about 60,000,000 cubic yards, 20,000,000 cubic yards in the settling basin and 40,000,000 cubic yards in the river bed above Daguerre Point barriers.

By comparison of the surveys of 1899 and 1904 it is ascertained that the increment of débris in these five years amounted to about 15,800,000 cubic yards, or an average annual addition of slightly over 3,000,000 cubic yards. The additions to the river bed between the surveys of 1899 and 1906 amount to a total of 18,000,000 cubic yards, of which 15,100,000 cubic yards were below the barrier and 3,000,000 cubic yards above. These results show a scour below the barrier and a substantial addition above, thus demonstrating the effect then being produced by the barrier. They also indicate that the annual flow of débris for the years 1905–6 was somewhat less than the average.

At an average rate of 3,000,000 cubic yards per year there is, then, storage in the Yuba bed for over 20 years. As the rate of débris flow will diminish with time unless the restrictions on hydraulic mining are relaxed, the actual period should be greater.

It is hoped that the settling basin may be completed during 1909 and that the training walls below Daguerre Point may be completed about the same time.

After the present storage is exhausted, it will be practicable and may be found advisable to use the space between the training walls and the river banks between Daguerre Point and the mouth.

Settling basins and barriers for the Bear: The control of such mining débris as is brought down by this river, by means of settling basins and impounding dams similar to those of the Yuba River, was carefully studied and sites selected where such works could be economically placed. It is estimated that a high dam could be built in the vicinity of Van Giesens for about $70,000, and a settling basin in the lower river for about $230,000, which, combined, would store 20,000,000 cubic yards of débris, at a cost of 1½ cents per cubic yard.

The most desirable site for the settling basin is in the vicinity of Camp Far West, but this land is in the hands of a gold dredging company which refuses to part with it for any reasonable price. Another practicable site was found in the vicinity of the county bridge.

As planned both of these settling basins were to be constructed of gravel embankments sufficiently high never to be overtopped, and were to have concrete spillways designed to take the maximum flow of the river.

The reports of these investigations were lost in the fire of April 18, 1906. The maps (not printed) herewith have been traced from blue prints of the original maps.

In view of the recommendations herein, the commission has not thought it necessary to go to the expense of reproducing the calculations and plans.

Settling basins and barriers for the American: The only site available for storage is the "American Basin," in which, as explained in paragraph 15, the cost of land would be prohibitively expensive. To control the débris of the American by means of settling basins or by diversion would far exceed the cost per cubic yard of storage on the other rivers. A rough estimate shows that any adequate system would cost more than $500,000.

After careful consideration we are of opinion that while this method of treatment is being successfully applied to the Yuba, its great cost on the Bear and American would render its application to these streams inadvisable.

Dredging: The remaining method of treatment is dredging. Suction dredges would be used, and the excavated material would be thrown up into levees along the banks. Applied to the lower courses of the nonnavigable tributaries this method would have the advantage of combining protection from flood overflow and better drainage, with disposal and control of débris. Its additional advantages when applied to navigable streams will be pointed out later.

As to the relative cost of disposing of material by dredging and by settling basins and low barriers, storage by the latter method may be obtained at a cost of about 2 cents per cubic yard, while it is estimated that dredging will cost about 6 cents. A large suction dredge with a capacity of about 150,000 cubic yards per month can be built for about $120,000. The expenses of operation would amount to about $5,000 per month, including maintenance and repairs. For seven months in the year operations can be carried on without serious interruptions from high water.

It appears, therefore, that for those portions of the Bear and American where either dredging or barriers and settling basins could be used, the method of dredging is the more expensive. Nevertheless the commission believes that dredging, with incidental levee construction, is preferable to the other method on account of the concomitant protection from flood overflow afforded.

The commission believes that it will be best at this time not to undertake any operations in the lower courses of the Bear and American, but to begin dredging in the navigable portions of the Feather and Sacramento Rivers.

That dredging would be the main reliance when it came to the direct improvement of the navigable streams has always been evident. But from the beginning it was believed, and rightly, that it would be hopeless to attempt the improvement of the Feather below Marysville until some successful plan of controlling and fixing the old débris in the Yuba had been devised and applied. That similar treatment would be required for the Bear and American was not equally apparent, and, as pointed out above, investigation and study have shown that barriers and settling basins for the lower reaches of these streams are not advisable, though dredging or the construction or thoroughly protected training walls may be. These conclusions and the progress of the work of control in the lower Yuba have now made advisable the application of the method of dredging both to the control of the old débris in the Feather and Sacramento and to the improvement of navigation in these streams. It is an important part of the dredging project that the excavated material shall be thrown up into levees along the banks.

It is estimated that $500,000 is the least sum for which a proper system of settling basins can be provided on the American River and $300,000 the least sum for which a similar system can be provided on the Bear River. So far as controlling the débris in the Sacramento and Feather Rivers and their tributaries and improving the navigability are concerned, we believe that $800,000 spent in dredging would produce wider and more immediate benefit. In addition, the excavated material if thrown up into levees along the banks, would do much to control floods.

The sum in question will be sufficient to equip two suction dredges and maintain them in operation for seven months a year for a period of eight years. The total amount of material moved in this time would probably be as much as 15,000,000 cubic yards.

We would not be understood as meaning that levees of a height sufficient to contain the river at extreme flood could be built on both banks along the entire stretch of river in which these dredges would work during these eight years. It will be recalled that the estimate of the Dabney Board for such levees and cut-offs amounted to more than $16,000,000. It would probably be found advisable to confine the work to one bank of the stream, but in any event the material thrown up by these dredges would be placed so as to form a useful part of any work that may be done hereafter by the State in the prosecution of the Dabney or other flood-control and reclamation project.

With dredging, the operation of the plan and the results obtained can be ascertained at any time. Emergency work can be done wherever and whenever specially needed, or, in short, dredging offers the most hopeful method of accomplishing débris control, improvement of navigation, and levee construction.

Should the application of this method result in restoring the navigable streams to their former condition of depth and flood-carrying capacity, hydraulic mining might be permitted under less severe restrictions than now obtain. Whether unrestricted hydraulic mining can ever again be permitted in this watershed will depend on the results obtained. The additional expense for maintenance due to any expansion of hydraulic mining should be borne by a tax on each mine operating.

Many ditches originally constructed for mining are now used for power purposes, and accordingly hydraulic mining on its former large scale can not be expected, and the use of water for power will gradually grow more valuable.

The State of California should assist, as it has heretofore done in débris work, by paying one-half the total cost. Furthermore, in order to prevent interruption of work, the rights of way for the levees and spoil banks should be secured before dredging is begun. On account of the benefit to the land protected, these rights of way should be procured without cost to the Government or State by the reclamation districts concerned, and the donation of said rights of way should be a condition precedent to the expenditure of money for dredging.

Conclusions: To summarize—

1. We concur in the opinion of our predecessors that dams in the high Sierras are inadvisable on account of cost per cubic yard of storage effected.

2. We believe that for the same reason it is inadvisable to attempt to divert the Yuba, Bear, or American into the "tules" or to construct settling basins or restraining barriers in the lower courses of the Bear or American.

3. We recommend that the Yuba River project be carried to completion, omitting the construction of No. 2 and the reconstruction of barrier No. 1.

4. Of all practicable methods of accomplishing the second of the duties assigned to the commission we believe that dredging in the navigable streams and possibly in the lower courses of the principal nonnavigable tributaries is the most feasible and advisable.

It has been urged against the dredging plan that any improvement of the Feather and of the Sacramento above the city of Sacramento will facilitate the progress of flood waters into the river below Sacramento and will therefore raise the flood plane in the lower river. To this the reply is obvious, that whatever work is done on the Sacramento and its tributaries must and will be done upon well-matured plans, in the preparation of which all elements of the problem will be taken into account. The jurisdiction of the commission is not confined to the Sacramento and its tributaries above Sacramento, but extends as well to the river below Sacramento. To quote the act:

"It shall be the duty of said commission to mature and adopt such plan or plans * * * as will improve the navigability of all the rivers comprising said system (the Sacramento and San Joaquin systems), deepen their channels, and protect their banks. Such plan or plans shall be matured * * * with a view of restoring as near as practicable and the necessities of commerce and navigation demand, the navigability of said rivers to the conditions existing in 1860."

Recommendations: In pursuance of these conclusions and in compliance with the requirements of the act of March 1, 1893, the commission recommends as follows:

That for the direct improvement of navigation in the Feather and Sacramento Rivers, and toward the controlling of débris and floods, an appropriation of $400,000 be made by Congress, its expenditure to be

contingent on the appropriation of an equal amount by the State of California; these sums to be devoted to the construction of two hydraulic dredges and to their operation and maintenance, in accordance with the general terms of this report; provided, furthermore, that all rights of way for levees and spoil banks shall be furnished free of cost to the United States.

Respectfully submitted.

JOHN BIDDLE,
Lieutenant Colonel, Corps of Engineers.
C. H. MCKINSTRY,
Major, Corps of Engineers.
THOS. H. JACKSON,
Captain, Corps of Engineers.

Brig. Gen. A. MACKENZIE,
Chief of Engineers, United States Army.

EXHIBIT D.

REPORT CALIFORNIA DÉBRIS COMMISSION, 1910 (MAJOR PROJECT).

[H. Doc. No. 81, 62d Cong., 1st sess.]

WAR DEPARTMENT,
Washington, June 27, 1911.

SIR: I have the honor to transmit herewith a letter from the Acting Chief of Engineers, United States Army, dated 24th instant, together with copy of report from the California Débris Commission, with maps, containing a project and an estimate of the cost of the same, for the relief from floods in the Sacramento Valley and the adjacent San Joaquin Valley, made in accordance with the requirements of the act of Congress approved March 1, 1893, creating the California Débris Commission.

Very respectfully,

HENRY L. STIMSON,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, June 24, 1911.

SIR: I have the honor to submit herewith, for transmission to Congress, a report, with maps, submitted with letter dated August 10, 1910, by the California Débris Commission, containing a project, together with an estimate of the cost of same, for the relief from floods in the Sacramento Valley and the adjacent San Joaquin Valley. The project is submitted in accordance with the requirements of the act of Congress approved March 1, 1893, creating the California Débris Commission, which act prescribes that the duties of the commission shall be—

"(a) The regulation of hydraulic mining in the territory drained by the Sacramento and San Joaquin Rivers systems, so that mining by that method may be resumed and carried on without injury to other interests in the State;

"(b) To mature and adopt plans to improve the navigability of the above-mentioned rivers, to protect same from damage due to mining débris, and to deepen their channels, protect their banks, etc.; and

"(c) To afford relief in flood time and to provide sufficient water to maintain a scouring force in the summer season."

The first of the above-mentioned objects has already been accomplished, and Congress, in the river and harbor act of June 25, 1910, approved the project submitted by the commission June 30, 1907, for continuing the control of débris in the tributaries of the Sacramento River, mainly by dredging instead of by construction of settling basins. Two hydraulic dredges are provided for, and their operation is to comprise the maintenance of navigable channels as the most effectual means to accomplish the second of the duties assigned to the commission, viz, the improvement of navigation in the rivers of that system. The said act appropriated $400,000, no part of said sum to be expended unless the State of California shall provide a like sum of $400,000 for prosecution of the work.

This report presents a project for control of floods, the third duty assigned the commission. Recognizing that the interests of navigation, débris control, and flood control are inseparably connected, the commission has considered these problems as one general project, thus utilizing for the common good to the fullest extent practicable the works for any one of the three projects.

The question of flood control in the Sacramento Valley is of the utmost importance, and much study has been given to it by a State commission and others. The extensive areas of reclaimable land, its high value after reclamation, and the great damage by frequent floods to land already reclaimed make the problem a vital one which presses for early solution. In some respects the interests of flood control and of low-water navigation are conflicting, and it is the concern of the United States to secure that solution of the flood problem which will be least injurious to the present good low-water channels. With the object of developing the most feasible and practicable plan for flood control, the commission has made surveys of the river and its tributaries, collected a large amount of data, and has given the whole subject exhaustive study, in which reports of former commissions have been utilized.

The plan proposed herein by the commission is known as the by-pass system, for the reason that an auxiliary channel through low lands at some distance from the main river is provided for the passage of the greater portion of the flood waters. This plan is described in paragraph 52 of the within report and involves the building of levees, excavation of channels, purchase of rights of way, construction of spillways, bridges, etc.

The estimated total cost is $33,800,000, from which should be deducted $800,000, provided in the river and harbor act of June 25, 1910, making the net cost of the present project $33,000,000. It is proposed that the State of California shall provide two-thirds and the United States one-third of this sum; also that after completion the State shall maintain all flood-control works.

The commission recommends the adoption of this project for the control of floods in the Sacramento River and its tributaries; that the work begin at once, and provision be made for its early completion; and that upon completion the United States turn over the flood-control works to the State of California for future maintenance.

This report has been referred, as required by law, to the Board of Engineers for Rivers and Harbors for consideration, and the board in its report, dated December 27, 1910, herewith, concurs generally in the plan proposed by the commission, and states that—

"The plan proposed by the commission seems well adapted to fulfill the above objects, subject to such changes as further study or experience in the course of execution may show to be desirable or necessary. The estimates from this point of view should be considered as approximate only, exact determination being impracticable in undertakings of such large magnitude, involving so many diverse interests and various details of cooperation not yet elaborated. The board is inclined to the opinion that further study should be given to the question whether it might not be preferable, even at increased cost, to keep the auxiliary channel wholly on the west side of the river, and thus lessen the risk of injury to the navigable channel where the two cross in the proposed plan.

"A project for the improvement of the Sacramento River below the city of Sacramento for the benefit of navigation was presented under authority of the act of March 2, 1907, and may be found published as House Document No. 1123, Sixtieth Congress, second session. This project provides for a channel 9 feet in depth and 200 feet in width. Under the provision of the act of March 3, 1909, a project has been forwarded by this board, under even date herewith, for the improvement of the river between Sacramento and Red Bluff, which contemplates a channel depth of 4 feet from Sacramento to Colusa, 3 feet from Colusa to Chico Landing, and such depth as is practicable under the plan recommended, from Chico Landing to Red Bluff. (See H. Doc. No. 76, 62d Cong., 1st sess.) These channel dimensions are believed to be sufficient to meet present and reasonable prospective demands of commerce, and will not be benefited by the proposed works of flood control. In fact, there is reason to apprehend greater difficulty in maintaining the low-water channel where the river is widened to increase its flood capacity, also where the by-passes leave the river, and in general where the flood heights are increased by reason of the works of flood control.

"While Congress has hitherto included flood relief among the objects to be accomplished by the work of the débris commission, it appears to have considered this only as incidental to the control of mining débris in the interests of navigation. Should Congress now decide to cooperate with the State of California in a comprehensive project of this magnitude for the purpose of flood control, it is believed that the plan proposed, with such division of cost as Congress may determine, should be adopted, since, in the opinion of the board, it is well designed to secure the desired result. The board reports, however, that the execution of this project is not necessary in the interests of navigation."

I concur in the views of the Board of Engineers for Rivers and Harbors.

Very respectfully,

EDW. BURR,
Acting Chief of Engineers.

The SECRETARY OF WAR.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
San Francisco, Cal., August 10, 1910.

SIR: The California Débris Commission has the honor to submit herewith a project for the relief from floods to the Sacramento Valley and the adjacent San Joaquin Valley.

This is the project which it was stated in the annual report of the California Débris Commission for 1910 would be submitted on or about July 30, 1910.

Very respectfully, your obedient servant,

JOHN BIDDLE,
Lieutenant Colonel, Corps of Engineers,
Senior Member California Débris Commission.

The CHIEF OF ENGINEERS, UNITED STATES ARMY,
Washington, D. C.

APPENDIX A.

REPORT OF CALIFORNIA DÉBRIS COMMISSION WITH REGARD TO AFFORDING RELIEF FROM FLOODS IN THE SACRAMENTO VALLEY AND THE ADJACENT SAN JOAQUIN VALLEY, CAL.

1. The principal duties of the commission as prescribed by the act of Congress approved March 1, 1893, which created the California Débris Commission, are:

"(a) To regulate hydraulic mining so as to permit the resumption of that industry so far as is compatible with the protection and restoration of the navigability of the Sacramento, Feather, and San Joaquin Rivers, and the prevention of damage from overflow.

"(b) To improve the navigability of all the rivers of this system, deepen their channels, and protect their banks, with a view of restoring as near as practicable and the necessities of commerce and navigation demand the navigation of said rivers to the conditions existing in 1860.

"(c) To afford relief in flood time and to provide sufficient water to maintain scouring force in summer season."

2. The first of these objects has been accomplished.

3. The commission, in a special report dated June 30, 1907, submitted a project for the continuance of the control of débris in the tributaries of the Sacramento River.

4. The commission now desires to submit a project for the control of the floods in the Sacramento River.

5. The interests of navigation, débris control, and flood control in the case of this river are so inseparably connected that it is thought that they should be considered under one general project, thus utilizing to the fullest extent and for the common good any work done under projects for improvement of navigation, control of débris, or the control of the floods.

6. The United States is interested in the improvement and maintenance of the present navigable channel; it is interested jointly with the State of California in the control of mining débris; but to date it has given no attention to the flood problem.

7. Any work done on the present river channel, in the nature of deepening it or of preventing mining débris from entering it, will increase its flood-carrying capacity and improve it both as a navigable and flood-carrying stream. Any work, however, that involves the widening of the channel will injure its navigability and necessitate the use of artificial means for securing low-water navigation. It is to the interest of the United States, therefore, that, if practicable, solution of the flood problem be adopted which will result in the least injury to the present good low-water navigable channel.

8. It is with this object in view that this commission has for some years been making surveys of this river and its tributaries, and collecting data for the preparation of a project which will control the floods in the river at a minimum cost and which when carried out will have caused the least injury to the present navigable channel.

9. The great amount of reclaimable land in the Sacramento Valley, its high value after being reclaimed, and the great damage to the land already reclaimed, wrought every few years by floods, render the problem of flood control a vital one which must be solved in the immediate future.

10. This problem has been considered for many years and various solutions have been advanced. Several of the proposed projects possess many good qualities and all have been considered in the preparation of this one. All projects prior to this one, however, have been based on a maximum flood discharge of about 250,000 cubic feet per second at Collinsville, while the floods of March, 1907, and January, 1909, showed that it will not be safe to provide for less than 600,000 cubic feet per second. It is evident that when the maximum flood discharge considered was less than one-half of what it is known to have been at a later date, great modifications must be made in the projects that have been advanced.

11. A commission of engineers, commonly known as the Dabney commission, appointed by the State of California to consider this problem, submitted in 1904 a complete and very comprehensive project. Up to the date of the flood of March, 1907, this project had been considered as the one most nearly filling the requirements of the case. In the discussion of this problem, the project of the Dabney commission is constantly referred to and compared with the project proposed herein, for the reason that the former project has received such general sanction in the State of California and has been so generally considered as a possible solution.

12. The Dabney report contemplated a widening of the present channel below the mouth of the Feather River from the present average width of about 600 feet to a width of about 1,200 feet. Though this would result in serious injury to navigation, it was considered that the benefits derived would justify such injury and a greatly increased cost of maintenance of the navigable channel. Modifying the Dabney project, however, to carry present estimated discharge, and assuming the proposed average depth of 35 feet, would necessitate the widening of the present channel to about 2,400 feet above Sacramento and about 3,000 feet between Sacramento and Cache Slough. This would ruin the present low-water channel throughout that division, a distance of about 80 miles, and make it impossible to maintain a water channel equal to the present, except at a cost of improvement and maintenance which would be almost prohibitive.

13. The problem of the maintenance of such a channel is further complicated in this case by the mining débris lying in the American and Feather Rivers, for there are at least 300,000,000 yards of material in those streams that must eventually pass to tidal waters. Some idea of the difficulty to be experienced from this mining débris can be obtained from the estimates submitted in a report submitted in 1908 by the engineer officer in charge of the river. The annual cost of maintenance by dredging of a 9-foot low-water channel below Sacramento was estimated at $42,000; that of a 12-foot depth below Sacramento at $160,000; that of a 15-foot depth below Sacramento at $425,000; and that of a 9-foot low-water channel between Sacramento and Feather River was estimated at $207,500. This excessive maintenance is due almost entirely to the mining débris in the Feather and American Rivers.

14. At present, owing to the restricted channel width, the river is able to maintain a good channel by scouring out at mean stages the débris brought into it during the high stages. On the other hand, with an increased channel width, the scouring effect would be less and the annual cost of maintaining the present navigable depths would be great. While the commerce of the Sacramento River is not large, it has a high value per ton. It is estimated that the average amount for the past 15 years has been 425,000 tons, valued at over $20,000,000. At present the annual tonnage is estimated at 425,000 tons and its value at about $30,000,000. This increase in value is due to the nature of the crops now being grown, especially on the lower river. Considering the extent of this commerce, it is evident, therefore, that any injury to the present navigable conditions will be a serious injury to the development of the river districts which are dependent on the river for transportation.

DESCRIPTION OF LOCALITY.

15. The entire central portion of California is a low, flat depression inclosed by mountains. It consists of an elliptically shaped valley about 450 miles long and 40 miles wide, embracing about 18,000 square miles. This basin is inclosed by the Sierra Nevada Mountains on the east and the Coast Range on the west. The entire drainage area of this great valley is about 57,000 square miles. The northern portion of this valley is drained by the Sacramento River and its tributaries, while the southern portion is drained by the San Joaquin River.

16. From an examination of the geology of the surrounding country it seems probable that Suisun Bay is all that is left of a large inland sea, the leveling effect of the weather and rainfall having filled the remainder and converted it into land by the eroded material carried down by the river from the surrounding mountains. This action has progressed for a great period of time and is still in progress. That portion of this great inland depression lying north of the Consumnes River is ordinarily known as the Sacramento Valley, while that portion to the south is known as the San Joaquin Valley. The Consumnes River, however, is only a convenient boundary, as there is no definite dividing line between the two valleys.

SACRAMENTO VALLEY.

17. The watershed of the Sacramento Valley is about 27,000 square miles, with an average rainfall of about 30 inches. This rainfall varies from about 18 to 20 inches in the flat portion of the valley to as high as over 100 inches in sections of the Sierra Nevada and Shasta regions, where there are maximum elevations of 11,000 and 14,000 feet. Practically all of the precipitation occurs during a few months in the winter and early spring, so that the warm rains and melting snows together cause frequent floods. The upper portions of all the streams have high gradients and are torrential in character. Most of the tributary streams are in flood at the same time, and the Sacramento River is called upon nearly every spring to carry off floods far beyond the capacity of its channel.

18. The flood waters flowing over the banks in a thin sheet have raised the natural banks by successive deposits in the manner characteristic of similar sediment-bearing streams, and in this manner natural levees of low elevation have been built which prevent the overflowed water from finding its way back to the neighboring channel when the river falls. Large basins have thus been formed where the water stands after the flood until evaporated or until it finds its way through other natural channels and side sloughs into the river at points nearer its mouth. These basins, together with the sloughs and side channels at the mouths of this river and the San Joaquin, comprise an area of about 1,250 square miles, which is subject to overflow at every ordinary flood. This area is increased to about 1,700 square miles at extraordinary floods.

19. In the lower part of the Sacramento and San Joaquin Valleys there are islands varying in area from 1,500 to 43,000 acres, most of which have been reclaimed for agricultural purposes. This overflow land (swamp land) is probably as good and as productive as any in the State of California. Reclaimed lands that are improved, i. e., hop vineyards, orchards, asparagus and alfalfa lands, etc., are now valued as high as $300 or more per acre, while the average value of the reclaimed land along the 65 miles of the river below Sacramento is about $200 per acre.

20. In the Sacramento Valley there are 48 reclamation districts, and reports on 41 of these districts, with an area of 317,904 acres, showed on July 1, 1909, that 205,423 acres have been completely reclaimed, and 99,376 acres have been partially reclaimed by the construction of 521 miles of levee. The total cost of such reclamation on that date was estimated at $15,039,525, with contemplated improvements amounting to $1,762,053. (Sacramento city was not included in the above statements.) It is estimated that in addition to the cost of reclamation to property owners, the State of California has expended on protection works along the rivers about $2,500,000.

21. It is estimated that the control of the floods will result in the reclaiming for agricultural purposes of about 400,000 acres, now valued at about $20 per acre, the value of which reclaimed should average $150 per acre, in addition to protecting the 300,000 or more acres now reclaimed and valued at about $200 per acre.

22. The losses throughout the valley due to the floods have been large. The estimated loss in the 41 reclamation districts mentioned in paragraph 20 during the flood of January, 1909, was over $4,500,000. The losses due to the flood of March, 1907, were somewhat greater than those of the flood of January, 1909. It is estimated that the losses due to the floods of 1904, 1907, and 1909 amounted to at least $11,000,000. From the above data regarding the cost of the reclamation of these swamp lands and of the extent of the injury sustained due to the great floods, the urgency of protection against floods is evident.

23. The conditions that affect the cost of making new reclamations and of protecting the old reclamations are growing worse from year to year, and will continue to do so until some general scheme of control is effected, for every additional reclamation results in a contraction of the present waterway or a reduction of the storage area that has heretofore been available. This results in the flood waters reaching the lower reaches of the river with an increased volume, a higher flood plane, and a greater velocity. The problem presented for solution, then, is to prevent the flooding of these lands and to do so with the least possible injury to the present navigable channels.

24. The valley is, in general, of alluvial formation, and below, about Stony Creek, the river has the characteristic elevation of banks with depressed basins on each side. Above Stony Creek the river lies in the lowest part of the valley and has sufficient capacity to carry all its flood waters except at times of extraordinary floods. Below that point, however, the river channel is deficient in capacity and requires artificial correction. On the west side there are two basins, Colusa Basin and Yolo Basin, separated by a ridge extending from the hills to the vicinity of Knights Landing. (This ridge is 12 to 18 feet higher than the basin above or below and is the result of deposits from Cache Creek.) On the east side Marysville Buttes, Feather River, and American River divide the depression into four basins, called, respectively, Butte Basin, Sutter Basin, American Basin, and Sacramento Basin. The areas and capacities of these basins during the floods of 1907 and 1909 are estimated as follows:

	Acres.	Acre-feet.
Butte Basin	54,000	407,000
Sutter Basin	116,000	1,038,000
Colusa Basin	93,000	880,000
American Basin	70,000	571,000
Yolo Basin	140,000	1,126,000

Or a total of about 470,000 acres and 4,022,000 acre-feet.

25. The Sacramento River channel from Stony Creek to Butte Slough, a length of about 52 miles, differs from the division above. The slope is less and the channel flood capacity decreases progressively downstream, so that at Butte Slough it is only about 70,000 cubic feet per second, or about 30 per cent of that at Stony Creek. A considerable portion of the flood discharge escapes through Butte Slough, with a corresponding reduction in the cross section of the channel below.

26. The division of the river from Butte Slough to Feather River, a length of about 64 miles, is not only more contracted in cross section than the division above, but it is very crooked and has a flatter slope. Its flood capacity is reduced at Knights Landing to about 23,000 cubic feet per second, or about 10 per cent of that at Stony Creek. The navigable channel, however, is correspondingly better, and there is no difficulty in maintaining a low-water depth of 4 feet.

27. Near the mouth of the Feather River the waters from Butte and Sutter Basins return to the Sacramento, and there is added such portion of the flow of the Feather as remains in its channel at flood stage. Opposite the mouth of Feather River and at points below the surplus flood water escapes into Yolo Basin, to return to the river at Cache Slough.

28. The channel of the Sacramento River from the Feather River to Suisun Bay contains large deposits of mining débris brought down by the Feather and American Rivers. The accumulations of mining débris in the channel of the Sacramento River have raised the bed about 5 feet and reduced its capacity about 5 to 10 per cent. In the lower reaches of the Feather, Yuba, Bear, and the American Rivers there still remains at least 300,000,000 cubic yards of material which must in time enter the Sacramento.

29. At the head of Grand Island the river divides into two main channels, Old River and Steamboat Slough, which unite at Cache Slough. Georgiana and Three Mile Sloughs on the east carry their waters from the Sacramento to the San Joaquin River.

30. The following table shows the estimated capacity of the river at various points, the distance of such points above the mouth of river (Collinsville), and the estimated discharge capacity that should be

provided to care for the great floods if the waters were confined to a single channel:

Localities.	Distance.	Capacity (present).	Capacity (required).
	Miles.	*Cubic feet per second.*	*Cubic feet per second.*
Chico Landing	202	235,000	235,000
Colusa	151	70,000	250,000
Knights Landing	94	25,000	250,000
Below Feather River	81	65,000	450,000
Below American River	62	80,000	525,000
Below Cache Slough	16	165,000	600,000

31. Feather River: The Feather River above the mouth of the Yuba has not been injured to any extent by mining deposits. Below the Yuba it is full of mining débris, and its channel capacity has been greatly reduced.

32. Yuba River: The Yuba River, the principal tributary of the Feather, drains that region where hydraulic mining operations were carried on most extensively. As a result the bed of the river has been raised from about 11 feet at its mouth to about 80 feet at Smartsville, 20 miles upstream. It is estimated that the deposit in that distance is about 250,000,000 cubic yards. This material varies from large cobblestones at Smartsville to a mixture of sand and clay, with some gravel in the main channels, at junction with the Feather River. For 10 miles above the mouth the levees are from 1 to 2½ miles apart, the space between being covered with this débris. It has ample flood capacity between the present levees except at its junction with Feather River.

33. American and Bear Rivers: These rivers rise in the Sierra Nevadas and have also received large deposits of mining débris. While not in such a bad condition as the Yuba, their beds are practically filled with this material.

34. While entirely inadequate as a flood channel, the Sacramento River has a good navigable channel below Colusa. The following table shows the low-water navigable depths below Red Bluff, the head of navigation:

From—	To—	Miles.	Least channel.
Mouth of river at Collinsville.	Sacramento	64	7 feet.
Sacramento	Colusa	90	4 feet.
Colusa	Chico Landing	57	3 feet.
Chico Landing	Red Bluff	52	3 feet for about 6 months; 1½ to 2 feet for about 6 months.

During the period 1875–1910 the average annual cost of maintenance has been $27,680.63, and the greater portion of this expenditure, probably about 65 per cent, has been made in the 60 miles immediately above Colusa. When account is taken of the length of this river and of the quantity of débris that has been carried and is still being carried down each year, some idea can be obtained of the natural excellence of the low-water channel. In this connection attention is again invited to the statements in paragraphs 12 to 14, inclusive.

PROPOSED SOLUTIONS.

35. Of the many projects that have been suggested for the solution of this problem, the following two have been considered the only ones possessing sufficient merit to justify discussion:

(a) Main-channel system.

(b) By-pass system.

MAIN-CHANNEL SYSTEM.

36. Project of 1880: The project to confine the river to one main channel was advocated first in 1880, under the State engineer, Mr. William Ham Hall, with a board of consulting engineers consisting of Gen. S. Alexander and Col. George H. Mendell, Corps of Engineers, and Mr. J. B. Eads. A general plan of reclamation was devised, suggested by Gen. Alexander and approved by the others, by which the river was to be confined between high levees and was intended eventually to carry all its flood flow in its own channel. Side relief channels were to accommodate the excess not carried by the river itself, but these relief channels were to be ultimately abandoned when the river had developed its ability under this treatment to carry all floods. This plan was never accepted nor acted on by the State legislature.

37. Dabney project: In 1904 a project was prepared by a board of engineers consisting of Messrs. T. G. Dabney, State levee engineer, Mississippi; Henry B. Richardson, member of Mississippi River Commission; M. A. Nurse, chief engineer State of California, commissioner of public works; and Maj. H. M. Chittenden, Corps of Engineers, United States Army. This project is similar to that of Gen. Alexander, Corps of Engineers, and contemplates confining the entire flow at high stages between permanent levees. Under this project the use of side relief channels is counted on until the project is far enough advanced to rely on the improved channels. Cut-offs at various places were to reduce the length of the river and increase the slopes.

38. The project, in brief, consisted in shortening the channels and enlarging them to the desired extent, partly by dredging and partly by natural scour, and by building levees along the best practicable lines to concentrate and rectify the river and hold it to its work of developing and maintaining its channel. These levees were to be sufficiently high to contain ultimately the entire flood flow. Side creeks were to be leveed and pumping plants established to care for the natural drainage. One-third of the excavation (about 120,000,000 cubic yards) was to be made by mechanical means, while the balance (about 240,000,000 cubic yards) was to be made by natural scour.

39. The estimated cost was placed at $23,776,002.

40. This project was based on a maximum flood discharge of 250,000 cubic feet per second below Cache Slough, which was greater than that provided for by any previous projects.

41. Before discussing this project it must be pointed out that while the Dabney report is based on a maximum flood discharge of 250,000, the records of the United States Geological Survey on the floods of March, 1907, and January, 1909, would indicate that provision should be made for a discharge of at least 600,000. This means channel capacities below the mouth of the Feather River of more than double those provided in that project, and a resultant increase in cost.

42. The principal objections to the proposed project are:

(a) This project provided for the moving of about 320,000,000 cubic yards of material, of which about 214,000,000 were to be removed by the river and carried to tidal waters. A modification of this project to meet the present known maximum flood discharge will involve the moving of over two and one-half times the above amount. If the same assumption is made with reference to scour by the river, then about 545,000,000 cubic yards will have to be carried to tidal waters. This amount of material can not be carried into Suisun Bay without injury to that body of water, resulting in injury to navigation interests on both the Sacramento and San Joaquin Rivers and the reclaimed areas along that bay. The filling up of Suisun Bay would also result in the raising of the flood plane at the mouth of the Sacramento River, with a consequent raising of the flood plane at points above. This is objectionable. It is considered by this commission, however, that under a modified project it would not be practicable to obtain the desired channel capacity by current action.

(b) Injury to navigation in the Sacramento River from Collinsville to Colusa, due to the excessively wide channel required.

The following table shows the present average widths, the necessary widening for the proposed widths of the Dabney commission, and the widths required to carry the estimated maximum flood discharge, based on the floods of March, 1907, and January, 1909:

Section of river.	Required capacity.	Mean widths at present.	Dabney Commission width.	Required mean width.	Widening necessary—		Ratio between two last columns.
					For Dabney flood.	For required capacity.	
Stony Creek to Caldens Landing	260,000			960			
Caldens Landing to Meridian	250,000	340	830	1,120	490	780	1.56
Meridian to Feather River	250,000	250	770	1,250	520	1,000	1.92
Feather to American	450,000	570	1,000	2,300	430	1,730	4.02
American to Grand Island	525,000	550	1,200	2,740	650	2,190	3.37
Steamboat Slough	470,000	380	1,000	2,320	620	1,940	3.13
Old River	50,000						
Below Cache Slough	600,000	1,080	1,400	3,325	320	2,245	7.02

The same slopes and mean depths as those used by the Dabney Commission are used in determining these estimated widths.

From this table an idea can be obtained of the inadequacy of the proposed channels of the Dabney Commission and of the increase in the amount of work and its probable cost.

The average low-water discharge of the Sacramento River is about 7,000 or 8,000 cubic feet per second, with a minimum of about 5,500 cubic feet per second. It is evident that this widening of the channel to the widths given above will ruin the present low-water channel, and that its restoration and maintenance will be a very expensive proposition, probably so great as to be prohibitory.

At the present time, owing to the contracted channel, the depths corresponding to high and mean stages of the river are greatly prolonged and the river is thus better able to care for the great quantity of mining débris that the floods in the tributaries bring into it. If the channel were increased in width as required under a main-channel project, the river would be for only a short period at what are now considered high and mean stages, for the channel would be several times wider and the amount of water flowing at the mean stages would be less than at present, owing to the elimination of the present storage areas. The river would therefore be unable to care for the débris brought into it by the floods. The conditions would be similar to that of the Feather River below Marysville, where the channel, having become filled with débris, has such a great width that the flow at mean and low water stages is not sufficient to care for the débris brought into it from the Yuba and Bear Rivers at floods, and navigation has become impracticable except for a few months of each year.

(c) The indefinite period required for the completion of the project, owing to the amount of excavation that is dependent on natural scour—current action. With a modified project contemplating the excavation of all material by mechanical agencies this objection would be removed.

(d) The cost of completing this project was estimated at $23,776,022; but, considering the present known maximum flood discharge, it is estimated that the modified project will cost at least $90,000,000.

43. The one advantage of this project is that it provides for the reclamation of the greatest possible area of land, amounting to about 60,000 acres more than can be reclaimed under the by-pass system.

BY-PASS SYSTEM.

44. The by-pass system was advocated by Messrs. Marsden, Manson, and C. E. Grunsky, who, as consulting engineers to the commissioner of public works, submitted in 1894 a report on the flood control of the Sacramento River. This project involves:

First. The enlargement and utilization of the river channels to their maximum capacity as drainways, i. e., channel rectification.

Second. The overflow of surplus waters from the river channels at selected points.

Third. Control of the surplus waters between embankments forming by-pass channels and a rapid delivery of the same into Suisun Bay.

45. Channel rectification: The principal works of channel enlargement and rectification were:

First. Below Cache Slough the river was to be reduced in width at Newton Shoal and widened at Horseshoe Bend, with general correction of alignment.

Second. Steamboat Slough was to be enlarged and made the main drainage channel.

Third. Above Feather River the alignment of the river was to be systematically improved.

46. Overflow weirs: The overflow weirs were to be located so as to pass flood waters into by-passes only at very high stages of the river. Two weirs, with an aggregate length of 6,500 feet, were to be placed just below the mouth of the Feather River, and a third, 1,200 feet long, 7 miles below Sacramento.

In Sutter Basin weirs were to be placed at the head of Butte Slough, and at or near Tisdale Break, with a combined length of 3,700 feet.

In Butte Basin the weir, 4,000 feet long, was to be located 2 miles above Butte City, while in the Colusa Basin a weir 750 feet long was to be located about 4 miles below Jacinto.

The crests of all these weirs were located at the general bank height, or about 3 feet below the assumed flood plane.

47. By-passes: The by-pass in Yolo Basin was to have a capacity of 108,000 cubic feet per second to Putah Creek and 130,000 cubic feet per second below that point. The embankments were to vary from 4,000 to 4,500 feet apart and be 15 feet high.

The by-pass in Sutter Basin was to have a capacity of 70,000 cubic feet per second, with embankments 2,500 feet apart and about 15 feet high.

The Butte Basin by-pass was to be 2,400 feet wide, with embankments 3 feet above the assumed flood plane.

The Colusa Basin by-pass was intended to act principally as a drainage canal for the Colusa Basin and its drainage area. It was to extend through the ridge at Knights Landing and connect with the Yolo Basin by-pass. Its width was to be about 800 feet, with embankments varying from 9 to 11 feet.

48. The estimated cost of this project was $8,637,000 for the by-passes and $650,000 for the channel corrections. This did not include any estimate for constructing levees along the river or its tributaries, though the project contemplates the construction of levees to a height that would confine all water that the by-passes do not carry. It was assumed that the individual landowners would construct those levees. The estimate did not provide for pumping plants in the basins that could not be drained by gravity, though the project recognizes them as necessary. The cost of those plants was to be borne by local interests.

49. The maximum discharge for which provision should be made was not given, but the by-passes provided were to supplement the river capacities to the following extent:

	Cubic feet per second.
Above Colusa	60,000
Colusa to Feather River	80,000
Feather River to Cache Slough	108,000–130,000

The capacities of the river at various points were given as follows:

	Cubic feet per second.
At Colusa	63,000
At Sacramento	70,000

The maximum discharge below Cache Slough was therefore assumed at about 200,000 cubic feet per second, which it was considered would not be exceeded more than once or twice in a century.

The elevations of the assumed flood planes at Cache Slough, Feather River, and Butte Slough were 13, 36, and 64 feet, respectively. The elevations of the assumed flood planes of the Dabney project and of this project at these points are, respectively, 14, 47, and 74 feet, and 15, 40, and 65 feet.

50. The principal objections to this project are its incompleteness and, owing to the lack of flood-discharge data, its inadequateness. The principles upon which this project is based, however, are believed to be sound. The project proposed by this commission differs from this project principally in providing for the complete control of a much larger flood discharge.

PLAN PROPOSED BY THIS COMMISSION.

51. It seems practicable to control the floods in this river and its tributaries in such a manner as to secure the desired results, without the objectionable features of injury to Suisun Bay, injury to navigation in the Sacramento River from Cache Slough to Colusa, indefinite period of construction, and excessive cost.

52. The project now proposed by this commission involves:

(a) Dredging to flood channel section that portion of the river below Cache Slough, with rectification of the channel by a cut-off at Horseshoe Bend.

(b) Improving the channel at various points, especially at the head of Steamboat Slough, so that the river from Cache Slough to American River will have a capacity of about 100,000 cubic feet per second.

(c) Constructing a weir opposite the mouth of Feather River and connecting it by means of a permanent by-pass in Yolo Basin with Cache Slough, this by-pass and weir to be of sufficient cross section to carry all flood waters that can not be carried by the present river below the above weir.

(d) Constructing a weir at Moultons Break, about 13 miles above Colusa, and connecting it by means of a permanent by-pass in the Sutter and Butte Basins with the Sacramento River at its junction with Feather River, this weir and by-pass to be of sufficient capacity to carry all flood waters that can not be carried by the present river below this weir.

(e) Increasing the cross section of the river above Moultons Break by raising the levees and placing them farther apart, so that the increased cross section will provide for the estimated discharge.

(f) Constructing a weir at Brytes Bend, 2 miles above the mouth of the American River, and connecting it by means of a permanent by-pass with the Yolo Basin by-pass, this by-pass and weir to have a capacity of about 70,000 cubic feet per second, or sufficient to carry the excess flood water that reaches that point.

(g) Reconstructing the present Tisdale Weir and connecting it by means of a permanent by-pass with the Sutter-Butte by-pass, the weir and by-pass to have a capacity of about 35,000 cubic feet per second, or sufficient to carry the excess water that reaches that point.

(h) Confining to their present channels by means of levees the flood waters of all of the important tributary streams.

(i) Collecting the hill drainage in intercepting canals and conveying it to the rivers or by-passes at convenient points.

(j) Providing for the drainage of the basins by placing culverts with gates at various points in the by-pass levees.

53. The objections which may be offered to this scheme are:

(a) The cost of maintaining the levees will be greater under this project than in the case of one main flood channel, on account of their greater length.

(b) The possibility of deposit in the by-passes and in the river itself below the spillways.

(c) The large area of land devoted to the by-passes. This project does not admit of the reclamation of the greatest possible amount of the land subject to overflow, as it requires about 60,000 acres of land more than a main-channel project.

54. The advantages of this solution are:

(a) It is estimated that this project can be completed for about $33,000,000, or about 35 per cent of that of a main-channel project of equal capacity.

(b) The cost of maintaining the river channels, both from a standpoint of navigation and flood control, will be less than the maintenance of equally good channels under a main-channel project.

(c) No injury will be done to Suisun Bay by the scouring of hundreds of millions of yards of material into it.

(d) The period of construction will be less.

(e) The by-pass system is especially adapted to the use of storage reservoirs whether for the development of power or for irrigation purposes, and, considering the numerous storage sites available for these purposes, it is probable that the time will come when the present flood and low water conditions will be affected by such storage. This subject will be discussed more fully later.

55. It may be claimed that the use of by-passes will result in great deposit therein from the main river and from tributary streams flowing into the by-pass, as in the case of Yolo by-pass. An examination of the land in the vicinity of the mouths of Cache and Putah Creeks shows that no considerable deposits are now being made in Yolo Basin by débris from those streams. Therefore, with the increased velocities in the by-passes over those in the basins at present, it is not to be expected that any considerable deposit will be made by them in the by-pass.

The by-passes will not be utilized at all some seasons, and it is probable that they will be in commission but a short period other years; therefore the deposit, if any, should not be great.

Considering the velocities in the by-passes due to the slopes in same, it is not expected that there will be much deposit of the material that may be carried into them. The conditions will be different from those at the present spillways and breaks where the water escapes at flood from the river into a large basin of comparatively still water, with an immediate deposit of the material carried in suspension. Further, there will be no water escaping into the by-passes except at stages above about 6 to 8 feet below the present maximum flood stages. Therefore the material carried into the by-passes should be principally material in suspension which will not be deposited in them.

56. It may be argued that the use of the by-passes will result in deposit in the river immediately below the spillways, especially below those spillways in the portion of the river carrying large quantities of mining débris. Considering, however, that the crest of the spillway into Yolo Basin is at elevation 30, or about 16 feet above low water at that point, the waters of the river after the flood wave has passed will be kept in the present channel, where they will be utilized to scour out any deposits that may have formed during the flood. Elevation 30 at the mouth of the Feather River corresponds to an elevation of about 24 feet at Sacramento, or a stage at least 16 feet above extreme low water. The elevation of the weir opposite the mouth of American River will be 30.6 feet, which corresponds to an elevation of about 29 feet at Sacramento.

With the flood waters escaping into Yolo by-pass at elevation about 30, the conditions will be better than those at present, the river overflowing now into the American and Yolo Basins at about elevation 26 feet. It is most desirable from a navigation standpoint that the river should be kept at what is now a low high-water stage during as great a portion of the year as possible in order to prevent deposit and secure scour.

57. Flood discharge: It was not until the flood of March, 1907, that definite data regarding the run-off from the Sacramento River watershed during a great flood were available. The records of the United States Geological Survey on that flood have proven of the greatest service in arriving at a reliable estimate of the flood discharge. Those records are assumed as a basis in determining a maximum discharge for which provision must be made at the critical points along the river. It is considered that this flood was the greatest experienced since the flood of 1862, and while a discharge of any one tributary may occur that will exceed that of the flood of 1907, the possibility of a greater discharge than that of 1907 simultaneously in several important tributaries is so remote that it is not considered advisable to provide for a greater flood over the entire river system. Owing to the breaks that occur at various points in the levees during every large flood and the consequent filling up of the basins adjacent thereto, it has always been impracticable to gauge the river itself, and the flood discharge at any point and the corresponding flood height must be arrived at from gauged discharge of the river and its tributaries at points where they are confined to their channels, with due allowance for the flattening of the flood wave due to channel capacity and for the time of arrival of floods in the tributaries.

58. United States Geological Survey records: During this flood the United States Geological Survey kept gauge records on the Sacramento at Red Bluff, the Feather at Oroville, the Yuba at Smartsville, Stony Creek at Fruto, Cache Creek at Yolo, Putah Creek at Winters, Bear River at Van Trent, and the American River at Fair Oaks.

59. The official reports for the year 1907 have not been issued, and the following table giving the run-off from the Sacramento Basin in cubic feet for March 18–21, 1907, is taken from an article entitled "Flood of March, 1907," pages 281–330, Volume LXI, Transactions of the American Society of Civil Engineers. This article was written by Messrs. W. B. Clapp, E. C. Murphy, and W. F. Martin, of the United States Geological Survey, and is based on the data collected by that survey and published by permission of the Director of the United States Geological Survey. The run-off of the unmetered area is an estimate by the same authorities, assuming a run-off of 50 per cent of the precipitation for the period March 17–20 in the case of the mountains and foot-

hills, and of 40 per cent of the rainfall for the same period in the case of the Sacramento Valley.

Streams.	Drainage area (square miles).	1907				Mean for 4 days.
		Mar. 18.	Mar. 19.	Mar. 20.	Mar. 21.	
Sacramento River	9,300	118,000	164,000	192,000	132,000	151,500
Stony Creek	601	25,000	20,000	13,450	6,800	16,310
Feather River	3,640	107,900	129,600	84,900	66,740	97,290
Yuba River	1,220	85,000	100,000	60,000	27,000	68,000
Bear River	263	15,500	28,000	17,400	8,400	17,300
American River	1,910	63,200	93,000	77,000	65,000	74,600
Cache Slough	1,230	13,500	19,000	12,500	7,820	13,200
Putah Creek	805	19,800	24,700	10,000	5,460	15,000
Mountains and foothills	3,907	.....	.....	.....	.....	76,000
Sacramento Valley	4,250	.....	.....	.....	.....	25,500
Total	27,126	.....	.....	.....	.....	554,700

60. The maximum stages of the various streams and the time are given below:

Streams.	Cubic feet per second.	Time.
Sacramento River	[1] 204,000	2 p. m., Mar. 20.
Feather River	185,000	1 a. m., Mar. 19.
Yuba River	105,000	2 p. m., Mar. 19.
Bear River	28,000	Mar. 19.
American River	[2] 105,000	5 a. m., Mar. 19.
Stony Creek	25,000	Mar. 18.
Cache Slough	[2] 20,000	Night, Mar. 19-20.
Putah Creek	[2] 33,000	About 12 m., Mar. 23.
Unwatered mountains and foothills	[3] 100,000	Mar. 19.

[1] The maximum recorded discharge at this point is 250,000 cubic feet per second, which occurred on Feb. 3, 1909. The maximum recorded discharge previously was 224,000 cubic feet per second on Feb. 16, 1904.
[2] Estimated.
[3] Estimated for 24 hours.

Comparison of the flood flow into the Sacramento Valley for March, 1907, and January, 1909.

Streams and places.	Flow at crest.			Greatest daily mean flow.		Greatest 4-day mean.	
	March, 1907.	January, 1909.	February, 1909.	March, 1907.	January, 1909.	March, 1907.	January, 1909.
Sacramento, at Red Bluff	204,000	[1] 205,000	250,000	[2] 192,000	175,000	152,000	129,000
Feather, at Oroville	185,000	[1] 170,000	.....	[2] 130,000	130,000	97,300	112,000
Yuba, at Smartsville	105,000	[1] 90,000	.....	[2] 100,000	85,000	68,000	68,000
Bear, at Van Trent	30,000	[1] 40,000	.....	[2] 28,000	27,000	17,300	20,000
American, at Fair Oaks	105,000	[1] 90,000	.....	[2] 100,000	85,000	74,600	75,000
Stony, at Fruto	[4] 30,000	[4] 28,000	[4] 38,000	[5] 25,000	[4] 25,000	16,300	[4] 17,000
Cache, at Yolo	19,500	17,500	25,000	[2] 19,000	17,000	13,200	12,000
Putah, at Winters	35,000	32,400	34,000	[2] 25,000	29,000	15,000	18,000
Unmetered mountains and foothills	[6] 120,000	[6] 105,000	.....	[6] 100,000	[6] 85,000	76,000	[6] 76,000
Total flow into valley	834,000	778,000	.....	719,000	658,000	530,000	527,000

[1] Jan. 16. [2] Mar. 20. [3] Mar. 19. [4] Estimate made from flow at Orland. [5] Mar. 18. [6] Estimated in comparison with run-off in 1907.

61. The records of the flood of January, 1909, by the same authority, show that flood was of a magnitude almost as great as that of the flood of March, 1907. The above data are a comparison of these two floods, taken from a brief analysis of the flood of January, 1909, by W. F. Martin, engineer, United States Geological Survey, dated February 9, 1909 In this analysis the following statement is made:

"The figures show that the flood of January, 1909, did not crest as high as the flood of March, 1907; but this year's flood was better sustained for a period of four consecutive days. There is no question, however, that the 1907 flood was better sustained for a longer period, such as a week or 10 days. During January the total peak, or crest, flow into the Sacramento Valley was 778,000 second-feet, as against 834,000 in 1907, or 6.5 per cent smaller. The crest flow lasted only a few hours, and it did not occur in all the streams simultaneously, but nearly so. The greatest mean daily flow in January was 658,000 second-feet, as against 719,000 in 1907, or 8.5 per cent smaller. The mean daily flow for four consecutive days was 527,000 in January and 530,000 two years ago, or practically the same for the two floods."

62. The following table gives a comparison of the estimate of the Dabney Commission for the maximum discharge of the river at various points, and the estimate of Messrs. W. B. Clapp, E. C. Murphy, and W. F. Martin in their article, which has been referred to in paragraph 59:

Places.	Maximum rate assumed by Dabney Commission.	Maximum rate computed by Messrs. Clapp, Murphy, and Martin.
	Cubic feet per second.	*Cubic feet per second.*
Below mouth of—		
Stony Creek	180,000	261,000
Feather River	190,000	465,000
American River	230,000	559,000
Cache Slough	250,000	640,000

It is thought that the estimates of Messrs. Clapp, Murphy, and Martin should be followed very closely in determining the necessary channel widths, and their maximum is assumed, with certain allowances for flattening of the flood wave in passing down the improved channels.

63. It is doubtful if the flood in the American was a maximum in 1907, and it is not considered safe to estimate its maximum flood discharge at less than 120,000 cubic feet.

64. Considering the above discharge data and the estimated maximum flood discharge of Messrs. Clapp, Murphy, and Martin, it is considered that provision should be made for the following discharges:

	Cubic feet per second.
Sacramento River below Stony Creek	260,000
Stony Creek	30,000
Sacramento River at Moulton Weir	250,000
In river to Tisdale Weir	65,000
In river from Tisdale Weir to Feather River	30,000
Tisdale by-pass	35,000
Sutter-Butte by-pass	185,000–220,000
Feather River above Marysville	150,000
Yuba River	110,000
Bear River	30,000
Feather River below Marysville	240,000
Yolo by-pass at Spillway	400,000
Yolo by-pass below Colusa Basin Canal	410,000
Yolo by-pass below Cache Creek	425,000
Yolo by-pass below American by-pass	490,000
Yolo by-pass below Putah Creek	510,000
From Feather River to American River	50,000
From American River to Cache Slough	100,000
Below Cache Slough	600,000
American River	120,000
Colusa Basin Canal	10,000
Cache Creek	20,000
Putah Creek	25,000
Sacramento by-pass	70,000

65. The above discharges are large and much larger than many may consider it advisable to provide for. The floods considered, however, were of long duration and but little reduction can be allowed for the flattening of the flood wave under such conditions. In the projects that have heretofore been seriously considered, the estimated flood discharges of the main river and of most of its tributaries have been abnormally low, and the possibility of even those low discharges being maintained for some days was not considered probable. The floods of 1907 and 1909 have proved conclusively that a flood in this river may continue for several days at almost the point of maximum discharge. Failure to provide for a discharge such as is shown by these floods of 1907 and 1909 would leave open the way for damage by the occurrence of a similar flood.

66. The magnitude of the maximum flood discharge of the Sacramento River may be better appreciated by comparing it with that of several well-known rivers of the United States:

Rivers.	Drainage area above station.	Maximum flood discharge (cubic feet per second) recorded.
	Square miles.	
Mississippi (at Vicksburg)	1,100,000	1,777,000
Mississippi (above Missouri River)	165,000	366,000
Missouri	527,000	[1] 546,000
Columbia	237,000	1,390,000
Ohio	201,700	1,233,000
Arkansas	186,300	440,000
Red River	90,000	210,000
Sacramento	26,000	[2] 600,000

[1] It is estimated that the discharge of the Missouri River during the floods of 1884 and 1903 was 900,000 cubic feet per second.
[2] Estimated, 1907–1909.

67. The by-pass system permits the adoption of an entirely safe estimate of the flood discharge, for no considerable excavation is involved except below Cache Slough, and if an excessive flood discharge is assumed the cost is increased but little except in the item "Purchase of land." Under the concentration scheme, however, the assumption of an excessive flood discharge means a great increase in cost due to excavation for this extra discharge, as well as an increase in cost of land.

68. It is considered advisable, therefore, by this commission to provide capacity for a flood of the extent and duration of that of March, 1907, or January, 1909, and that provision for anything less would be not only unwise but unjustifiable.

69. Elevation of the high-water plane: In determining the elevation of the high-water plane the important points, Collinsville, Cache Slough, American River, and Feather River, Marysville and Moultons, and Chico Creek were first determined and the intermediate elevations determined from those. The datum plane assumed is 3.60 feet below mean sea level.

Mean high water at flood stages at Collinsville is taken as the elevation of the flood plane at that point. The gauge records of the flood of January, 1909, show that the mean high water at that point is about 7 feet. The elevation at the mouth of the American River is assumed at 35 feet. Owing to the many disadvantages to Sacramento city of a high-water elevation it is desirable to keep that elevation as low as possible. On the other hand, a sufficiently high elevation must be assumed to make the river at that point care for about the maximum discharge of the American River and also to prevent too much of the upper river flood waters from coming down to the American River. An elevation of 35 feet insures about sufficient capacity to care for the American River and allows an elevation of 40 feet at the mouth of the Feather River, with only about 50,000 cubic feet per second to be cared for at the spillway just above the American River.

An elevation of 40 feet at the mouth of the Feather River makes it possible to care for all of the flood waters above that point except about 50,000 cubic feet per second which is passed into the Yolo by-pass at the American River spillway, with reasonable heights of levees in the Sutter-Butte and Yolo by-passes. The elevation at the mouth of Cache Slough was assumed at 15 feet, based on the determination of the other important points just mentioned. The elevation at Marysville at the Yuba City bridge is assumed at 75.5 feet, a safe elevation for the levee system of that town and an elevation that it is known will care for the floods in the Yuba and Feather Rivers with little modifications in the present levee systems in the vicinity of Marysville.

The elevation at Moultons is assumed at 86 feet. The elevation at Chico Creek is assumed at 141.6 feet.

As a general statement it may be said that all flood-plane elevations were assumed so as to make the present channel carry as much water as possible, but at the same time obtain such flood-plane elevations as would permit the locating of the by-passes in the troughs of the basins with the assumed allowable levee heights.

70. The elevations of the high-water plane at points where the slope changes and the distances and slopes between these points are given below:

	High-water elevation.	Distance.	Slope in feet per mile.
Collinsville	7.0	15.9	0.503
Mouth of Cache Slough	15.0	18.3	.464
Head of Grand Island:			
Via Old River	23.5	11.4	.745
Via Steamboat Slough	23.5	27.7	.415
Mouth of American River	35.0	19.5	.256
Mouth of Feather River	40.0	43.4	.323
		[1] 37.0	.379
Tisdale Weir	54.0	27.0	.564
1 mile above Colusa	69.2	12.6	1.33
Moultons Break	86.0	20.0	1.60
1½ miles below Jacinto	118.0	17.8	1.33
Chico Creek	141.6		
Feather River	40.0	25.0	1.06
1 mile below Eliza Bend	66.5	4.7	1.90
Yuba City Bridge	75.5	24.9	2.10
1 mile below head of Butte County Canal	128.0		

[1] With cut-offs.

71. In making computations for discharges the side slopes of the channels are assumed as 3 to 1, extending from the bed of the stream to the top of the levee. In applying Kutter's formula n is taken at 0.030.

IMPROVEMENT OF CHANNELS.

72. Collinsville to Cache Slough: The channel in this division must be excavated to full-flood section, or to an average width of about 3,100 feet and a mean depth at flood stages of 35 feet. The levees will be raised to 5 feet above the adopted flood plane of 7 feet at Collinsville and 15 feet at Cache Slough. This will provide for a flood discharge of about 600,000 cubic feet per second. In connection with the enlargement of the channel, it is proposed to straighten the channel by a cut through Horseshoe Bend. Threemile Slough will be closed as soon as the channel below that point is completed to its full-flood section. The amount of excavation in this division is estimated at 148,600,000 cubic yards.

73. Cache Slough to head of Grand Island: No change will be made in Old River except to raise the levees to 3 feet above the adopted flood plane of 15 feet at Cache Slough and 23.5 feet at head of Grand Island. This will provide for a flood discharge of about 54,000 cubic feet per second.

In Steamboat Slough the only improvement will be the setting back of the levees in the upper 4½ miles, to provide for a discharge of about 46,000 cubic feet per second. The levee system throughout will be raised to 3 feet above the adopted plane of 15 feet at Cache Slough and 23.5 feet at head of Grand Island. This will provide for a flood discharge of about 46,000 cubic feet per second.

74. Head of Grand Island to American River: The only changes in this section will be the closing of Sutter Slough and the setting back of the levees at two or three points where the cross section is not sufficient with the adopted flood plane. The levees will be raised throughout to a height of 3 feet above the adopted flood plane of 23.5 feet at head of Grand Island and 35 feet at American River. This will provide for a flood discharge of about 100,000 cubic feet per second.

75. American River to Feather River: The levees in this section will be raised to a height of 3 feet above the adopted flood plane of 35 feet at American River and 40 feet at Feather River. The capacity will be greater than the required capacity of 50,000 cubic feet per second.

76. Feather River to Tisdale Weir: The river in this section has several very bad bends. It is proposed to straighten the channel in the vicinity of Grays Bend, Collins Eddy, Ministerial Bend, and Race Track Bend by cuts, having a total length of about 1.4 miles. These cuts will shorten the present channel about 6.4 miles and will increase the capacity of the river to about 30,000 cubic feet per second. The cost of making these cuts will be offset by the saving in the levee construction that would be necessary along the present channel at these points, and the reduction in length of the improved channel, amounting to about 6.4 miles, will give a considerable decrease in cost of maintenance. The amount of excavation is estimated at 1,550,000 cubic yards. No other work will be done in this section except the closing of all sloughs and the raising of the levee system to 3 feet above the adopted flood plane of 40 feet at Feather River and 54 feet at Tisdale Weir.

77. Tisdale Weir to Moulton Weir: No change wil be made in this division except to raise the levees to a height of 3 feet above the adopted flood plane of 54 feet at Tisdale Weir, 69 feet at 1 mile above Colusa, and 86 feet at Moulton Weir. This will provide for a capacity of 65,000 cubic feet per second.

78. Moulton Weir to Chico Creek: In this division the levees will be set back to secure sufficient cross section to care for a flood discharge of 260,000 cubic feet per second. The levees will be raised to a height of 3 feet above the adopted flood plane of 86 feet at Moulton Weir, 118 feet at 1½ miles below Jacinto, and 141.6 feet at Chico Creek. Where the levees are set back to provide for additional cross section, all timber and obstructions to the free flow of the flood waters must be removed to permit an increase in cross section of the flood channel.

79. Feather River: Along this river the present levees will be utilized where available and new levees will be constructed along lines that will give a capacity between levees of about 240,000 cubic feet per second to Marysville and 150,000 cubic feet above Marysville. The levees will be raised to a height of 3 feet above the adopted flood plane of 40 feet at the mouth of the river, about 66.5 feet 1 mile below Eliza Bend, and 75.5 feet at Yuba City Bridge. Above Marysville the levees will be raised and strengthened on the east side of Feather River to the mouth of Honcut Creek, thence up the south side of that creek to high ground. On the west side the levees will be extended to about 1 mile below the head of the Butte County Canal, the elevation of the flood plane at this point being assumed at 128 feet.

80. Yuba River: No work is needed along this river except the protecting and strengthening of the south levee at a few points and the clearing of brush in the channel to a width of about 2,000 feet. The present capacity is about 110,000 cubic feet per second.

81. Bear River: The adopted flood plane is 55 feet at Feather River and 62.5 feet 7 miles upstream. Levees 3 feet above the adopted flood plane will be provided to care for a flood discharge of 30,000 cubic feet per second.

82. American River: The levee system on the south side of this river, strengthened where necessary, will be utilized as far as possible. On the north side a levee will have to be constructed 3 feet above the adopted flood plane of 35 feet at the mouth of the river and about 49 feet at high ground above 8½ miles upstream. The capacity to be provided is 120,000 cubic feet per second.

83. Chico Creek and Stony Creek: These creeks enter the Sacramento River at the upper limit of the necessary regulating works. Levees will be constructed along the south bank of each for a distance of about 2½ miles.

84. All other important tributaries will be provided with levees extending from the main rivers or by-passes to high ground.

85. Yolo Basin by-pass: The adopted flood plane in this basin is 15 feet at Cache Slough, 27 feet at Southern Pacific Bridge, and 40 feet at Fremont Weir. The flood discharge to be provided for varies from 400,000 cubic feet per second at Fremont Weir to about 500,000 cubic feet per second at Cache Slough. To provide for this discharge the by-pass will have a width varying from about 8,000 feet at Fremont Weir to about 12,000 feet above Cache Slough. On account of the inferior material of which the levees will be constructed and the wave action to which they will be exposed, they will be constructed 6 feet above the adopted flood plane. At the head of the by-pass the ground rises to elevation about 30 feet, at which elevation the crest of the weir is placed.

86. Sutter-Butte by-pass: The adopted flood plane in this basin is 40 feet at Fremont Weir, 45 feet at 3 miles below Tisdale by-pass, 57 feet at about opposite Butte Slough, and 86 feet at Moulton Weir. The flood discharge to be provided for varies from 185,000 cubic feet per second at Moulton Weir to 220,000 cubic feet at the mouth of Tisdale by-pass. To provide for this discharge the by-pass will have a width varying from about 1,900 feet to 4,100 feet. The levee height will be 5 feet above the adopted flood plane.

87. Tisdale Weir by-pass: This by-pass will connect Tisdale Weir with the Sutter-Butte by-pass. It will have a capacity of about 35,000 cubic feet per second.

88. Sacramento by-pass.—This by-pass will connect the Sacramento Weir with the Yolo by-pass. It will have a capacity of about 70,000 cubic feet per second.

LEVEE SYSTEM.

89. The crown width of all levees is to be 10 feet, with slopes of 3 to 1. The construction will be in accordance with the best practice of levee construction. The grade will be 3 feet above the high-water plane except in the by-passes, where it will be 5 to 6 feet, and below Cache Slough, where it will be 5 feet. The present levees will be utilized as far as practicable.

Where the river must be widened to secure the necessary cross section it will be widened, if possible, on that side on which the land is least valuable. Where levees are constructed in connection with excavations for cut-offs, canals, increase in channel capacity, etc., deductions are made in the estimates of the cost of levee work.

SPILLWAYS.

90. Fremont Weir: It is proposed to construct at the head of the Yolo by-pass and opposite the mouth of the Feather River a weir which will allow the passage at maximum flood flow of all the flood waters of the Sacramento and Feather Rivers except about 50,000 cubic feet per second. This weir will have a length of about 8,000 feet. Its sill will be placed at elevation 30 feet, or 10 feet below the adopted flood plane at this point. To provide for the passage over it of such a volume of water, it must be of the strongest construction, and the estimate of cost is based on a concrete structure on concrete pile foundations, of dimensions and construction such as that of similar works on the Ohio River. The elevation assumed will permit the confining of the river to the main channel up to about a 16-foot stage—an ordinary stage. The river may be confined to a higher stage by constructing this weir with

a movable crest. If the crest were lowered below that assumed, the saving in the cost of spillway would be more than offset by the additional cost of excavation. The advantages of keeping the river confined at the higher stages has been discussed before. It is estimated that this spillway will cost about $1,000,000.

91. Sacramento Weir: The weir located at Brytes Bend, 2 miles above American River, will be similar in construction to that of the Fremont Weir. It will have a length of about 1,670 feet and its sill will be at elevation 30.6 feet, or about 5 feet below the adopted flood plane at that point. The estimated cost is $168,000.

92. Moulton Weir: The weir located at the head of Sutter-Butte by-pass will be similar in construction to that of the Fremont Weir. It is to be about 2,840 feet in length, and its sill will be at elevation 79 feet, or 7 feet below the adopted flood plane at that point. The estimated cost is $284,000.

93. Tisdale Weir: This weir, located about 26 miles below Colusa, was constructed by the State of California some years ago. It has a length of about 1,140 feet and a crest elevation of 42.3 feet. It is proposed to utilize this weir in the present project by raising its crest to elevation 50 feet, or 4 feet below the adopted flood plane at that point. The estimated cost is $91,000.

DRAINAGE OF WATERSHEDS TRIBUTARY TO BASINS.

94. Yolo Basin: The large streams and sloughs that now empty into this basin will be connected to the by-pass by levees which will extend up those streams to high ground.

95. Colusa Basin: It is proposed to construct a drainage canal extending from Sycamore Slough to the Yolo by-pass. This canal will be about 7 miles long, with an enlargement of Sycamore Slough for about 2½ miles. It will have a bottom width of 300 feet and side slopes of 1 on 1. Its capacity with Colusa Basin at elevation 30 feet will be about 16,000 cubic feet per second. The amount of excavation is estimated at 6,700,000 cubic yards.

96. Butte Basin: It is proposed to construct a line of levees along the trough of this basin northward from the Sutter-Butte by-pass. They will be located to intercept a great portion of the drainage now entering the basin.

97. American Basin: No provision is made for the drainage into this basin, as it is considered that the reclamation project of the Natomas Consolidated Co. will care for all drainage into this basin.

98. Drainage of basins: Provision remains to be made for the drainage of the unreclaimed lowlands of the basins of the water that will accumulate there from local rainfall, seepage, etc. This will be done by the use of culverts, with suitable gates through the levees at the lowest point of the area to be drained. These culverts will afford a means of draining these areas by gravity as the water falls in the adjacent channels. The estimate for this work is included under miscellaneous work. Where the land is reclaimed no provision is made for such drainage, that duty devolving on the property owner. It is assumed that any drainage canals constructed in Sutter and Yolo Basins will be done in connection with the levee construction in those basins, and the cost of same will be considered as levee construction.

99. The question of caring for the numerous small streams tributary to these large basins is one that involves much consideration and study, and the commission is not in the possession of sufficient data to properly consider this question. Owing to the difficulty of making any estimate of the cost of caring for this water, no detailed estimates are made. Provision can be made to cover this work only by making the estimates for miscellaneous work sufficiently large to meet the cost of any possible solution, and this has been done.

MISCELLANEOUS.

100. Rights of way: It is very necessary that the rights of way be acquired promptly, otherwise the work will be greatly delayed. This project will involve less difficulties along this line than that of any project heretofore considered, for the bulk of the land and the rights of way to be secured are controlled by a limited number of people and most of the land is not reclaimed.

101. Irrigation and power reservoirs: The commission has considered the possibility of the control of floods, in part at least, by the utilization of storage reservoirs. The Geological Survey and the Reclamation Service have made examinations and surveys of reservoir sites, both in the Coast Range and the Sierras. The commission has also had the principal sites examined, and has delayed this report for the purpose of making these examinations. While the available data is not sufficient to report fully on all possible sites, and while some other sites than those considered may later be found practicable, the information on hand is sufficient to discuss the advisability of the use of reservoirs for flood control. As all the tributaries have been looked over, it is not probable that any large reservoir sites exist that have not been examined.

The reservoir capacity of the Coast Range is relatively small as affecting the flood discharge. In the Sierras three principal sites have been surveyed—on Indian Creek, on Pitt River, and on the North Fork of the Feather River. It is calculated that the combined effect of these three reservoirs will reduce the floods of the Sacramento as follows: Above Moulton Weir 9.8 per cent, in Sutter by-pass 11.2 to 13.3 per cent, in Yolo by-pass 8.2 per cent, and below Cache Slough 6.1 to 10.2 per cent. The effect is therefore small, and additional means to care for floods would in any case have to be provided. The value of the reservoir from an economical point of view is whether this relatively small amount of flood discharge can best be cared for by reservoirs or by by-passes.

The following table shows the relative cost:

Reservoirs.	Ratio of cost of control in valley to control in reservoirs.
Clear Lake	1.0- 1.5
Indian Valley (Clear Lake)	1.0- 2.0
Putah Creek Reservoirs	1.0- 1.7
Stony Creek Reservoirs	1.0- 3.0
Indian Valley (Feather River)	1.0-10.0
Big Valley	1.0- 5.0

It is therefore evident that this partial control by reservoirs is not economical. If for power or irrigation purposes reservoirs are constructed, and part of the flood withheld, it will simply mean that the by-passes will be in use for a shorter period of time, and that the river will carry a larger proportionate part of the flood. Reservoirs for power or irrigation purposes are difficult to operate to the best advantage for flood control, as they would be filled at the earliest moment and would then exercise but little effect on subsequent floods.

While favoring the use of reservoirs as far as possible, and considering that one of the advantages of the project herein proposed is that it lends itself to future storage possibilities, the commission believes that it is not economical to construct reservoirs for flood control, but that such construction should be deferred until these reservoirs prove desirable for power and irrigation purposes.

102. Clearing between levees, etc.: When the levees are set back to provide for additional cross section, it is proposed to remove all timber and obstructions to the free flow of the flood waters for a width sufficient to obtain the necessary flood channel cross section. The estimate for this work, including the right to clear and keep this land clear for use as an overflow channel, is $576,000, or $30 per acre. This estimate is included under miscellaneous work.

103. Bank revetment: It is probable that some bank protection may be found necessary, but that matter is one to be considered in connection with the question of maintenance, not of construction.

104. Telephone lines: A complete telephone system should be established along the river and its tributaries throughout the limits of the work, and extensions made to all of the United States Geological Survey's gaging stations. The estimate for this work is included under miscellaneous work.

BRIDGES, ETC.

105. In connection with the completion of this project a railroad bridge across the Colusa Basin Canal will be necessary, and the following bridges and trestle of the Southern Pacific Co. will require raising or reconstruction: Bridge at Knights Landing, bridge at Yuba City, bridge across Feather River above Yuba City, trestle across Sutter Basin, trestle across Yolo Basin. A change in the location of this company's track for about 5 miles along lower Feather River is also contemplated, the track for this distance to be moved back on the new levee. The estimates for this work were prepared by the Southern Pacific Co., to which this commission is greatly indebted. It is considered that, as much of this work of reconstruction will be to the interest of the Southern Pacific Co., that company will be willing to share in the expense. This is especially true of the following constructions:

First. Bridge across Yolo by-pass, where estimates are based on a double track to replace the present single-track trestle.

Second. Bridge across Sutter by-pass.

Third. Moving of 5 miles of track along lower Feather River.

In preparing these estimates it is assumed that this company will assume 65 per cent of the cost of the Yolo by-pass bridge, 50 per cent of the Sutter by-pass bridge, and the entire cost of moving the track along Feather River.

(a) It is proposed to construct across the Yolo Basin by-pass a double-track steel railway bridge about 9,500 feet long, with about 50-foot clear spans and a draw span of about 80 feet at each end for the passage of dredges. The elevation of the lowest member is fixed at 3 feet above the adopted flood plane at that point. The estimated cost of this bridge and the work on its approaches is estimated at $1,589,000, of which the Southern Pacific Co. will assume $1,033,000.

(b) It is proposed to construct across the Sutter by-pass a single-track steel railway bridge with about 50-foot clear spans and with an 80-foot draw span at each end for the passage of dredges. The elevation of the lowest member of this bridge is fixed at 3 feet above the adopted flood plane at that point. The length of the bridge will be about 3,400 feet. The estimated cost of the bridge and work on approaches, etc., is $370,000, of which the Southern Pacific will assume $185,000.

(c) It is proposed to construct across the Colusa Basin Canal a single-track steel railway bridge about 375 feet long. The elevation of the lowest member is fixed at 3 feet above the elevation of the adopted flood plane in the canal at that point. The cost of the bridge and work on the approaches, etc., is estimated at $53,000.

(d) The bridge at Knights Landing will have to be raised 7 feet, and the cost of the work involved incident to this rise is estimated at $121,000.

(e) The railroad bridge between Yuma City and Marysville will have to be raised 6 feet, and the cost of the work involved incident to this rise is estimated at $70,000.

(f) The railroad bridge across Feather River above Marysville will have to be raised 6 feet, and the cost of the work involved incident to this rise is estimated at $140,000.

106. Other bridges: The other important bridges that will have to be raised are the highway bridges across the Sacramento River at Butte City and at the head of Grand Island. Numerous small highway bridges across the tributary streams and across the various canals, etc., will have to be constructed, and in many cases the present bridges will have to be modified. The number and sizes of these bridges have not been definitely determined, so this work is provided for by a lump sum. It is considered that local interests, county, city, etc., should contribute in work on many of these bridges. It is estimated that the cost of raising and of rebuilding all bridges other than those of the Southern Pacific Co. is $253,000.

107. Preliminary surveys: The estimates of quantities, dimensions, and locations of those portions of the work along the main river—the American River—and the Feather River and its principal tributaries, the Yuba and Bear, are based on surveys made by this commission since 1905 and by the United States engineer officer in charge of the Sacramento River in 1908 and 1909. Estimates on those portions of the work in the overflow basins are based on the surveys of the United States Geological Survey. As a preliminary to much of the drainage work in and adjacent to the basins and to the control of the creeks flowing into the basins, it will be necessary to make many surveys; but it is thought that such surveys, while important in determining locations, will not result in material change in the estimates of quantity.

108. Prosecution of the work: Under this project work can be carried on simultaneously at practically all points, but the final completion and putting into operation of the several principal parts of this plan should progress upstream from Collinsville. By the time the river channel is improved to Cache Slough the Yolo and Sutter Butte by-passes should be ready for service. Meanwhile the levees of the tributary streams, the drainage canals, etc., should have reached such a state of completion that not more than one flood season need elapse before they are completed. Vigorous prosecution of the work at all points is essential.

ESTIMATES.

109. (a) Leveeing: About 90 per cent of all the leveeing can be done using clamshell dredges. The balance of the dredging will have to be done using teams and scrapers. The work to be done by means of dredges is divided into two classes, depending on the quantity of work in the locality and the facilities for operating dredges. Where the quantity is large and the dredges can be operated without difficulty, the unit cost is taken at 6 cents per cubic yard. For other clamshell dredging the unit cost is placed at 12 cents. Where teams and scrapers are to be used, the unit cost is placed at 20 cents.

(b) Excavation: Estimates for excavation are based on the use of clamshell and hydraulic dredges, except for that at the different weirs, and are as follows: In lower river, 6½ cents per cubic yard; in Colusa Basin Canal and cut-offs above Feather River, 12½ cents per cubic yard; and at weirs, 25 cents per cubic yard.

(c) Right of way: The right of way will be a costly feature of this project, though the bulk of the land to be acquired is unreclaimed land in the basins. For improved land along the river below Knights Landing the average cost is estimated at $200 per acre. For improved land along the upper river and the tributary streams the average cost is estimated at $75 per acre. For unreclaimed land the average cost is estimated at $25 per acre.

110. Table of estimates:

Levees:		
58,000,000 cubic yards, at 6 cents	$3,480,000	
28,000,000 cubic yards, at 12 cents	3,360,000	
18,000,000 cubic yards, at 20 cents	3,600,000	
		$10,440,000
Excavation:		
148,600,000 cubic yards, at 6½ cents	9,659,000	
8,250,000 cubic yards, at 12½ cents	1,031,250	
380,000 cubic yards, at 25 cents	95,000	
		10,785,250
Land:		
4,400 acres, at $200	880,000	
8,400 acres, at $75	630,000	
78,000 acres, at $25	1,950,000	
		3,460,000
Spillways:		
8,000 feet, at $125	$1,000,000	
4,500 feet, at $100	450,000	
1,140 feet, at $80	91,200	
		$1,541,200
Bridges		1,382,000
Miscellaneous		1,740,000
Engineering and contingencies, 15 per cent		4,451,550
Total		33,800,000
Less amount appropriated under existing project		800,000
Total		33,000,000

111. Maintenance: In view of recommendation 3 in paragraph 116, no estimate of maintenance is made.

112. Maps: There is submitted with this report a map of the valley of the Sacramento River to a scale of 1 inch to 5,000 feet, on which are indicated all the works recommended in this project. There is also submitted a sheet of profiles of the adopted flood planes in the rivers and by-passes.

113. The surveys and the collection of data made in connection with the preparation of this project were under the immediate charge of Mr. H. H. Wadsworth, assistant engineer, whose report is appended hereto.

CONCLUSIONS.

114. The project here submitted differs much from the commonly accepted solution, but this commission is satisfied that it more nearly meets the requirements of the case than any heretofore considered. In a consideration of this project attention is invited to its small estimated cost and short time of completion; also to the fact that the floods are controlled immediately and completely upon its completion.

115. The results to the State of California in permitting reclamation and preventing damage to reclaimed lands are great, but the United States also gains in keeping the present channels uninjured. It is the opinion of the commission that both should therefore share in the construction of the works under this project, the United States to the extent of 33⅓ per cent. It is also the opinion of the commission that the State of California will benefit to such an extent by the control of the floods of the river that upon the completion of this project it should take over and maintain all flood-control works, the United States to provide only for the maintenance of the navigable channels. This seems an equitable distribution both of the first cost and the maintenance.

RECOMMENDATIONS.

116. It is therefore recommended—

First. That the United States begin at once the work for the control of the floods of the Sacramento River in accordance with the above project and provide for its early completion.

Second. That the United States contribute one-third of the cost of work and the State of California contribute the remaining two-thirds.

Third. That upon its completion the United States turn over to the State of California for maintenance all flood-control works.

Respectfully submitted.

JOHN BIDDLE,
Lieutenant Colonel, Corps of Engineers.
THOS. H. JACKSON,
Captain, Corps of Engineers.
CHAS. T. LEEDS,
First Lieutenant, Corps of Engineers.

The CHIEF OF ENGINEERS, UNITED STATES ARMY.

[Second indorsement.]

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, December 27, 1910.

Respectfully returned to the Chief of Engineers, United States Army.

This is a report by the California Débris Commission on the subject of the control of floods in the Sacramento River. It is apparently submitted in compliance with that provision in the act of March 1, 1893, creating the commission, which refers to affording relief in flood time, as follows:

"SEC. 5. That it shall further examine, survey, and determine the utility and practicability, for the purposes hereinafter indicated, of storage sites in the tributaries of said rivers and in the respective branches of said tributaries, or in the plains, basins, sloughs, and tule and swamp lands adjacent to or along the course of said rivers, for the storage of débris or water or as settling reservoirs, with the object of using the same by either or all of these methods to aid in the improvement and protection of said navigable rivers by preventing deposits therein of débris resulting from mining operations, natural erosion, or other causes, or for affording relief thereto in flood time and providing sufficient water to maintain scouring force therein in the summer season."

This provision of the law appears to contemplate only such flood relief as would be incidental to the reservoirs or settling basins that were once regarded as the most important means of controlling the mining débris. Moreover, in the same act Congress discriminated between the objects of the work to be undertaken by the United States and the State, respectively, as follows:

"SEC. 24. That for the purpose of securing harmony of action and economy in expenditures in the work to be done by the United States and the State of California, respectively, the former in its plans for the improvement and protection of the navigable streams and to prevent the depositing of mining débris or other materials within the same, and the latter in its plans authorized by law for the reclamation, drainage, and protection of its lands, or relating to the working of hydraulic mines, the said commission is empowered to consult thereon with a commission of engineers of said State, if authorized by said State for said purpose, the result of such conference to be reported to the Chief of Engineers of the United States Army, and if by him approved shall be followed by said commission."

In the river and harbor act of June 25, 1910, however, Congress has approved the conclusion announced by the commission in its report of 1907 in favor of dredging rather than settling basins as the most effectual means for "the direct improvement of navigation in the Feather and Sacramento Rivers, and toward the controlling of débris and floods." The problem is stated by the commission as follows:

"The United States is interested in the improvement and maintenance of the present navigable channel; it is interested jointly with the State of California in the control of mining débris; but to date it has given no attention to the flood problem.

"Any work done on the present river channel in the nature of deepening it or of preventing mining débris from entering it will increase its flood-carrying capacity and improve it both as a navigable and flood-carrying stream. Any work, however, that involves the widening of the channel will injure its navigability and necessitate the use of artificial means for securing low-water navigation. It is to the interest of the United States, therefore, that if practicable that solution of the flood problem be adopted which will result in the least injury to the present good low-water navigable channel.

"It is with this object in view that this commission has for some years been making surveys of this river and its tributaries and collecting data for the preparation of a project which will control the floods in the river at a minimum cost and which when carried out will have caused the least injury to the present navigable channel.

"The great amount of reclaimable land in the Sacramento Valley, its high value after being reclaimed, and the great damage to the land already reclaimed wrought every few years by floods render the problem of flood control a vital one which must be solved in the immediate future."

Extensive surveys and investigations have been carried on for a number of years by the commission, and much thought and study have been given to this subject, culminating in the within report, which outlines a project for the control of the floods through the cooperation of the State of California and the United States. The question of flood control in the Sacramento Valley is recognized as being of the utmost importance to the State of California and the varied interests located in the valley, and this subject has had the consideration of many engineers, boards, and commissions. Several plans have been advanced involving different methods of control at varying costs. Excessive floods in recent years, however, indicate a maximum discharge of more than twice the volume assumed in these former projects, and they are therefore considered wholly inadequate at the present time.

The California Débris Commission has had the benefit of these former studies in considering the greater problem with which it has been confronted, and it submits herein a project estimated to cost $33,800,000, toward which the commission proposes to apply $400,000 appropriated by the act of Congress approved June 25, 1910, and the like sum of $400,000 furnished by the State of California in compliance with the terms of said act, leaving $33,000,000 to be provided if the project is adopted and carried out. It proposes that the State of California shall provide two-thirds and the United States one-third of this sum, and that the State shall maintain all the flood-control works, this distribution of the first cost and maintenance being equitable in the opinion of the commission.

The plan proposed is known as the by-pass system by reason of the auxiliary channel to be provided through the lowlands at some distance from the river, along the greater portion of its length, and intended to take the major part of the discharge during extreme flood stages. On the tributaries and the upper Sacramento levee systems are proposed of sufficient capacity to confine all flood waters, and the channel of the Sacramento below Grand Island is to be enlarged to a similar capacity. The intermediate portion of the river is also to be leveed above extreme flood height, and will provide capacity sufficient for small floods, but it will be able to carry only a minor part of the maximum flood discharge. Weirs are provided at certain points in the levee lines, over which the surplus flood waters will pass into the auxiliary channel when the river rises above the weir levels. The auxiliary channel is formed by two lines of levees along the low ground in the Butte, Sutter, and Yolo Basins. It leaves the Sacramento about halfway between Butte City and Colusa on the left bank, crosses the Sacramento at the mouth of the Feather River, and rejoins it on the right bank at the foot of Grand Island. This project is the result of careful study and deliberation, and, in the opinion of the commission, will solve the problem of flood control and resulting land reclamation in the Sacramento Valley without injury to navigation interests. The commission has considered the use of reservoirs for flood control, but concludes that they could at the most afford only a small percentage of the necessary relief, and this at such a great cost that they are not economically justifiable for this purpose alone.

The plan proposed by the commission seems well adapted to fulfill the above objects, subject to such changes as further study or experience in the course of execution may show to be desirable or necessary. The estimates from this point of view should be considered as approximate only, exact determination being impracticable in undertakings of such large magnitude, involving so many diverse interests and various details of cooperation not yet elaborated. The board is inclined to the opinion that further study should be given to the question whether it

might not be preferable, even at increased cost, to keep the auxiliary channel wholly on the west side of the river, and thus lessen the risk of injury to the navigable channel where the two cross in the proposed plan.

A project for the improvement of the Sacramento River below the city of Sacramento, for the benefit of navigation, was presented under authority of the act of March 2, 1907, and may be found published as House Document No. 1123, Sixtieth Congress, second session. This project provides for a channel 9 feet in depth and 200 feet in width. Under the provisions of the act of March 3, 1909, a project has been forwarded by this board, under even date herewith, for the improvement of the river between Sacramento and Red Bluff, which contemplates a channel depth of 4 feet from Sacramento to Colusa, 3 feet from Colusa to Chico Landing, and such depth as is practicable under the plan recommended from Chico Landing to Red Bluff. These channel dimensions are believed to be sufficient to meet present and reasonably prospective demands of commerce, and will not be benefited by the proposed works of flood control. In fact, there is reason to apprehend greater difficulty in maintaining the low-water channel where the river is widened to increase its flood capacity, also where the by-passes leave the river, and in general where the flood heights are increased by reason of the works of flood control.

While Congress has hitherto included flood relief among the objects to be accomplished by the work of the débris commission, it appears to have considered this only as incidental to the control of mining débris in the interests of navigation. Should Congress now decide to cooperate with the State of California in a comprehensive project of this magnitude for the purpose of flood control, it is believed that the plan proposed, with such division of cost as Congress may determine, should be adopted, since, in the opinion of the board, it is well designed to secure the desired result. The board reports, however, that the execution of this project is not necessary in the interests of navigation.

For the board:

WILLIAM T. ROSSELL,
Colonel, Corps of Engineers,
Senior Member of the Board.

APPENDIX B.

REPORT OF ASSISTANT ENGINEER H. H. WADSWORTH.

UNITED STATES ENGINEER OFFICE,
San Francisco, Cal., July 1½, 1910.

CAPTAIN: I have the honor to submit the following report on studies and investigations made by me relative to the control of floods in the Sacramento Valley and its relation to navigation in the Sacramento River:

Detail surveys of the Sacramento River from its mouth at Collinsville to Chico Landing have been made and reported upon in connection with reports on projects for improvement of navigation.

Within the past few years surveys have also been made of the Feather River below Oroville, but complete only as to that portion below Marysville; also of those portions of the Yuba, Bear, and American Rivers lying between their mouths and the foothills of the Sierra Nevada Mountains.

These surveys and that of the San Joaquin River below Stockton, made under the direction of Col. John Biddle in 1908, together with several minor surveys made under the direction of this office, form the framework of the map of the valley of the Sacramento and San Joaquin Rivers, which, with a sheet of profiles showing several actual and assumed water surfaces of the Sacramento River and adjoining basins, accompany this report.

The topography, except in the immediate proximity of the rivers and portions of the troughs of Yolo, Sutter, and Butte Basins, has been taken, so far as they were available, from the published maps of the United States Geological Survey.

The contours in the territory lying between the Feather and Sacramento Rivers, except the lower parts of Sutter and Butte Basins, were obtained from the map of the Sacramento Valley published in 1895 by the commissioner of public works of the State of California, modified by elevations obtained by lines of levels extending easterly across the basins from Butte City and from Meridian, the latter being from surveys of the Northern Electric Railway.

The data used in this report relative to the discharge of rivers during the flood of March, 1907, were obtained from a paper by Messrs. W. B. Clapp, member, American Society of Civil Engineers; E. C. Murphy, member, American Society of Civil Engineers; and W. F. Martin, jr., American Society of Civil Engineers; engineers of United States Geological Survey, published in Volume LXI of Transactions of American Society of Civil Engineers.

The records of gauge heights at several points kept by the United States Weather Bureau were used to supplement those obtained from numerous staff and several registering gauges maintained in connection with the surveys under the direction of this office.

A general statement of the physical characteristics of the Sacramento River and its several tributaries is given in the report of the State commission of engineers to the commissioner of public works of California, under date of December 15, 1904. The report of this commission, commonly known as the Dabney Commission, was reprinted as an appendix to a report of a board of engineer officers, United States Army, in House Document No. 262, Fifty-ninth Congress, first session, so that it does not seem necessary to repeat much of this descriptive matter. After reviewing the several plans which had theretofore been proposed for dealing with the floods of the Sacramento Valley, the Dabney Commission formulated a comprehensive plan for the rectification of the river and the reclamation of the adjacent lands.

This report did not consider the effect which the carrying out of its plan would have on navigation, but it was recognized by those who have to do with the maintenance of navigable channels that the enlargement of the river channel to carry such a flow as was then assumed to be a maximum would greatly increase the difficulty and cost of maintaining a good channel at low-water stages. To adapt this same general plan, by the further enlargement of channels, to the flood conditions of March, 1907, would not only render the maintenance of a navigable channel still more difficult, but, if the necessary channel enlargement by the methods proposed could be extended to the limits which this new flood standard requires, would take a very large area of valuable agricultural lands which are now either completely reclaimed or which lie so high that flood waters recede from them each year in time to produce bountiful crops.

The occurrence of another flood in January, 1909, nearly as great as that of 1907, and even surpassing that on some of the tributaries, does not make the assumption tenable that such floods are so phenomenal and are separated by such very long intervals that a flood-control project should not provide for them.

A study of the cross sections of the Sacramento River and Valley shows that the river never carried more than a small percentage of the water delivered to it by its tributaries. Before levees were constructed the excess escaped into the basins over the banks in a thin film, gradually building up the banks by the deposit of sediment, thus increasing the depth and consequently the velocity in and capacity of the channel. The capacity decreased progressively downstream, because of the further escape of water. When levees came to be built they were located on the natural ridges along the channels, thus raising the flood heights in channel and improving channel depths, but, on account of insufficient provision for escape of water, compelling breaks in the weaker levees and escape of the water to the flood basins. The effect of a break is, of course, to protect the adjacent districts from the danger of increased flood height, and the discharge of the water into these basins of great capacity delays its appearance at outlet of same until the crest of flood wave in the river channel has passed.

The insufficient capacity of outlets of flood basins results in the raising of the water in them to such heights as to threaten the back levees of reclaimed lands and in the backing up of the water in the main channels. When the Sacramento River at the outlet of Cache Slough is at its highest stage the water stands practically level from that point nearly to Walnut Grove. A similar conditions prevails above the mouth of Feather River and lower end of Sutter Basin.

If storage reservoirs of capacities equal to or even approximating those of the valley flood basins could be provided in the mountains at a cost not greater than the value of the basin lands which might thereby be relieved from similar duty, they would be well worth while. To make such storage reservoirs of effective assistance in controlling floods, however, it would be necessary to subordinate their use for storing water for irrigation, power development, or for improving low water navigable depth to that purpose, since an ample storage at the end of the rainy season is essential in the one case and a large storage capacity until such time as the possible occurrence of a flood has passed is essential in the other. The possibility of utilizing mountain reservoir storage in connection with a flood-control project will be discussed further on.

TABLE 1.—*Comparison of the flood flow into the Sacramento Valley for March, 1907, and January, 1909.*

Streams and places.	Flow at crest (cubic feet per second).			Greatest daily mean flow.		Greatest 4-day mean.	
	March, 1907.	January, 1909.	February, 1909.	March, 1907.	January, 1909.	March, 1907.	January, 1909.
Sacramento at Red Bluff	204,000	[1] 205,000	250,000	[2] 192,000	175,000	152,000	129,000
Feather at Oroville	185,000	[1] 170,000	.....	[3] 130,000	130,000	97,300	112,000
Yuba at Smartsville	105,000	[1] 90,000	.....	[3] 100,000	85,000	68,000	68,000
Bear at Van Trent	30,000	[1] 40,000	.....	[3] 28,000	27,000	17,300	20,000
American at Fair Oaks	105,000	[1] 90,000	.....	[3] 100,000	85,000	74,600	75,000
Stony at Fruto	[4] 30,000	[4] 28,000	[4] 38,000	[5] 25,000	[4] 23,000	16,300	[4] 17,000
Cache at Yolo	19,500	17,500	25,000	[3] 19,000	17,000	13,200	12,000
Putah at Winters	35,000	32,400	34,000	[3] 25,000	29,000	15,000	18,000
Unmetered mountains and foothills	[6] 120,000	[6] 105,000	.....	[6] 100,000	[6] 85,000	76,000	[6] 76,000
Total flow into valley	834,000	778,000	.....	719,000	658,000	530,000	527,000

[1] Jan. 16
[2] Mar. 20.
[3] Mar. 19.
[4] Estimate made from flow at Orland.
[5] Mar. 18.
[6] Estimated in comparison with run-off in 1907.

The subject of the maintenance of good navigable depths at low-water stages is intimately connected with the diversion of water from the river and its tributaries for irrigation purposes, and is one likely to require careful attention in the near future. Water for irrigation purposes stored in reservoirs during the rainy season is no drain on the navigability of the river, and may even be an aid in reducing flood heights, but water diverted from the river at low stages, reducing the flow by the amount of the diversion, is a direct detriment.

The extensive irrigation works now in progress of construction in Glenn and Colusa Counties will require a much larger quantity of water than has heretofore been used. Other projects which are now under consideration and those which are likely to come up will create a demand which, if granted, will seriously affect the navigable depths, particularly above Colusa. The probable effect of the diversion at low-water stage of 1,000 second-feet of water above the mouth of Chico Creek, as computed by me, will be to decrease present depths between

that point and Colusa from 0.3 foot to 1.5 feet, depending upon the characteristics of the section. The decrease in depth will be least at points where existing depths are least, but these points are now the critical ones, and a decrease of even 0.3 foot would be a serious matter and would require the construction of contraction works where, but for the diversion, they would not be necessary. Therefore the storage of water on the Sacramento or its tributaries above Red Bluff, either by companies diverting water for irrigation purposes or otherwise, so that the low-water flow may be increased, should be made a condition precedent to further diversion.

Such storage can be provided in Big Valley on Pitt River, and this same reservoir is the one best suited by location and capacity of any of the several possible storage sites to aid in flood control.

Table No. 1 (see preceding page), compiled by the engineers of the United States Geological Survey from their records of flood discharge, as published in the American Society of Civil Engineers paper, previously referred to, and extended to show in comparison the floods of January and February, 1909, shows in each case the peak flow, the greatest daily mean, and the greatest four-day means flow at a station on each of the tributaries.

The volume of water which must be taken care of in the several natural divisions into which the river is divided will differ with every flood. Using the records of the floods of 1907 and 1909 as a basis and assuming an increase of 25,000 second-feet and 50,000 second-feet, respectively, to those records of the maximum flow of the Yuba and American Rivers, on account of observations under this office on the Yuba and on account of the similar character and greater extent of the American River drainage area, and making such allowance as seems proper for the volume of water absorbed by or stored in the channels, considering the length of time that the high rate of flow may be (in the light of the experience of 1907) sustained, the following has been assumed as the rate of flow for which channel capacity must be provided, viz:

	Second-feet.
Sacramento River below—	
Mouth of Stony Creek	260,000
Princeton	250,000
Feather River above Marysville	150,000
Yuba River above Marysville	120,000
Feather River below Marysville	240,000
Feather River at its mouth (including Bear River)	250,000
Sacramento River below mouth of Feather River	450,000
American River	120,000
Sacramento River below mouth of—	
American River	500,000
Cache Slough	600,000

Of the several engineers and engineering commissions which have reported on the flood-control problem, there has been a substantial agreement as to the necessary manner of treating that part of the river between Cache Slough, the outlet of Yolo Basin, and Collinsville, at the mouth of the river. In fact, there is no other reasonable solution than that the entire flood flow must be carried through this section.

There has been such a persistent popular impression among many people that a canal through the ridge separating Yolo Basin from Suisun Bay, north of Montezuma Hills, permitting a more direct discharge of the Yolo Basin waters, would be the simplest solution of the problem that a more complete detail survey of the route of such a canal than was before available has been made and a map and profile prepared. These show that a flood-relief canal from Yolo Basin to Suisun Bay via Denverton to be out of the question, as not only would it require the excavation of a cut with maximum depth of about 60 feet, but the distance to a free outlet in Suisun Bay would be actually greater than via Rio Vista and Collinsville. This scheme will be referred to again.

While the plan recommended by the Dabney Commission may have been best suited for floods of the magnitude assumed by it to be maximum, it becomes quite insufficient to deal with the problem which records subsequently made have shown to exist. The accompanying profile shows, besides several other lines, the proposed high-water surface of the river according to the proposed plan of the Dabney Commission. The annexed cross sections are typical ones of several different reaches of the river, and show, first, existing sections; second, the sections proposed by the Dabney project; third, the sections that would be required according to the plan of that commission enlarged to carry the flood of 1907.

Below the mouth of the Feather River the widths of channel would be approximately two and one-half times as great as estimated, but the extent to which existing widths would have to be increased would be from three and one-half to seven times as great as estimated. In those estimates it was assumed that two-thirds of the material would be removed by the agency of the current and one-third by mechanical means. It can not be hoped that these proportions could obtain with the much greater total volume of material which such an enlargement of the project would involve.

The impracticability, therefore, of enlarging on that plan to the extent that would be required on account of excessive quantities of material which would have to be handled, and the prohibitive cost of the same, and the value of land that would be sacrificed for the sake of reclaiming other lands less valuable, makes the adoption of the by-pass system, aided by storage of water in reservoirs, as far as practicable, the only alternative. Such a system is much better for navigation, since the low-water flow is confined to a channel commensurate with its volume.

The main principles which it has been assumed should govern in planning a by-pass system of flood control are—

First. That the largest practicable volume of water consistent with the maintaining of good navigable conditions and without raising levees to excessive and dangerous heights should be forced through the main channels.

Second. That by-passes should occupy the troughs of the basins, and that the side levees for same occupying the highest available ground should be constructed, as far as practicable, from material excavated from within the by-pass.

Third. That the weirs over which water is diverted from the river to by-passes should be as long as is economically practicable, so that a high stage of water may be maintained in the river and so that the diversion of water may be effected in a thin layer and with as low a velocity as possible to avoid carrying into the by-passes a large amount of sediment from the river.

Fourth. That canals should be constructed to intercept the drainage from lands bordering the basins to reduce the volume of water which will have to be pumped from those lands adjoining the by-passes and river which are too low to be drained naturally.

In fixing the flood planes or high-water grade lines noted on the profile as "adopted grade lines," in accordance with which the details of this flood-control project have been worked out, the elevations at several critical points were first fixed and then, by a careful study of slopes in connection with depths and cross sections, intermediate points were so established that the channel would carry the maximum volume of water without too violent a change in existing regimen.

The elevations of the high-water plane or "adopted grade line" at points where the slope changes and the distances and slopes between these points are as follows:

TABLE 2.

	High-water elevations.	Distance (miles).	Slopes in feet per mile.
Collinsville	7.0	15.9	0.503
Mouth of Cache Slough	15.0	18.3	[1] 1.464
		11.4	[2] 2.745
Head of Steamboat Slough	23.5	27.7	.415
Mouth of American River	35.0	19.5	.256
Mouth of Feather River	40.0	43.4	.323
		[3] 37.0	.379
Tisdale Weir	54.0	27.0	.564
1 mile above Colusa	69.2	12.6	1.33
Moultons Break	86.0	20.0	1.60
2½ miles below Jacinto	118.0	17.6	1.33
Chico Creek	141.54	.....	.....

[1] Via Old River. [2] Via Steamboat Slough. [3] With cut-offs.

With reference to the fixing of the elevation of the flood-flow grade line at Collinsville at so high an elevation as 7 feet, the following data are given. This elevation for mean tide was used by the Dabney Commission with the explanation that it was probably too high for any but extraordinary conditions. Such extraordinary conditions actually existed during the time of the January, 1909, flood. The automatic registering gauges maintained by this office at Collinsville and at Benicia showed that during the period of one tidal cycle of 25 hours, i. e., from one lower low water to the following one, the mean height of tide at Collinsville was at elevation 7.2, with a maximum height of 9.7 feet. During the period of two tidal cycles, 50 hours, the mean height of tide was 6.9 feet. At Benicia the corresponding heights were 6.5 feet and 6.1 feet, respectively. At San Francisco during the same 50-hour period the mean height of tide was 0.9 foot above the mean of predicted heights.

The following table shows approximately the present capacity of the river channel up to the high-water line of the floods of 1907 and 1909. This line, however, simply shows the height reached before the levees broke, and is, of course, above the present effective height of the levees. The table also shows the capacity to be given each section of the river under the project now proposed and the volume of water which it will be necessary to carry in the by-passes.

TABLE 3.

	Present capacity.	Capacity by proposed plan.	
		River channel.	By-pass.
Above Stony Creek	.....	250,000	.....
Stony Creek to Jacinto	.....	260,000	.....
Jacinto to Moulton Break	140,000	260,000	.....
Moulton Break to Cobbs Bend (above Colusa)	100,000	65,000	185,000
Cobbs Bend to Butte Slough	70,000	65,000	185,000
Butte Slough to Tisdale Weir	60,000	65,000	185,000
Tisdale Weir to Feather River	23,000	[1] 30,000	220,000
Feather River to Elkhorn Weir	62,000	50,000	400,000
Elkhorn Weir to American River	36,000	50,000	[2] 430,000
American River to Kripp Break	127,000	100,000	[2] 430,000
Kripp Break to head of Steamboat Slough	75,000	100,000	[3] 500,000
Steamboat Slough	[4] 34,000	46,000	500,000
Old River	[4] 49,000	54,000	
Cache Slough to Threemile Slough	[5] 300,000	.....	.....
Below Threemile Slough	[5] 200,000	600,000	.....

[1] 27,000 without cut-off.
[2] Below Cache Creek.
[3] Below Putah Creek and Southern Pacific Ry.
[4] These capacities for Old River and Steamboat Slough assume a free outlet, which condition does not obtain after passage of first flood wave down the river, as the slope is flattened almost to nothing by backwater from outlet of Yolo Basin.
[5] These figures represent approximate quantities of water flowing in these sections at crest of floods, but are much above their safe capacity, both on account of height and velocity. Safe present capacity below Threemile Slough is about 160,000 second-feet.

The main points to be discussed in connection with this flood-control project are:

(a) The enlargement of the river channel below the mouth of Cache Slough.

(b) The construction of a weir at Moultons Break of 185,000 second-feet capacity to divert water into Butte Basin; the raising and maintenance of Tisdale Weir with capacity of 35,000 second-feet to divert water into Sutter Basin; the construction of a weir at mouth of Feather River of 400,000 second-feet capacity to carry the Butte and Sutter Basin and the Feather River waters into Yolo Basin; and the construction of a weir of 70,000 second-feet capacity near Sacramento to carry the waters of the Sacramento and American Rivers, in excess of the channel capacity below, into Yolo Basin.

(c) The rectification, in several places, of the river channels.

(d) The raising of river levees, and in places the construction of new ones along established lines to the heights required by the adopted flood plane or high-water grade line.

(e) The construction of by-pass levees in Butte, Sutter, and Yolo Basins, with wing levees extending up the tributary streams.

(f) The possible diminution of flood channel capacity by means of storage reservoirs in mountains.

(g) Tributaries.

(h) The construction of intercepting canals to carry as much as possible of the drainage naturally tributary to the flood basins to gravity outlets, and the drainage of the lower parts of these basins outside of limits of by-passes.

(i) The raising of several bridges and construction of others, both railway and highway, in consequence of raising the flood plane.

The accompanying maps and profiles show in a general way the locations and dimensions of the several features of the project. Many of these are shown more in detail on larger-scale maps on file in the office. These several features will be discussed separately in the order named.

(A) ENLARGEMENT OF RIVER CHANNEL BELOW MOUTH OF CACHE SLOUGH.

The situation below mouth of Cache Slough is such that not only does it need correction on account of the flood hazard to the lands in the vicinity under present conditions, but any project for confining floods to channels (river and by-pass) is dependent on there being first provided an outlet for the waters which will then reach this point in greater volume than before. The present flood capacity of the channel below Threemile Slough up to the adopted grade line is only about 160,000 second-feet, and above Threemile Slough it does not exceed 220,000 second-feet.

In determining the size of channel necessary to give the required capacity of 600,000 second-feet a depth of 35 feet at flood stage was adopted after careful consideration of the relation of depth to total area of section, to area of dredged section, to velocity of current, and to the effect on maintaining low-water navigation. The corresponding necessary width (at surface), taking the slope due to the cut-off north of Horseshoe Bend above Tolands Landing, is 3,050 feet where the river is confined to one channel, and it is 2,600 feet in the cut-off mentioned, leaving present channel via Horseshoe Bend to carry its proportion of the flow.

Some of the land which it will be necessary to acquire for this work is now reclaimed. The point where the channel is now most contracted is at Bakers Point, on Sherman Island, opposite Tolands Landing. Here it will be necessary to set the levee back about 2,500 feet. The quantities of material to be moved for channel enlargement and for levee construction and the area of land required for channel and for spoil banks will be found under the head of estimates.

Considerable relief from flood conditions will be afforded by the simple setting back of levees and the removal of remnants of old levees and fringe of trees and brush, which prevent the free movement of water across the swampy land north of Horseshoe Bend just above Tolands Landing. By this means alone the flood capacity will be increased to about 250,000 second-feet.

So extensive an increase in the width of the channel to give it the required flood-carrying capacity will probably result in a detriment to low-water navigation or will require increased expenditures to maintain good navigable channel at low water. How this may best be done will require special study. The widening of the river from its mouth to Cache Slough will help to increase tidal flow, which will be an advantage.

In comparison with the estimate of cost of enlarging this section of the river from the 250,000 second-feet capacity to 600,000 second-feet capacity, which, except in so far as it may be done by inducing channel scour, must be done by dredging, the quantities involved in making the Denverton Cut already referred to may well be presented here. To carry 350,000 second-feet through such a cut would require a free discharge into Suisun Bay. This might possibly be effected by a cut across Grizzly Island from near the lower end of Nurse Slough to the nearest point of the bay, but there is such a vast extent of very shoal water between this point and the nearest channel that it is thought that the maintenance of a clear outlet would be much less practicable than would be the case if Montezuma Slough, which in its lower course averages 600 feet wide and 35 feet deep, were enlarged to the requisite section.

Assuming the same adverse condition as to tidal height in Suisun Bay as in the case of the river channel, and a water surface elevation of 18 feet in Yolo Basin where the flow would diverge from that to the river, the mean slope would be 0.406 foot per mile. With a depth of water of 35 feet in a canal having side slopes of 1:1, the required width at bottom would be 2,020 feet. What seems to be the most favorable location for such a canal is shown on sheet No. 6 of the map. This sheet of the map and a profile of the line of the canal are on file in this office.

The estimated total quantity of excavation is 289,000,000 cubic yards, of which 17,000,000 cubic yards would be easy (presumably) dredging in Yolo Basin, and 100,000,000 cubic yards would be dredging in Suisun Marsh, for the most part easy work, but rock might be encountered near Potrero Hills. The remainder, 172,000,000 cubic yards, would be in the cut through the saddle in the ridge. So far as could be learned from parties who had sunk wells along or near this line, no rock is likely to be encountered, but a considerable portion of the excavation would be in a hard formation, locally known as hardpan, which, together with the depth of the cut (60 feet maximum), would greatly increase the cost per cubic yard. These quantities are greatly in excess of those required to effect the same result in the main river channel. As the average unit cost will also be greater, it is unnecessary to give the proposition further consideration.

It may be shown also that the proposition to carry Putah Creek by canal along the edge of Yolo Basin and thence across the divide to Suisun Bay is not economical. As an outlet for small canals to intercept the drainage, above an elevation of about 35 feet from the area south of that tributary to Putah Creek, this location has some merit, but that is a matter for the consideration of the owners of the land lying below an elevation that can be drained into the river after the flood has passed and from which the water must be pumped for complete reclamation.

(B) THE CONSTRUCTION OF DIVERTING WEIRS.

This subject is taken up next because provision for relieving the river channels of water in excess of their capacities must be made before all the numerous breaks in the river levees can safely be closed and the extension of the levees made to the heights proposed. With the weirs constructed, Butte, Sutter, and Yolo Basins will continue to act as relief reservoirs and flood channels, as at present, until such action can be better regulated by the confinement of the water to the somewhat restricted areas forming the by-passes.

The question of proper location and crest elevation of the weirs has received a good deal of attention. As now proposed and shown on the maps and profile, the two principal weirs are at Moultons Break, on east side of river about 13 miles above Colusa, and on the south bank of the river opposite and extending upstream from the mouth of the Feather River. The former, which will be called Moulton Weir, is designed to divert 185,000 second-feet. Its length is to be 2,840 feet and its sill will be at elevation 79 feet—7 feet below the adopted high-water grade line. The latter, which will be called the Fremont Weir, is designed to divert 400,000 second-feet. It is planned to be 8,000 feet long with its sill at elevation 30, or 10 feet below the adopted high-water grade line.

Moulton Weir is nearly opposite the point (Caldens or Comptons Landing) selected by the Dabney Commission for the upper temporary diversion. The reason for locating it on the east side instead of the west will appear later in connection with the subject of location of by-passes. This point is as far downstream as it is practicable to bring the flood volume between the river levees even with the high-water grade line adopted.

By the adjustment of the grade line shown it will be possible to carry the water in the river without further diversion to Tisdale Weir, thus permitting the permanent cutting off of the outlet through Butte Slough.

Tisdale Weir, with a length of 1,140 feet and crest at elevation 42.3, is located about 7 miles below Grimes. It was built by the State a few years ago. To conform to this project its crest will be raised to elevation 50, or 4 feet below the adopted high-water grade line.

Between Fremont Weir and the mouth of American River the channel capacity of Sacramento River will be sufficient to carry the 50,000 second-feet, which is the excess of estimated flow reaching the mouth of Feather River over the capacity of the weir there.

The Elkhorn Weir, also built by the State, about 6 miles below the mouth of Feather River, will therefore be abandoned and closed.

For a distance of about 8 miles below the mouth of the American it might be practicable to enlarge the flood capacity of the river channel to carry the waters of the American in addition to those of the Sacramento not diverted at Fremont Weir. But it is thought that the interests of navigation, which are much greater below Sacramento than above, would be better served by limiting the flood capacity of this section to that of the channels below and permitting the construction of wharves and terminals on the west side of the river. This would be accomplished by constructing the Sacramento Weir at Brytes Bend, about 2½ miles above the mouth of the American River. Its proposed length is 1,667 feet and the elevation of its crest 30.6 feet, or 4.4 feet below the adopted high-water elevation at mouth of American River.

The length and depth of sill below flood height of water of each weir, as given above, are those necessary to pass the specified volume when the by-pass below is running to its full capacity, but as this condition will not be reached until there has been a flood into it at a mean rate as great as its capacity, sufficiently long for the by-pass channel to become filled, the same volume will in the meantime pass the weir at increased velocity and decreased depth. Thus, in the case of the Fremont Weir, if the assumed maximum rate of flow should be reached early in the flood, so that there would be free egress for the water from a temporarily raised crest on the sill of the weir, a depth of about 5.5 feet on the crest would give this discharge and the full depth of 10 feet would be needed only during the latter part of a long-sustained flood. By building suitable steel frames on the sill of the weir to support adjustable stop planks reaching up to within, say, 2 feet of the allowable flood height, the amount of water drawn off over the weir could be so regulated by these stop planks, removing one row at a time, as the volume of water increased, as to force the greatest possible flow down the river channel and hold the surface up to the established high-water mark much longer than would otherwise be the case. The necessity of removing all the stop planks would arise only at the times of the very exceptional floods, which are separated by intervals of several years.

The superstructure of the weirs may be so designed that the release of one stop plank will automatically release all or any desired number of the other planks in its row. The substructures will necessarily be founded on piles, which will project so far above permanently wet ground that concrete piles should be used. Wooden ones would be too short lived. This construction will necessarily be expensive, and the designs will require much study.

(C) RECTIFICATION OF RIVER CHANNELS AND PROTECTION OF BANKS.

In the portion of the river between Colusa and the mouth of Feather River a number of cut-offs may be made with beneficial results both to navigation and to flood-carrying capacity. Between Sacramento and the mouth of Cache Slough there are a few places where the cross section must be increased by a slight widening, and the entrance to Steamboat Slough must be much enlarged to give the desired capacity as per Table No. 3.

Above Colusa, however, although the river is very crooked, the slopes are steep and any material cut-off of bends would increase them. The resulting increase of velocity would aggravate bank caving and cause even more rapid changes in the regimen of the stream than those which now make the maintenance of good navigable conditions difficult. Straightening the channel would doubtless momentarily increase its flood-carrying capacity, but the tendency of the river to readjust its bed to conform to its current would in a few years probably cause it to return to a condition no better able to carry a large flood volume, unless very extensive bank-protection works were maintained, than before.

Although the present commerce carried on the river is not sufficient of itself to warrant very extensive bank-protection works, there are several places where such protection works, in my opinion, would be abundantly justified by the combined benefit to navigation and to agricultural lands; to the latter both by reason of preventing further caving into the river of the adjacent land and by reason of increased flood-carrying capacity.

Four cut-offs in the extremely crooked portion of the river between Cranmore and the mouth of Feather River are proposed. Each of these will be considered by itself, but the combined effect of them all will be to shorten the channel 6.43 miles, to eliminate several very sharp turns, and to increase the flood-carrying capacity about 3,000 second-feet (from 27,000 to 30,000 second-feet). By reason of the shortening, the increased velocity, due to increased slope, will result in slightly decreased depths at low water, but not enough to have any serious effect on navigation, as exceptionally good depths exist here.

The banks along this part of the river are stable and would not be injuriously affected by the small increase in velocity.

At low water velocity would be increased from 2.32 to 2.44 feet per second, and at high water it would be increased from 3.3 to 3.6 feet per second, approximately.

Several data regarding the suggested cut-offs are shown in tabulated form below:

TABLE 4.

	Location, cutting out—				
	Grays and Woods Bends.	Collins Eddy.	Ministerial Bend and Kirkville.	Racetrack Bend.	Total.
Length of cut.....miles..	0.50	0.45	0.35	0.30	1.40
Distance, channel shortened .....miles..	3.18	.57	1.48	1.20	6.43
Quantity of excavating .....cubic yards..	586,000	231,000	397,000	317,000	1,531,000
Amount of material to raise levees along present lines .....cubic yards..	757,000	162,500	243,500	202,800	1,365,800
Increase in flood-carrying capacity.....second-feet..	1,475	265	700	560	3,000
Per cent of reduction in required capacity, Sutter by-pass below Tisdale Weir.....	.68	.12	.32	.25	1.37
Possible decrease in acreage of by-pass, account cut-offs..... .....acres..	55	10	26	20	111

In each case the material excavated in making the cut-off channel will be more than sufficient to build the levees paralleling it on either side. It will be seen from the above table that in the case of Grays Bend the amount of excavation is actually less than that required to raise levees along present lines. In the cases of the other cut-offs the material that would be required to raise the existing levees is from 30 to 40 per cent less than that required to make the channel excavation. This difference would probably be largely offset, however, by the smaller unit cost of the cut-off channel excavations.

The decrease in area of land required for by by-pass by reason of the cut-offs is less than that required to make the cut-offs, except in the case of the Grays Bend cut-off, and its present value per acre is also less.

Other points in favor of the cut-offs are the lessened cost of maintenance of levees, because of decreased length, and the improvement of navigation due to the elimination of four very bad bends and shortening the distance 6.43 miles.

Between Sacramento and the head of Steamboat Slough there are three points only where changes affecting the alignment of the river are proposed. In each case the levee at a bend of the river will be moved back for a length of about 1,800 feet, in two instances a maximum distance of 200 feet, and in the other 500 feet. At the upper end of Steamboat Slough it will be necessary to increase the space between levees from about 350 feet (the present width) to 650 feet, from the head to Sutter Slough, a distance of about 4½ miles.

(D) THE RIVER LEVEE SYSTEM.

Below Colusa no radical change in the location of the river levees is proposed except as noted under previous headings, viz, the Sherman Island levees at mouth of river and at Bakers Point opposite Tolands Landing; along upper course of Steamboat Slough, partly on Grand and partly on Sutter Island; at three points between the head of Steamboat Slough and mouth of Feather River; and at the points where cut-offs are proposed.

Between Colusa and the mouth of Chico Creek the present location of levees will generally be followed, making some changes as shown on accompanying map, and perhaps some others if a more minute study of the ground shows them to be feasible. It is not practicable to follow the windings of the channel for several reasons. In many places rapid cutting of banks is going on with consequent frequent changes in location of the channel. This has resulted in the formation of many lakes and sloughs, to go around which has resulted in placing the levees, in some instances, more than 1½ miles apart. To have crossed the sloughs with levees would have been prohibitive in first cost and to maintain them would have been impracticable.

By following the higher ground, cutting across from bend to bend, a large area is left between the river and the levees. Excepting the lakes and former channels, the ground between levees is high and becomes unwatered promptly after the passage of a flood. Much of it is exceedingly fertile, and when cleared of the tropical jungle which naturally covers it, it becomes very valuable agricultural land.

Above Moulton Weir it will be necessary to keep a strip of land varying from a few hundred feet to one-half mile wide, adjoining the channel, clear of timber and brush to provide the necessary cross section for the flood discharge. Where the soil is suitable, which is generally the case except where gravel bars exist, such cleared strip would be available for agricultural purposes. The estimated cost of clearing this land should be sufficient to cover also the necessary easements to the property, since the owners' use of the land, in most cases, will not be curtailed and the clearing will be an actual benefit to them.

In general it is planned to give the levees a crown width of 10 feet, side slopes of 3 horizontal to 1 vertical, and a height 3 feet above high water. Below the mouth of Cache Slough, where the width of the river is so great that wave action will at times be serious, the height is made 5 feet above high water. On the upper river, where the levees are a long distance from the channel and separated from it by a growth of timber, so that only slack water reaches them, the section may be somewhat reduced.

(E) BY-PASS.

The storage capacity of the several flood overflow basins up to the height reached by the water during the floods of 1907 and the flooded areas are approximately as follows:

	Acre-feet.	Acres.
Colusa Basin.....	880,000	93,000
Butte Basin.....	407,000	54,000
Sutter Basin.....	1,038,000	116,000
Yolo Basin.....	1,126,000	140,000
American Basin.....	571,000	70,000
Total.....	4,022,000	.....

Assuming a mean discharge of the river of 600,000 cubic feet per second, of which the river below Sacramento would carry, in its present condition, 80,000 second-feet, and that the discharge through Cache Slough would increase during the time this mean flow of 600,000 second-feet continued from nothing to 250,000, giving, when this discharge had been reached, a flow past Rio Vista and through Georgiana Slough equal to the capacity of these channels, the basin capacity would be filled at the mean rate of 475,000 second-feet. At this rate it would take four and one-fourth days to fill the five basins mentioned.

With the river channel capacity increased to the extent contemplated by this project, and with the lands in the basins reclaimed, leaving only sufficient areas for by-passes, the storage capacity of these would be exhausted much sooner, while, as has been shown, a mean flow at the rate mentioned may be expected for a period of four days. Therefore, by-passes of capacity sufficient to carry continuously the volumes specified in Table 3 must be provided. The possible effect of storage in these by-passes will be shown later.

Below the mouth of Feather River there is no choice as to location, which will be down the trough of Yolo Basin to its outlet through Cache Slough.

For location of by-pass to carry the water from the upper weir, Colusa Basin offers the advantage that the water would not have to be taken across the river, but could be turned directly into Yolo Basin. This would reduce the required capacity of the Fremont Weir about one-half. The disadvantages, however, outweigh the advantage. With the most favorable high-water grade line for the Colusa Basin by-pass, a cut through the ridge south of Knights Landing 1½ miles long and 4,900 feet wide, with a maximum depth of 10 feet, would be required. This would involve the excavation of about 6,000,000 cubic yards of material, the cost of which would be almost twice as much as for that portion of the Fremont Weir required to pass an equivalent volume of water.

The area of land required for the Colusa by-pass would be nearly 4,000 acres in excess of that for the Sutter-Butte Basin by-pass. This excess acreage would be land lying on the Knights Landing Ridge, which is of much greater value per acre than that in the basin bottoms. In addition to this, the Colusa Basin by-pass would require the maintenance of about 18 miles more levee than the other and would require the raising of one railroad bridge and the construction of another, longer than that crossing the proposed Sutter Basin by-pass. It would also cross a greater number of highways. The advantages which the Sutter Basin by-pass has over one in Colusa Basin more than compensate for the increased cost of weir sill and superstructure.

The grade line of high-water surface in by-passes has, as far as practicable, been fixed so that the depths of water along the levees should not exceed 18 feet.

The width of channel between levees, as shown on the map, varies from 1,900 feet to 4,100 feet in Butte and Sutter Basin by-pass, increasing to 5,500 feet just above junction with Feather River, and from 7,500 feet to 12,000 feet in Yolo Basin.

Near the lower end of the Yolo Basin by-pass Cache Slough, through which the basin discharges its water into Sacramento River, increases in depth and cross section and becomes capable of carrying about 112,500 second-feet. It thus becomes possible to narrow the space between by-pass levees; but to carry the whole flow of 500,000 second-feet into the river, at the junction of Steamboat Slough and Old River, it would be necessary, as the levees approach each other, to increase the width of the deep channel (now averaging 45 feet deep below the adopted grade line) in the lower 3 miles of its course from its present width of about 500 feet to one of about 2,600 feet at its mouth. This would, however, involve more than 50,000,000 cubic yards of dredging. Some enlargement of Cache Slough at its lower end, as shown on map, even with by-pass outlet contracted only to the extent necessitated by the topography will be required.

The lines for the by-pass levees shown on map and the heights of water surface shown on profile are those required for the completed project. Construction to these lines need not necessarily be undertaken all at once, but may be made in connection with projects for reclaiming separate portions of the basins.

As planned and estimated for here, the levees would be constructed to a height of 6 feet in Yolo Basin and 5 feet in Sutter and Butte Basins above high-water mark, with 10 feet crest and side slopes of one vertical to three horizontal. This large section was assumed on account of the possible severe wave action and on account of the character of the material which in places will likely settle excessively.

It is planned to build the levees, as far as practicable, by dredging from a channel along the by-pass side of them, thus increasing the by-pass section and providing a good drainage canal for the lands within the by-pass. After the flood season has passed it should then be possible to use for agricultural purposes so much of the areas within the Yolo Basin by-pass as lie well above high-tide level, or, say, above elevation 10 feet; so much of Sutter Basin by-pass as lies above the water surface elevation of the Sacramento River at Fremont on, say, the 1st of June; and all of Butte Basin except Butte Slough and worthless land along the foot of Marysville Buttes. On the 1st of June, 1909, the water surface at Fremont was at elevation 26.8. In 1908 and 1910 it was much lower. This means that about 38,000 acres, or nearly 50 per cent of the total areas of the by-passes, would be available for agricultural use.

The area of land in each of the three basins that would be used for by-passes, including land occupied by levees, is approximately as follows:

	Acres.
Yolo Basin.....	56,545
Sutter Basin.....	13,970
Butte Basin.....	7,570
	78,085

And the capacities of these by-passes up to the allowed high-water mark would be for Yolo Basin, 765,000 acre-feet, and for Sutter and Butte Basins, 277,000 acre-feet.

With the river levees intact and the stop planks in place on overflow weirs a very moderate flood would fill the river channel to its capacity, and there would be a large flow into Sutter Basin by-pass at its lower end, filling it to the elevation of the crest of the Freemont Weir. This would greatly reduce the capacity of this by-pass for storage when an extreme flood occurs. Assuming, however, that the full by-pass storage capacity is available for receiving flood waters after the river channel has become filled and is carrying the estimated flow before a flood having a mean rate of 600,000 second-feet occurs, the following figures show the effect of the by-passes on the flow in the river below Cache Slough and the length of time which it will take the by-passes to fill.

First. With the river widened as planned but not deepened:

	Second-feet.
Capacity of river below Rio Vista	250,000
Of this, Steamboat Slough and Old River contribute	100,000
Leaving for overflow from Yolo Basin through Cache Slough	150,000

While this outflow of 150,000 second-feet is being attained the actual outflow will increase from 0 to 150,000 second-feet and the mean rate of outflow will be not far from 75,000 second-feet. The mean rate of flow into Yolo, Sutter, and Butte Basins will be (600,000—100,000) 500,000 second-feet. The rate at which by-pass storage will then be filled equals (500,000—75,000) 425,000 second-feet. At this rate the 1,042,000 acre-feet capacity will be filled in 1.2 days. When this point is reached the outflow from the basin would be at the rate of 150,000 second-feet and the rate of increase of storage would be (500,000—150,000) 350,000 second-feet.

The continuance of the flood at this rate for a longer time would, of course, raise the flood plane in Yolo Basin to a higher level than the assumed one, with consequent increase in capacity of about 1.8 hours flow per foot of height. Such an increase in height, resulting in increased slope on the lower river, would increase the discharge there, but at the expense of greater hazard to property on account of higher water and increased velocity.

Second. With the lower river increased in capacity to 600,000 second-feet it would carry off from Yolo Basin 500,000 second-feet. While this outflow is being attained the actual outflow will increase from 0 to 500,000 second-feet and the mean rate will be not far from 250,000 second-feet, and the rate at which by-pass storage will then be filled is (500,000—250,000) 250,000 second-feet. At this rate 1,042,000 acre-feet capacity will be filled in 2.1 days, after which the assumed rate of flow would cause no further increase in height.

(F) FEASIBILITY OF REDUCING FLOOD-CHANNEL DIMENSIONS BY STORAGE OF FLOOD WATER IN MOUNTAIN RESERVOIRS.

The United States Reclamation Service has made surveys of many reservoir sites in both the Sierras and the Coast Range. Advance sheets of the maps of several of these sites have been obtained by this office. The sites where the construction of reservoirs gave promise of some material relief to flood conditions in the valley were visited—those in the Coast Range by Capt. W. P. Stokey, Corps of Engineers, United States Army, and those in the Sierras by myself—to acquire information for use in making estimates of probable cost of such storage. In three instances surveys of dam sites were made, and in another the maps of surveys made for an electrical power development company were secured.

In the case of the Coast Range reservoirs, estimates of cost as favorable as possible to the project of utilizing them for flood control, compared with the saving which their use would make in reducing dimensions of by-passes, flood channels, and the several structures they will necessitate, show that it will not be economical to construct them for that purpose. Several of them will doubtless be used in the near future for storing water for irrigation and power development. A project is now on foot for utilizing Clear Lake for this purpose, and it calls for the use of so much water that the total flow into the lake will probably have to be stored to supply it. When carried out these works will have a slightly ameliorating effect on floods.

In the Sierras are three reservoir sites where either all or a very large part of the season's run-off from the tributary drainage areas may be stored at a cost per acre-foot less than at any of the Coast Range sites. None of these are in the region of greatest precipitation and most rapid run-off, but they are thought to be the most favorable for the purpose of any of the possible sites. Such large storage capacity as these reservoirs would afford would make it possible to store the water required for very extensive irrigation and power projects, and still leave room to hold all the run-off from the tributary area during a storm period such as that which caused the flood of 1907.

The following table gives data relative to the storage capacities of these reservoirs for two heights of dam in each case, also the effect which such storage would have in reducing the estimated necessary channel capacity:

TABLE 5.—*Reservoir data.*

	Reservoirs.					
	Big Valley, Pitt River.		Indian Valley, Indian Creek.		Big Meadows, North Fork, Feather River.	
Height of dam above low-water surface of river.feet	70	100	110	120	85	105
Area of reservoir.....acres	50,800	72,300	12,200	12,600	22,000	24,750
Storage capacity...acre-feet	1,200,000	3,100,000	450,000	600,000	450,000	866,000
Tributary drainage area, square miles	2,950		810		460	
Total run-off during February and March, 1907, acre-feet	659,000		304,000		[1] 172,500	
Total run-off during 4 days of greatest flow, March, 1907.....acre-feet	195,000		77,400		[1] 44,000	
Mean flow during same 4-day period, cubic feet per second	24,600		9,750		[1] 5,520	

[1] These figures were obtained by using the run-off per square mile at Crescent Mills on Indian Creek. There was no gauging station on North Fork Feather River.

Effect of storing this flood discharge in the reservoirs in diminishing the estimated required capacities of flood channels.

	Per cent.	*Per cent.*	*Per cent.*
Above Moulton Weir	9.8	.....	.....
Butte and Sutter Basin by-pass above Tisdale Weir	13.3	.....	.....
Sutter Basin by-pass below Tisdale Weir	11.2	.....	.....
Yolo Basin by-pass	5.1	2.0	1.1
Below Cache Slough	4.1	1.6	.9
Feather River:			
Above Marysville	.....	6.5	3.7
Below Marysville	.....	3.9	2.2

It will be noticed that in each case the storage capacity of reservoir, with the lower dam, will be greatly in excess of the total run-off for the months of February and March, 1907. This capacity will be ample to completely control the flood flow from the drainage area above. In this connection it may be noted that the storage of the total run-off of Pitt River above the canyon at outlet of Big Valley for the months of February and March, 1907, would have provided water enough to increase the low-water flow 3,000 cubic feet per second for 100 days.

In the estimates on the cost of these storage reservoirs the ones depending on the lower dam are taken in each case. In the preceding table the height of dam above the low-water surface of the river is given, for the reason that the total height above a suitable foundation is not known, as will appear in the statements which follow.

Big Valley: The elevation of this valley is about 4,200 feet above sea level. Within the area which would be overflowed is the town of Bieber. Lookout, a smaller town, is located on ground which would not be overflowed by a reservoir formed by a dam of the height now being considered. The land is of very varying character. Some portions near the river and tributary creek channels are rich agricultural lands. Other portions have an adobe soil, which in many places very thinly overlies the bedrock. From the number of vacant buildings and apparently abandoned ranches, these lands can not have been very productive. Railway lines projected through the valley, surveys for which are now being made, will increase the land values over those given in the following estimate.

The rock formation of the canyon where the several possible dam sites are located is of lava, varying in character from hard basalt or block lava, ranging in specific gravity from 2.65 to 2.80, to tufa, having a specific gravity of 2.1 or less and an absorption of 7½ per cent. Indications are favorable for a quarry producing rock suitable for concrete. The question of the suitability of the foundation for a dam 70 feet in height can be determined only after extensive test pits and core-drill holes have been sunk.

The estimated cost of dam is based on a gravity section having a maximum height of 90 feet. Rock capable of bearing the pressure may be found at a less depth than 20 feet, but the uncertainty as to the necessity of going to a great depth with a cut-off wall does not justify a decreased estimate of cost.

Estimate of cost, Big Valley Reservoir.

Land:		
10,000 acres, at $100	$1,000,000	
8,000 acres, at $50	400,000	
10,000 acres, at $20	200,000	
26,400 acres, at $5	132,000	
		$1,732,000
Ranch buildings		130,000
Town of Bieber, buildings and capitalization of income from destroyed businesses		400,000
Dam:		
26,000 cubic yards excavation, at $1	$26,000	
58,400 cubic yards concrete, at $12 (present freight rate on cement from San Francisco to Bieber is $24.75 per ton)	700,800	
		726,800
Total		2,988,800

This cost of the reservoir is believed to be under rather then over estimated. The lessening in cost of works for controlling floods, under the project here proposed, which this reservoir would effect is (referring to Table No. 5) approximately as follows:

Lands:		
13.3 per cent of 11,560 acres	1,540	
11.2 per cent of 9,190 acres	1,028	
5.1 per cent of 56,545 acres	2,882	
5.5 per cent (the flow intercepted by the reservoir is 4.1 per cent of maximum below Cache Slough, but it would effect a diminution of 5.5 per cent of the required increase in dimensions of channel) of 2,989 acres	164	
Total	5,614, at $25	$140,350
Excavation:		
5.5 per cent (the flow intercepted by the reservoir is 4.1 per cent of maximum below Cache Slough, but it would effect a diminution of 5.5 per cent of the required increase in dimensions of channel) of 144,452,000 cubic yards (7,950,000 cubic yards), at 5 cents		397,500
Structures:		
13.3 per cent of cost of Moulton Weir		37,800
5.1 per cent of cost of Fremont Weir		54,800
5 per cent (5 per cent is approximate means of reduction in cost of bridges over the by-pass channels) of cost of bridges over by-pass chanels		98,700
		729,150

This estimate of the amount that cost of flood-control works would be lessened by reason of the great storage capacity of Big Valley Reservoir is less than 25 per cent of the estimated cost of the reservoir.

Indian Valley: The elevation of this valley is about 3,500 feet above sea level. Within the area which would be overflowed are the small towns of Cresent Mills and Taylorsville. The reservoir would extend close to the limits of the considerably larger town of Greenville. The mine of the Crescent Mills Mining Co. has been closed down for several years awaiting cheaper power for pumping out its flooded workings. The filling of the reservoir would probably result in the impracticability of ever pumping out the mine. The valley is composed largely of good agricultural land now devoted quite extensively to dairying. The recent completion of the Western Pacific Railway has added to the value of the land.

The outcropping rock at the only feasible dam site on Indian Creek seems to be a hard, massive dioryte, but there is so great an accumulation of fragmentary rock, bowlder, and soil that the depth to a safe foundation is unknown. The estimated cost of dam is based on a gravity section having a maximum height of 130 feet, as the conformation of the sides of the canyon and the banks of the creek do not indicate bedrock within less than 20 feet of the low-water surface of the creek. Quite possibly it is much cheaper.

Estimate of cost, Indian Valley Reservoir.

Land: 12,600 acres, at $50		$630,000
Buildings in towns of Crescent Mills and Taylorsville and on ranches; and capitalization of incomes from destroyed businesses		630,000
Mining property		100,000
Dam:		
28,000 cubic yards excavation, at 75 cents	$21,000	
105,600 cubic yards concrete (freight rate on cement from San Francisco to Crescent Mills is $13 per ton), at $9.50	1,003,200	
		1,024,200
Total		2,384,200

As the flood discharge which this reservoir would intercept is only about 40 per cent of that which Big Valley would intercept, while the cost of this reservoir is 80 per cent of the other, it is evident without further consideration that no saving in the cost of the project would result from the construction of this reservoir.

Big Meadows: The elevation of Big Meadows is about 4,400 feet above sea level. A large portion of the reservoir site, including the dam site, is owned by the Great Western Power Co. The rock formation at the dam sites is practically the same as that at the Big Valley dam sites. Diamond drill holes show lava, varying in density and hardness from that of basalt to that of tufa for a depth of 100 feet or more. A dam here will evidently be very expensive. The power company is now making more thorough investigation as to the character of the foundation.

Considering the facts that the flood discharge from Big Meadows was only about one-fourth, while the acreage required for a reservoir is about one-half as much as that for Big Valley; and that the present owners of the controlling interest in the lands will evidently use the site for a reservoir in connection with its power-development plants; it would be neither economical nor practicable for either the Federal or State Governments to construct a reservoir here for flood-controlling purposes.

As the storage of water for power purposes would result in increased summer flow with consequent benefit to navigation at low-water season, and would also relieve the flood situation to the extent already pointed out, some arrangement might be possible by which the construction of the reservoir could be reimbursed for a part of the expense, provided the reservoir was so operated as to give a maximum benefit both to low water and to flood conditions.

A similar statement might be made concerning the use of Big Valley by either a private corporation or by the United States Reclamation Service.

(G) TRIBUTARIES.

Flood waters of all the tributary streams can be carried between levees raised to heights conforming with those adopted for the Sacramento with radical changes of alignment or location in a few places only. Each of the principal streams will be considered separately. With the levee system modified as here specified it will be a matter of equal importance that the space between them, or the specified portion of this space, be kept cleared of trees and brush which naturally grow in great luxuriance.

American River: Adopted high-water plane at mouth is at elevation 35. The assumed high-water slope is 1.7 feet per mile from the mouth for 8½ miles, or to elevation 49, then a slope of 2.64 feet per mile for 2.7 miles, or to elevation 55. At this point, 10.95 miles above the mouth, the high-water elevation is within the trough of the river's valley and marks the end of the south levee. The north levee strikes high ground 8½ miles above the mouth. The grades adopted by the city of Sacramento for top of levees at Twenty-third Street and at Elvas are 3 feet above the high-water plane here described. The grade of the Southern Pacific Railway track from Elvas nearly to Perkins is well above this plane. To pass the 120,000 second-feet assumed flood discharge requires that at and near the mouth the levees be not closer together than 2,000 feet and that this space be kept cleared. Approximately this same width should be kept clear for several miles up the river. A considerable portion of this area is now under cultivation. Waters recede from it rapidly after a flood. Reclamation projects now being carried on will doubtless necessitate very material changes in the lines for levees from those shown on accompanying maps.

Feather River: The tentatively adopted high-water planes for this river are as follows:

	High-water elevation (feet).	Distance (miles).	Mean slope per mile (adjustments necessary).
Mouth	40.0	25.0	1.06
Cross section No. 3, 1 mile below Eliza Bend	66.5	4.7	1.9
Yuba City Bridge	75.5	24.9	.....
1 mile below head of Butte County Canal	128.0	8.9	2.1

These high-water elevations and slopes require changes in the levee systems below the mouth of Bear River, substantially as shown on accompanying maps. It also involves a change in location of about 5 miles of the Knights Landing branch of the Southern Pacific Railway, which would then occupy the crest of the levee for most of that distance.

There is an extensive area east of the Feather River between the Bear and Yuba Rivers, in which are large lakes and swamp lands and of which we have not sufficient data to determine even approximately the proper locations of levees. This will not affect flood conditions on the Sacramento materially, and with provision made for carrying the Feather, Bear, and Yuba River waters to an outlet, there will be no serious problems involved in the reclamation of this area.

The assumed high-water elevation for the junction of the Yuba and Feather Rivers is but one-half foot higher than that of the actual high water of January, 1909.

Above Marysville it is proposed to raise and strengthen the levees on the east side of the Feather to the mouth of Honcut Creek; thence up the south side of that creek to high ground. The west side levee will need be extended to and across Hamilton Slough, through which flood waters now escape from Feather River to Butte Basin. It is understood that arrangements have been made by a gold-dredging company to construct that part of this levee crossing the head of Hamilton Slough.

Bear River: At mouth of Bear River the assumed high-water plane is at elevation 53 and rises on a slope of 1.06 feet per mile for 7 miles, at which distance the top of levees, 3 feet above this water plane, will strike surface of ground.

Yuba River: The high-water plane at D Street Bridge, Marysville, has been assumed at elevation 75.5 (height of 25 feet on gauge at that point), rising on a mean slope of 5 feet per mile for 10 miles. Levees along existing lines, strengthened and raised in some places on south side to make them safe for this height of water, will confine the floods between them, with provision made for keeping a width of 2,000 feet clear of obstructions.

The training walls now being constructed under direction of the California Débris Commission downstream from Daguerre Point Cut will confine the river to a width of 2,000 feet, but it is impracticable to extend them, at this distance apart, to Marysville, as the only available material for building the levees will not stand the action of the current which such confinement of flood on this steep slope would produce. The flood waters should, however, be confined as far as possible to a single channel by clearing a strip of river bottom. This would induce scour, with resulting increase of channel capacity.

Chico Creek and Stony Creek: These creeks enter the Sacramento at the upper limit of necessary regulating works. Levees along the south bank of each are proposed for a distance of about 2½ miles. High-water plane at mouth of Chico Creek is at elevation 142, and at mouth of Stony Creek it is at elevation 134.

Of the streams which do not enter the Sacramento directly, but flow into the flood basin, those entering the American Basin, it is assumed, will be taken care of by land reclamation companies now organized, by diverting them into American or Bear Rivers, or both. Those of considerable size entering Butte and Yolo Basins will need be leveed on each side, connecting with the by-pass levees. Smaller streams entering these basins and all those entering Colusa Basin will be considered under the head of intercepting canals and basin drainage.

(H) DRAINAGE OF BASINS AND INTERCEPTING CANALS.

Besides the streams already described, which at normal stages discharge their waters into the Sacramento River and which upon the execution of a flood-control project will do so at all stages, there are several smaller streams that empty into the flood basins. The principal ones of these, viz, Dry Creek and Butte Creek, discharging into Butte Basin; and Cache, Putah, and Willow Creeks, discharging into Yolo Basin, will be carried directly into the by-passes; and levees connecting with those of the by-passes will be built along their banks to points where the adjoining land is above the flood plane.

There will still remain considerable areas the run-off from which will accumulate in the lower parts of the basins and in the pockets formed by the junction of main by-pass and branch creek levees. These areas are:

496 square miles tributary to Butte Basin.
382 square miles tributary to Sutter Basin.
612 square miles tributary to Yolo Basin.
1,700 square miles tributary to Colusa Basin.

In the case of Butte, Sutter, and Yolo Basins gates will be provided by means of which, after the passage of the floods, the accumulated water may be drained into the by-passes, leaving the more complete reclamation of the land, necessitating the installation of pumping plants, to the proper owners. The run-off from about 250 square miles of the area tributary to Yolo Basin may be carried in an intercepting canal to a gravity outlet either in the Sacramento River above Rio Vista or through the Denverton Saddle to Denverton Slough and Suisun Bay.

The drainage of Colusa Basin presents greater difficulties. Using the recorded run-off from the adjacent and near-by drainage areas of Stony and Putah Creeks as a guide (the flow of Cache Creek is regulated to a large extent by the reservoir action of Clear Lake), the run-off into Colusa Basin during the flood of March, 1907, must have been approximately as follows:

Maximum daily run-off, 40 second-feet per square mile; greatest 4-day mean run-off, 22 second-feet per square mile; mean run-off for February and March, 5 second-feet per square mile.

With these rates of flow, the greatest 4-day mean daily run-off from the 1,700 square miles area would alone amount to 299,000 acre-feet, or the capacity of the basin up to about the 33-foot contour; but the mean run-off for the 45 days of February and March preceding the 4-day period of greatest flow would amount to about 575,000 acre-feet. Therefore, at the end of the 4-day period the run-off into the basin would have amounted to 874,000 acre-feet, or the capacity of the basin up to the 40-foot contour. The proposed high-water plane of the river at Knights Landing, where Sycamore Slough, the natural outlet of Colusa Basin, enters the river is at elevation 44.5 feet. During the summer of 1909 the river at this point did not drop to an elevation of 30 feet until the 12th of June. The drainage of the basin into the river would therefore be impracticable until late in the season. The only solution of the difficulty is a canal through the Knights Landing Ridge.

It is proposed to cut off Sycamore Slough from the river and to excavate a drainage canal following Cache Creek Slough from its junction with Sycamore Slough to the south about one-half mile, thence cutting directly across the ridge and following the lowest ground to the Yolo Basin by-pass. Such a canal would have a free outlet in the Yolo Basin by-pass, except when there is a considerable flow over the Fremont Weir. The flood plane of this by-pass at the point where the drainage canal would reach it is at elevation 34.5. It would, however, be at this elevation for a few days only. The canal would be about 7 miles long.

With the water in Colusa Basin up to the 30-foot contour and that in the Yolo by-pass at elevation 25, the hydraulic grade line of the canal would have a slope of 0.67 foot per mile. Excavated to a depth of 15 feet below this grade line, with a bottom width of 300 feet and side slopes of 1 to 1, it would have a capacity of 16,300 second-feet.

To keep the water surface in the trough of the basin at as low an elevation as a canal of these dimensions would make possible, Sycamore Slough would probably need be enlarged for about 2½ miles above the head of the canal. The canal would then take care of a uniformly distributed run-off of 5 second-feet per square mile of the drainage area without permitting the rise of water in the basin above the 28-foot contour so long as there was a free outlet into Yolo Basin by-pass.

But with the basin filled to the 28-foot contour, the occurrence of a discharge into it of 22 second-feet per square mile of drainage area for four days, at a time when the Yolo by-pass would be running

full, or to such height as to shut off outflow from the basin, would cause a further rise of water surface of about 6 feet, and the total volume of water impounded would be about 375,000 acre-feet. The drainage canal of dimensions given would, after the subsidence of the water in by-pass, lower the water to the 28-foot contour in about nine days and draw it practically all off in about nine days more.

In the more complete reclamation of Colusa Basin by property owners the inclosing of a considerable part of the lowest land by levees, say that within the 28-foot contour, would result in much less accumulation of water and much more rapid drainage of the other portions.

To construct the canal will require the excavation of about 6,700,000 cubic yards of material. The maximum depth of cut will be 25 feet, with 1 mile averaging 20 feet in depth and 6 miles averaging 15 feet in depth.

It would be possible to construct an intercepting canal carrying the discharge from 1,400 of the 1,700 square miles tributary to the basin and discharging into the Yolo Basin by-pass at flood stage through a cut across the Knights Landing Ridge, with a maximum depth of 8 feet. The total length of the canal would be 63 miles. To carry the peak discharge in a section largely above the natural surface of the ground would involve the temporary flooding of a very large area of land well above the flood plane of the basin and to construct a canal of such capacity with only 20 per cent of its section in excavation would involve the excavation of 30,000,000 cubic yards. Any materially less capacity (such as that of the mean flow for two months) would require the spilling of such a quantity of water into the trough of the basin that the flood height reached there would not be reduced below that which we have seen might exist with a drainage canal as described. During normal winters such an intercepting canal would prevent any of the run-off from 1,400 square miles from reaching the trough of the basin, but the expense makes it impracticable.

(I) BRIDGES.

The execution of a flood-control project along the lines outlined above will necessitate the construction of a few bridges and the reconstruction of several others. These are as follows:

First. Southern Pacific Railway bridge across Yolo Basin, between Sacramento and Davis. The aggregate length of existing trestles in the Yolo Basin crossing is 7,550 feet. The double-tracking of the road is now in progress. The estimate of cost of a bridge across the by-pass is for a double-track structure 9,500 feet long, with an 80-foot clear opening draw span at either end. Bottom chords of spans are to clear the assumed high-water elevation by 3 feet, which will involve raising tracks 12 feet above their present elevation and providing 3,000 feet of run-off at each end.

Second. Southern Pacific Railway bridge across Sutter Basin. Existing trestle is 11,153 feet long. The estimated cost of reconstructing this bridge is for a single-track structure 3,400 feet long, with an 80-foot clear opening draw span at either end. Bottom chords of spans are to clear high-water plane by 3 feet, which will involve raising track 9 feet above its present elevation and raising the trestle approaches at either end to provide the necessary run-off.

Third. Southern Pacific Railway and highway bridge across Sacramento River at Knights Landing. This will have to be raised 7 feet, involving the raising of embankment approaches and incidentally raising sidings and buildings.

Fourth. Southern Pacific Railway bridge across Feather River between Marysville and Yuba City. This will have to be raised 6 feet and run-offs back of levees constructed at either end.

Fifth. Southern Pacific Railway bridge across Feather River, 1½ miles above preceding bridge. Measured along the railway track the distance between levees is here 11,000 feet. Besides the bridge across the river proper there is a long trestle approach and a second trestle across Simmerly Slough. On this main line the maximum grades are lighter than on the Knights Landing branch, on which are the three preceding bridges. Consequently the necessary length of run-off resulting from raising the track 6 feet between levees is greater than in those cases and involves several street changes in Marysville. This change of grade through Marysville has, however, already been practically effected by raising of tracks necessitated by increased height of the Marysville levee system. It is quite possible that one new bridge could be constructed to take the place of this and the preceding one at a decreased total expense, but this would involve so many features of uncertain cost that it has not been thought best to consider such a change in the estimates.

Sixth. Southern Pacific Railway bridge on Knights Landing branch, across the Colusa Basin drainage canal. This bridge will need be 375 feet long. The grade of the railway will need be raised 4 feet.

Seventh. Highway bridge near upper end of Grand Island. This will need be raised 3 feet.

Eighth. Highway bridge at Colusa. The bottom chord of this bridge is now 2 feet above the adopted high-water plane.

Ninth. Highway bridge at Butte City. This bridge will need be raised 7 feet.

Tenth and eleventh. Highway bridges across Sutter-Butte Basin by-pass. There are at present two timber trestles crossing Butte Slough (with truss spans over the channels), which will be made a part of the by-pass. These are on parallel roads about 3 miles apart. These will have to be reconstructed to an elevation about 6 feet higher than at present.

Twelfth. New highway bridge across Colusa Basin drainage canal, 375 feet long and 20 feet high.

In addition to the roads on which bridges have beeen enumerated above, there are roads crossing Sutter Basin which are used only during the late summer season after the flood water has drained off. No provision is made here for permanent structures crossing the by-passes at these places.

ESTIMATES.

Estimates of quantities and of cost of the several features of this project are taken up in the same order as were those features in the preceding description.

(A) ENLARGEMENT OF RIVER CHANNEL BELOW MOUTH OF CACHE SLOUGH.

Land:	Acres.	
For increased channel section	2,989	
For new levees and enlargement of existing ones	200	
Total	3,189, at $100	$318,900.00
Earthwork:		
Enlargement of existing and construction of new levees, 4,083,000 cubic yards, at 10 cents		$408,300.00
Channel excavation in excess of material required for levees, 144,452,000 cubic yards, at 6 cents		8,667,120.00
		9,394,320.00

(B) CONSTRUCTION OF WEIRS.

Weirs:			
Moulton Weir, 2,840 linear feet, at $100			$284,000.00
Tisdale Weir (reconstruction), 1,140 linear feet, at $80			91,200.00
Fremont Weir, 8,000 linear feet, at $125		$1,000,000	
Fremont Weir excavation—			
Removal of levee, 139,000 cubic yards, at 20 cents		27,800	
Material above sill of weir, 231,000 cubic yards, at 20 cents		46,200	
			1,074,000.00
Sacramento Weir, 1,667 linear feet, at $100		166,700	
Sacramento Weir excavation: Removal of levee, 8,300 cubic yards, at 20 cents		1,660	
			168,360.00
			1,617,560.00

(C) RECTIFICATION AND ENLARGEMENT OF RIVER CHANNELS.

Lands:	Acres.	
Steamboat Slough, for channel enlargement	198	
Between head of Steamboat Slough and mouth of Feather River	30	
Cut-off channel, cutting out Grays and Woods Bends	46	
3 cut-offs between Knights Landing and Cranmore	78	
Total	352, at $200	$70,400.00
Earthwork:		
Excavation of cut-off (Grays and Woods Bends), 586,000 cubic yards, at 12½ cents		73,250.00
Excavation of 3 cut-offs between Knights Landing and Cranmore, 945,000 cubic yards, at 12½ cents		118,125.00
Clearing land for flood channel, 2,300 acres, at $25		57,500.00
		319,275.00

(b) THE SACRAMENTO RIVER LEVEES.

Land:	Acres.	
Steamboat Slough, for levee enlargement	9	
Old River	13	
Between head of Steamboat Slough and mouth of Feather River, for enlargement of old and construction of new levees	338	
Between mouths of Feather River and Chico Creek, including borrow ditches	2,950	
Total	3,310, at $100	$331,000.00
Earthwork:	Cubic yards.	
Steamboat Slough, enlargement existing and construction of new levees	1,061,000	
Old River, enlargement of existing levees	288,000	
Between head of Steamboat Slough and mouth of Feather River, enlargement of existing and construction of new levees	5,738,000	
Total	7,087,000, at 10 cents	708,700.00
Between mouths of Feather River and Stony Creek, enlargement of existing and construction of new leveees, 22,756,000 cubic yards, at 15 cents		3,413,400.00
		4,453,100.00

(e) BY-PASSES.

Land:	Acres.	
Yolo Basin	56,545	
Sutter Basin	13,970	
Butte Basin	7,570	
Sacramento Weir by-pass	340	
Tisdale Weir by-pass	230	
Total	78,655, at $25	$1,966,375.00
Clearing land along Butte Slough, between Butte and Sutter Basins, 2,900 acres, at $25		72,500.00
Earthwork:	Cubic yards.	
Yolo Basin levees	21,147,000	
Sutter Basin levees	22,606,000	
Butte Basin levees	5,760,000	
Sacramento Weir by-pass levees	523,000	
Tisdale Weir by-pass levees	1,122,000	
Total levees	51,158,000, at 6 cents	3,069,480.00
		5,108,355.00

(f) RESERVOIRS.

Not made a part of project.

(g) TRIBUTARIES.

Land:	Acres.		
For flood channel on lower Feather River	1,721		
For levees and borrow pits on—			
American River	328		
Feather River and Honcut Creek	1,463		
Bear River	222		
Yuba River	84		
Chico Creek	27		
Stony Creek	26		
Dry and Butte Creeks	597		
Area within levees (Cache Creek, Willow Slough, Putah Creek)	752		
Total	5,220,	at $50	$261,000.00
Clearing lands in river bottoms, 12,000 acres, at $25			300,000.00
Earthwork:			
Levees on—	Cubic yards.		
American River	1,693,500		
Feather River and Honcut Creek	13,065,000		
Bear River, including connection with Feather River to northwest	1,751,000		
Yuba River	526,000		
Chico Creek	216,000		
Stony Creek	59,000		
Dry and Butte Creeks	2,724,000		
Cache Creek	539,000		
Willow Slough	1,352,000		
Putah Creek	647,000		
Total	22,572,500,	at 15 cents	$3,385,875.00
			3,946,875.00

(H) COLUSA BASIN DRAINAGE CANAL.

Land, 630 acres, at $150	$94,500.00
Earthwork, 6,700,000 cubic yards excavation, at 12½ cents	837,500.00
	932,000.00

(I) BRIDGE.

Double-track railway bridge across Yolo Basin by-pass		$1,588,775.00
Single-track railway bridge across Sutter Basin by-pass		368,321.00
Raising railway bridge across Sacramento River at Knights Landing		120,653.00
Raising railway bridge across Feather River between Marysville and Yuba City		69,692.00
Raising railway bridge across Feather River 1½ miles above preceding		140,000.00
Single-track railway bridge across Colusa Basin drainage canal near Knights Landing		53,000.00
Raising highway bridges at upper end of Grand Island, Colusa, and Butte City		30,000.00
Raising two highway bridges across Butte Slough		15,000.00
Highway bridge across Colusa Basin drainage canal		7,500.00
		2,392,941.00
Less portions of cost of bridges over by-passes properly chargeable to railway companies, viz:		
65 per cent of cost of Yolo by-pass bridge	$1,032,703.75	
50 per cent of cost of Sutter by-pass bridge	184,160.50	
		1,216,864.25
		1,176,076.75

SUMMARY.

(a) Enlargement of river channel below Cache Slough	$9,394,320.00
(b) Construction of weir	1,617,560.00
(c) Rectification and enlargement of river channels	319,275.00
(d) Sacramento River levees	4,453,100.00
(e) By-passes	5,108,355.00
(g) Tributaries	3,946,875.00
(h) Colusa Basin drainage canal	932,000.00
(i) Bridges	1,176,076.75
	26,947,561.75
Add 15 per cent for contingencies and administration	4,042,134.26
Total	30,989,696.01
Less appropriations made by United States and State of California, the project for the expenditure of which may be made a part of this larger project	800,000.00
	30,189,696.01

Respectfully submitted,

H. H. WADSWORTH,
Assistant Engineer.

Capt. THOS. H. JACKSON,
Corps of Engineers, United States Army,
Secretary California Débris Commission.

EXHIBIT E.

REPORT CALIFORNIA DÉBRIS COMMISSION, 1913 (MODIFICATION OF MAJOR PROJECT).

[House Committee on Rivers and Harbors Document No. 5, Sixty-third Congress, first session.]

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, July 17, 1913.

SIR: 1. Referring to your letter dated December 6, 1912, inclosing a resolution of the Committee on Rivers and Harbors of the House of Representatives of December 2, 1912, requesting the Board of Engineers for Rivers and Harbors to examine and review its report of December 27, 1910, upon the navigation and flood control of the Sacramento and San Joaquin River systems, California, printed in House Document No. 81, Sixty-second Congress, first session, and to report its subsequent information and conclusions thereon, I have to inclose herewith a copy of the report of the board, dated June 17, 1913, in response thereto, accompanied by a copy of a report by the California Débris Commission, dated February 8, 1913, submitted at the request of the board.

2. The commission adheres in general to its original project, but submits a modified plan for the work to be done jointly by the United States and the State of California, at a total estimated cost of $12,517,008, of which it considers $800,000 has already been appropriated by the United States and the State of California, leaving $11,717,008 required for completion of the project. Under the plan of cooperation proposed, one-half of this sum, or $5,858,504, would still remain to be furnished by the General Government. The board reports that if Congress desires to participate in this work the plan of cooperation now proposed is equitable and advantageous to the United States, and recommends its adoption, at an estimated cost of $5,860,000, on condition that the State of California contribute a like sum. I concur with the views of the board.

Very respectfully,

W. H. BIXBY,
Chief of Engineers, United States Army.

Hon. S. M. SPARKMAN,
Chairman Committee on Rivers and Harbors,
United States House of Representatives.

—

WAR DEPARTMENT,
BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., June 17, 1913.

From: The senior member Board of Engineers for Rivers and Harbors.
To: The Chief of Engineers, United States Army, Washington, D. C.
Subject: Sacramento River, Cal.

1. This report is submitted in compliance with the following resolution:

"*Resolved by the Committee on Rivers and Harbors of the House of Representatives, United States,* That the Board of Engineers for Rivers and Harbors created under section 3 of the river and harbor act approved June 13, 1902, be, and it is hereby, requested to examine and review its report of December 27, 1910, upon the navigation and flood control of the Sacramento and San Joaquin River systems, California, printed in House Document No. 81, Sixty-second Congress, first session, and to report its subsequent information and conclusions thereon."

2. In its former report on this matter, printed in House Document No. 81, to which attention is invited, the board called attention to the law under which the California Débris Commission submitted its report and reviewed briefly the project prepared by the commission for the control of floods, and expressed the opinion that the plan proposed was well adapted to accomplish the object intended, but that other projects had been reported upon purely for the improvement of navigation which were more economical, and that the larger plan was not, therefore, necessary in the interests of navigation.

3. The resolution was referred to the California Débris Commission, and the commission has made a supplemental report, which is transmitted herewith. While considerable changes have taken place in the Sacramento Valley since the commission's former report, these have not been of such a nature as to require any material change in the technical features of the plan of flood control proposed by the commission in its original report. Minor changes of detail in the execution of the work will adapt the plan to the present conditions. By act of the legislature approved December 24, 1911, the State of California has adopted the commission's plan for control of floods in the Sacramento River and its tributaries, and it has organized a State reclamation board with ample power to require conformity to this plan in future reclamation work.

4. There has been extensive development along the valley, as evidenced by the building of railway lines and the formation of reclamation districts. Much work that was included in the original plan for flood control has already been done by local interests. In view of the present situation, the commission is of the opinion that the following conclusions may be properly drawn:

"(1) That the land should and will stand a larger share in the total cost of the project than was originally proposed.

"(2) That private capital may be depended upon to carry out certain elements of the project under a general supervision only as to the location and capacity of the river and overflow channels to be provided.

"(3) That the rate at which reclamation has proceeded in the last three years and the fact that such reclamation work is being designed and laid out to conform to the flood heights and general lines of the plan proposed by the commission, renders extremely urgent the work of increasing the channel capacity of the Sacramento River below the mouth of Cache Slough."

5. The commission's original recommendations were as follows:

"First. That the United States begin at once the work for the control of the floods of the Sacramento River in accordance with the above project and provide for its early completion.

"Second. That the United States contribute one-third of the cost of the work and the State of California contribute the remaining two-thirds.

"Third. That upon its completion the United States turn over to the State of California for maintenance all flood-control works."

6. The commission now recommends:

"First. That the United States begin at once the work for the control of floods, removal of débris, and improvement of navigation in the Sacramento River in accordance with the commission's report submitted August 10, 1910, and printed in House Document No. 81, Sixty-second Congress, first session, in so far as the same provides for the rectifica-

tion and enlargement of river channels and the construction of weirs, and provide for the early completion of these features of the plan.

"Second. That the United States contribute one-half of the cost of the work indicated in the first recommendation and the State of California contribute a like amount.

"Third. That all land required for the work indicated be turned over free of cost to the United States.

"Fourth. That upon its completion the United States turn over to the State of California for maintenance all flood-control works."

7. The estimate for the work in which the commission recommends that the United States should participate on a 50 per cent basis is as follows.

(a) Enlargement of river channel below mouth of Cache Slough	$9,075,420
(b) Weirs	1,617,560
(c) Rectification and enlargement of river channels	191,375
	10,884,355
Add 15 per cent for contingencies and administration	1,632,653
	12,517,008
Less amount appropriated by the United States and the State of California under existing project	800,000
	11,717,008
Share each of United States and State of California	5,858,504

8. As the commission originally recommended an expenditure by the United States of $11,000,000, it will be noted that the division of cost now proposed reduces the amount to be appropriated by the United States by about $5,000,000. No estimate for maintenance is given, as all of the works covered by the estimate are flood-control works, and as such are to be maintained by the State of California after their completion.

9. The board has again very carefully considered this entire subject, and on May 26, 1913, held a hearing at which were present Hon. Julius Kahn, Hon. T. F. Curry, Hon. William Kent, Hon. J. E. Raker, and Hon. E. A. Hayes, Members of Congress, Mr. A. L. Shinn, and Mr. F. Freeman, who argued in favor of the improvement, laying stress, among other things, on the obligation of the Government to remedy conditions which it was claimed had largely resulted from the failure on the part of the United States to prevent hydraulic mining operations in the early days.

10. The subject matter covered by this report seems to be a special one pertaining wholly to the duties of the California Débris Commission as expressed in the organic act creating it, the commission stating that flood control was a distinct subject committed to its care, and that Congress has recognized the necessity for flood control in the Sacramento River work by an appropriation of $400,000 in the act of June 25, 1910. In this connection it seems proper to call attention to the growing demands on the part of the public for participation by the United States in works of flood control where these can be properly coordinated with the improvement necessary for commerce and navigation. In the case under consideration the execution of the plan proposed would greatly increase the productiveness and prosperity of the adjacent country and lead to a large increase of commerce on the Sacramento River and its tributaries. The board therefore reports that, if Congress desires to participate in this work, the plan of cooperation now proposed is equitable and advantageous to the United States, and recommends its adoption at an estimated cost of $5,860,000, on condition that the State of California contribute a like sum.

11. In compliance with law, the board reports that except as contemplated by the above recommendations there are no questions of terminal facilities, water power, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

W. M. BLACK,
Colonel, Corps of Engineers, Senior Member of the Board.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
San Francisco, Cal., February 8, 1913.

From: California Débris Commission.
To: The Chief of Engineers, United States Army, Washington, D. C.
Subject: Subsequent information bearing upon report of Board of Engineers of December 27, 1910, upon the navigation and flood control of the Sacramento River and San Joaquin River systems.

1. In compliance with the third indorsement, office of the Chief of Engineers, dated December 28, 1912, Engineer Department file No. 16121/462, the California Débris Commission submits the following report upon the present conditions in the Sacramento and adjacent San Joaquin Valleys and their relation to the plan of the commission, printed in House Document No. 81, Sixty-second Congress, first session, and the report of the Board of Engineers for Rivers and Harbors thereon.

2. Upon receipt of the instructions above referred to, notice was sent to all parties known to be interested in the matter and published in the local papers, requesting all such parties to submit to the commission their views in the matter. The commission also immediately undertook a general study of the conditions in the valley affecting the flood-control plan.

3. The responses received to the above-mentioned notice may be divided into two classes: (1) Those suggesting modification in the engineering features of the plan, affecting the location and capacity of the channels to be provided; and (2) those suggesting modification in the method of carrying out the work, affecting the nature and degree of participation of the Federal Government in the plan, and the estimated cost of the same.

4. As to the first class the commission has carefully considered the modifications suggested and is of the opinion that such of them as are practicable and advisable under present conditions can be effected under the terms of the original report, and that therefore no modifications in the engineering features of the original plan are at this time necessary. In this connection the commission has considered the suggestion contained in the original report of the Board of Engineers on the plan, "that further study should be given to the question whether it might not be preferable, even at increased cost, to keep the auxiliary channel wholly on the west side of the river, and thus lessen the risk of injury to the navigable channel where the two cross in the proposed plan." On this point, although it might be practicable, at a considerably increased cost, due to the reclaimed condition of Colusa Basin and the existence of a natural ridge between Colusa and Yolo Basins in the vicinity of Knights Landing, to carry the excess waters of the upper Sacramento River in a by-pass located entirely on the west side of the river, the commission finds that, with a capacity in the Sacramento River below the mouth of the Feather at limiting flood stages of less than 100,000 second-feet and an estimated flood discharge from the Feather River of 250,000 second-feet, it would still be necessary to spill the excess Feather water into Yolo Basin, which can best be done at the place indicated in the original plan. This is in fact nothing more nor less than now occurs, except that the excess waters will flow over an established weir instead of through scattered breaks in the banks and levees from Grays Bend to the Elkhorn district.

5. It seems proper here to remark that the plan of the commission for the control of floods in this valley has received the general approval of those familiar with conditions in these streams and a greater degree of consideration and support than any of the previous plans for the control of floods in this valley. The very existence of the plan has contributed in no small degree to the great development that has taken place in the valley in the last two years.

By an act of the Legislature of the State of California, approved December 24, 1911, copy herewith, the plan of the commission has been adopted as the approved plan for control of floods in the Sacramento River and its tributaries. The board created by section 2 of the act above mentioned was appointed by the governor in April, 1912, and since that time has exercised its functions.

There are no engineers on the board, but it has referred all questions that have come up affecting the engineering features of the plan to both the State engineer and the commission and has acted in accordance with the recommendations received from these sources.

Through the powers exercised by the State reclamation board since its organization, it has been possible to so control reclamation work as to preserve the general lines of the plan. Certain reclamation districts, however, organized prior to the creation of the State board have encroached upon the by-pass areas, particularly in Yolo Basin, necessitating certain changes in the lines as originally laid down. Such necessary changes can be made under the terms of the original plan and the approval of the chief of engineers thereon.

6. As to second class of modifications suggested, those affecting the nature and degree of the participation of the Federal Government in the plan, and the estimated cost of the same, the commission finds such considerable changes in the conditions on which the original recommendations were based as to indicate the desirability of certain modifications in such features of the original report of the commission.

7. Since the commission's plans were prepared there has been a period of tremendous development in the Sacramento Valley and a general recovery from the disastrous effect of the floods of 1907 and 1909. As evidence of this development, the following features may be mentioned:

Railways: The Sacramento Southern Railway has been built from Sacramento to Walnut Grove along the east bank of the Sacramento River.

The Oakland, Antioch & Eastern Railway (electric) is building from Oakland to Sacramento, crossing Yolo Basin in the vicinity of the Glide district, and expects to have trains running to Sacramento inside of six months.

The Vallejo Northern Railway (electric) is building from Vallejo to Sacramento, and expects to have trains running within a year.

The Sacramento & Woodland Railway (electric) has been built and is in operation between those places.

The Northern Electric Railway, which began operation in 1906, from Chico to Oroville, and came into Sacramento via Marysville the following year, has during the last year built a branch from Marysville to Meridan, on the Sacramento River, and will immediately extend this line to Colusa.

The Southern Pacific is building a branch from Harrington, on its line on the west side of the Sacramento River, across Colusa Basin to Grimes, Colusa, and Hamilton, all on the Sacramento River.

The Central California Traction Co. (electric) began operating between Sacramento and Stockton in the spring of 1911.

Reclamations: The following new reclamations have been completed or are under construction:

	Acres.
Egbert tract (tide levee only)	7,000
Hastings tract (tide levee only)	7,388
Netherland Farms Co	26,000
West Sacramento district No. 900	10,236
Driver district	3,136
Elkhorn district	1,280
Natomas district 1000 and 1001	90,000
Addition to district 108	23,100
District 1002	7,200
Total	175,340

Plans are being prepared for the reclamation of some 50,000 acres in lower Sutter Basin and the remaining portion of Yolo Basin east of the by-pass. As a result of the completion of the several districts above noted, the by-pass levees in lower Sutter Basin and the east by-pass levee through Yolo Basin will be established.

In addition to the above, practically all of the old districts have raised and strengthened their levees, and in all work of this nature the levees and railroad grades are being carried to or above the grade proposed in the commission's plans.

Other features: The city of Sacramento has voted bonds in the amount of $887,000 for the raising of its levee system and the construction of the weir near Brytes Bend contemplated in the commission's plans, about $500,000 to be devoted to the latter work. Options on the land required have been taken and plans for the work are being prepared.

District No. 108, which is extending its area so as to include practically all of the bottom of Colusa Basin, has sought to secure a right of way for a drainage canal through Knights Landing Ridge on the line indicated in the commission's plan, and has submitted plans for such a canal to the State reclamation board which have been approved.

The above-noted new construction of railroads and reclamations is shown on the accompanying map.

Levee work: The estimates of the commission for the levee work along the Sacramento and Feather Rivers contemplated in the flood-control plan were based on surveys made in 1907, 1908, and 1909. Since these surveys were made so much work has been done on the river levees that the commission has, during the last summer, caused the levee rights to be checked, with the results given in the following table:

Statement showing length of levees required, constructed to grade, and partially constructed, Sacramento River flood-control project.
[Distances given, miles.]

	Levees in project.	Prior to 1910.		1912			
		Existing.	Built to grade.	Existing.	Built to grade.	New levee required.	Levee to be raised.
Sacramento River:							
Chico Landing to mouth of Feather	196.0	165.0	5.0	168.0	34.0	28.0	134.0
Mouth of Feather to Sacramento	40.0	28.0	.....	40.0	26.0	.....	14.0
Sacramento to Collinsville	105.0	97.0	50.0	97.0	81.0	8.0	16.0
Steamboat Slough	22.7	17.1	14.0	17.1	17.1	5.6	.....
Feather River:							
Oroville to Marysville	45.0	35.8	(1)	35.8	(1)	9.2	(1)
Marysville to Sacramento River	52.0	35.5	3.0	38.5	34.0	13.5	4.5
Bear River	10.4	6.5	.....	7.5	7.5	2.9	.....
Yuba River	4.8	4.8	(1)	4.8	(1)	.....	(1)
American River	18.0	2.0	2.0	18.0	18.0	.....	.....
	493.9	391.7	74.0	426.7	217.6	67.2	168.5

[1] Elevation of flood plane has not been determined on Feather River and Yuba River above Marysville.

From this table it appears that on the total length of 494 miles of levees contemplated in the flood-control plan there existed at the time the surveys on which the plan was based were made 391 miles of levee of some description, of which 74 miles were up to the grade contemplated in the plan. Since that time the total mileage of levees has become 427, an increase of 36 miles of new levee, and the mileage of levee completed to grade has become 218, an increase of 144 miles of completed levee, leaving to complete the project, so far as river levees are concerned, 67 miles of new levee to be constructed and 169 miles of old levee to be raised, the greater part of this work being on the upper Sacramento.

For reasons that will appear below it is not considered necessary in the present report to compute the effect of the above-noted levee work on the original estimates of the commission.

8. In view of the foregoing statement of the condition of development in the Sacramento Valley and the work already undertaken in furtherance of the plan, and in view of the present tendency of capital to undertake large units of the work which by natural conditions are properly separable from the rest and to carry them out in accordance with lines laid down in the plan, such as the Natomas project between the Bear and American Rivers, and the district 108 project, which will take care of Colusa Basin and the cut through Knights Landing Ridge, the commission is of the opinion that the following conclusions may be properly drawn:

1. That the land should and will stand a larger share in the total cost of the project that was originally proposed.

2. That private capital may be depended upon to carry out certain elements of the project under a general supervision only as to the location and capacity of the river and overflow channels to be provided.

3. That the rate at which reclamation has proceeded in the last three years and the fact that such reclamation work is being designed and laid out to conform to the flood heights and general lines of the plan proposed by the commission, renders extremely urgent the work of increasing the channel capacity of the Sacramento River below the mouth of Cache Slough.

As explained in the original report, the various elements of the project should be brought to completion progressively upstream from the mouth of the river. To date a great amount of work has been done in Yolo, Colusa, Sutter, and American Basins, while no work has been done below the mouth of Cache Slough.

9. The final recommendations of the commission's original report were as follows:

"116. It is therefore recommended—

"First. That the United States begin at once the work for the control of the floods of the Sacramento River in accordance with the above project and provide for its early completion.

"Second. That the United States contribute one-third of the cost of work and the State of California contribute the remaining two-thirds.

"Third. That upon its completion the United States turn over to the State of California for maintenance all flood-control works."

The commission now recommends:

First. That the United States begin at once the work for the control of floods, removal of débris, and improvement of navigation in the Sacramento River in accordance with the commission's report submitted August 10, 1910, and printed in House Document No. 81, Sixty-second Congress, first session, in so far as the same provides for the rectification and enlargement of river channels and the construction of weirs, and provide for the early completion of these features of the plan.

Second. That the United States contribute one-half of the cost of the work indicated in the first recommendation and the State of California contribute a like amount.

Third. That all land required for the work indicated be turned over, free of cost, to the United States.

Fourth. That upon its completion the United States turn over to the State of California for maintenance all flood-control works.

10. The effect of the first recommendation will be to confine the expenditure of any Federal appropriations to one-half of the items (a), (b), and (c) of the estimate contained in the report of Mr. H. H. Wadsworth, appended to the report of the commission of August 10, 1910, and to materially reduce the expense of the project to the United States. Eliminating from the estimate the cost of the land and clearing, these items become:

(a) Enlargement of river channel below mouth of Cache Slough	$9,075,420
(b) Weirs	1,617,560
(c) Rectification and enlargement of river channels	191,375
	10,884,355
Add 15 per cent for contingencies and administration	1,632,653
	12,517,008
Less amount appropriated under existing project	800,000
	11,717,008
Share, each, of United States and State of California	5,858,504

The effect of the second recommendation will be to make the method of defraying the cost of this work conform to that which has heretofore been followed on all works undertaken by the commission in furtherance of the aims and purposes of the act of March 1, 1893.

The third recommendation is in accordance with the present policy of the department in the matter of lands required for river and harbor improvements, and the fourth is the same as the third of the original report.

11. In participating in certain features only of the plan as originally proposed, the Federal Government should not relinquish the control over the other features of the plan necessary to make its work effective. It is the opinion of the commission that the adoption by Congress of the original plan as modified by the present report would confer on the commission power to exercise such control over work done on other elements of the plan than those actually participated in by the Federal Government as would be necessary to prevent anything being done that would adversely affect the general lines of the plan, and particularly the limiting flood heights assumed.

12. It is thought that the Board of Engineers for Rivers and Harbors, in stating that the execution of the original plan was not necessary in the interests of navigation, meant to imply that a sufficient degree of navigability could be maintained at less cost. This commission knows of no way of maintaining navigability with certainty and permanence except under a plan which is part of a plan for flood and débris control, nor does it seem possible to estimate with certainty the cost of maintaining navigability apart from flood and débris control.

Should nothing be done to control floods, there is every probability that from time to time navigability will be temporarily destroyed.

To the cost of restoring navigability should then be added the damage done to navigation interests during the periods of nonnavigability.

The commission understands that the act creating the commission directed the preparation of a plan for flood and débris control. Congress in making the appropriation of $800,000 in the act of June 25, 1910, apparently realized that flood control was a necessity; that sooner or later works for flood control would be undertaken; and that any work done for the improvement or maintenance of navigability should be part of a plan intended to accomplish the three objects of flood control, débris control, and improvement of navigability.

We believe that the execution of the plan prepared by the commission, revised as described in this report, is necessary for the accomplishment of these three objects. The difficult question is what proportional part of the cost the United States should pay.

In making its present recommendations the commission has sought to eliminate from the project those features which are more intimately associated with reclamation and to confine the work of the Federal Government to the river channels and weirs, which features have a more direct bearing upon the navigability of the river.

13. As to the statement contained in the report of the Board of Engineers that "there is reason to apprehend greater difficulty in maintaining the low-water channel where the river is widened to increase its flood capacity, also where the by-passes leave the river, and, in general, where the flood heights are increased by reason of the works of flood control," the commission would invite attention to the fact that the proposed widening of the river channel is confined to the tidal portion of the river where the depths are determined by tidal levels rather than by the low-water discharge. The commission considers that the substitution of weirs for the breaks in the levees and banks by which the excess waters now reach the basins will limit the outflow into the basins to relatively high stages and in some seasons prevent it altogether, which should generally prolong the medium high stages of the river and cause less deposit of material in the river channels below the weirs than now occurs below the present outlets.

For this particular stream, in which the flood and low-water channels are generally coincident where navigation is important and for the proposed increase in the height of the flood plane, the commission does not share the apprehension expressed by the Board of Engineers for Rivers and Harbors that raising the flood plane will increase the difficulty of maintaining the low-water navigation channel.

Some work will doubtless be required to maintain the increased cross section of the channel required for flood discharge below the mouth of Cache Slough; but this does not form a part of the project, for reasons stated in the original report. There is good reason to expect that the increased tidal effect will materially assist in maintaining an ample estuary channel as it does in the lower reaches of the San Joaquin River.

THOS. H. REES,
Lieutenant Colonel, Corps of Engineers, United States Army, President California Débris Commission.

THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
United States Army.

GENTLEMEN: The flood-control committee of California that has for several years been cooperating with the California Débris Commission and with the State engineering department in the interests of navi-

gation and reclamation in that State, respectfully submits the following suggestions and requests for your consideration:

In early years hydraulic mining precipitated vast quantities of débris into the Sacramento River and its tributaries, greatly impairing navigation in the main river and entirely filling the Feather River so that navigation became impossible.

The filling of the channels also increased the difficulty of controlling the floods, and in protecting adjacent lands from overflow.

In 1893 the Federal Government recognized some obligation on its part to restore the stream to the condition that existed before the havoc was done by the mining interests, which operated under the laws of the United States.

In that year Congress passed an act known as the Caminetti Act, creating the California Débris Commission, and declaring a purpose of dealing with the subject.

Appropriations were made from time to time for this object, and the State usually contributed an equal amount.

In 1907, pursuant to the directions of the Caminetti Act, the California Débris Commission made a partial report, recommending the execution of part of the plan under its jurisdiction.

Congress and the State each appropriated $400,000 for this purpose, which sum has been used in part to construct two large dredges which have been completed and are ready to begin actual excavation at the mouth of the river.

In 1910 the débris commission made a more extended report, recommending a plan which is embodied in House Document No. 81, Sixty-second Congress, second session. This plan contemplated the construction of levees and acquisition of by-passes to carry the excess waters in addition to channel improvement.

When this report was presented to Congress in 1912, the Committee on Rivers and Harbors declined to recommend its adoption, because certain features of the plan were manifestly intended to promote reclamation of land. But the principal reason for the action of the committee was found in the report of the Board of Engineers for Rivers and Harbors, dated December 27, 1910, wherein it was said that "The execution of this project is not necessary, in the interests of navigation."

At the session of the legislature of 1913 an act was passed, known as Senate bill No. 1218, which was prepared under the direction of the flood control committee, and received unanimous support from the legislature as well as from the people whose lands are to be taxed for an enormous expenditure.

This act separates all of the plan which embraced the construction of levees and purchase of by-passes and rights of way, and provides to carry out all of the plan except channel rectification and enlargement and the construction of weirs to regulate the flow in the river, so as to encourage its scouring capacity and the consequent removal of the accumulated mining débris.

The California Débris Commission kindly assumed the burden of separating, as far as possible, the portions of the plan which related to reclamation and which did not relate directly to navigation, although it has always been understood that a complete separation of these elements is impossible.

The purchase of rights of way for channel enlargement and rectification by the drainage district, created by the act of 1913, clearly affects and assists navigation, and this burden is cast upon the district; there is no logical way to separate the two elements.

Channel enlargement, in the interests of navigation, also has a resultant influence on the flow of the streams, and, of course, benefits reclamation to some degree.

A supplemental report has been submitted to you by the California Débris Commission, embodying its conclusions, and rearranging the estimates upon a basis considered by it to be fair to the United States.

The estimate of cost by the report of 1910 was $33,000,000, one-third of which, or $11,000,000, was apportioned to the United States. The supplemental report segregates all except $12,517,000, from which is deducted $800,000 already appropriated, leaving $11,717,000 to be borne by the State and Federal Government, or $5,858,000 each. This leaves over $20,000,000 of the original estimates to be provided by taxing the land of private concerns which would be benefited by the work.

A considerable portion of these estimates have already been paid by the reclamation of large tracts at private expense, under the direction of the State reclamation board, which is in turn guided by the débris commission.

The purpose in appearing before this board, as a representative of the State of California, is to urge an approval of the supplemental report and a recommendation that will harmonize the work in the future, and secure from Congress such action as will clothe the California Débris Commission with jurisdiction over the entire subject.

In the past the State has carefully complied with the plan and recommendations of the débris commission, but it is doubtful if the commission has jurisdiction over subjects not closely connected with channel improvement and flood control as identified with navigation.

It is necessary that there should be a primary head to an enterprise as great as this. The State of California has recognized the débris commission as the proper governing influence, and has enacted laws to bind the State to follow on this theory. Congress, however, has not adopted the plan, or empowered the débris commission to execute it, except in part.

The supplemental report now before you strongly recommends a definite policy, as follows:

First. That the Federal Government should not relinquish control over the entire plan, for the reason that control is necessary to prevent anything being done in one part of the work that would affect the general plan, and particularly limiting flood heights.

Second. The adoption by Congress of the plan would confer on the commission power to exercise control over the work done on other elements of the plan than those participated in by the Federal Government. It also appears that the plan, as supplemented by the present report, is necessary in the interests of navigation, and apparently the best method of reasonable and permanent navigation.

It is upon these recommendations that the State of California requests specific, definite approval from this board, together with recommendations to Congress for such legislation as will fulfill the requirements for successful execution of the plan.

The necessity for congressional action is urgent and immediate.

Of course, one of the objects of the plan is the preservation of life and property, as well as the reclamation of a vast territory of rich land that must be dependent upon the execution of this plan for any kind of cultivation or profit.

There are about 400,000 acres in a comparative state of reclamation, but it will never be safe until the plan is executed. In 1907 millions of dollars' damage was done and nearly all of the reclamation districts were flooded. There are about 300,000 acres more in process of reclamation, because of the expectation that the plan will be carried out, but no one would expect these reclamations to be effective to any degree unless the plan should be executed.

It must be borne in mind that all of this reclamation is being made at private expense, and that all of the plan excepting the river-channel improvement and control is to be paid for by the owners of the land.

NAVIGATION.

The interests of navigation are very much involved in the carrying out of this plan. Among the special instances in which navigation is affected we can mention the following:

First. By maintaining a uniform flow of water in the river at its greatest capacity the débris now in the stream and that which will in due course find its way into the stream will be carried away by the scouring process and deepen the channel permanently.

Second. The erection of levees along the river by landowners will form part of the reclaiming works to effect a constant flow of water and improve navigation; and these levees should be standardized and controlled by the débris commission, to the end that the channel improvement and rectification will not be abortive or interrupted by breakes in levees.

Third. The by-passes which are to carry the excess water escaping at flood periods must be controlled so that the flood elevation in the by-passes will not exceed that in the river, and thereby endanger the restraining levees and render the weirs ineffective.

Fourth. The closing of Three Mile Slough and Georgiana Slough is necessary to preserve the navigability of the San Joaquin River. Recent observation shows that the channel is being filled with débris and that navigation is being rapidly impaired.

The growing industry of the Sacramento Valley, especially the hundreds of thousands of acres of new land that will be reduced to cultivation, is making it necessary to improve the channel and keep it in a permanently navigable condition, which can be done only by the execution of the general method recommended by the débris commission. Northern California is growing more rapidly in population and development than any other locality in the United States and needs better facilities for cheap and convenient transportation.

We desire a report from this board, if in harmony with its views, to the following effect:

First. That the execution of the plan as now presented by the débris commission is the most economical method by which permanent and practical navigation can be attained and preserved in the Sacramento and Feather Rivers.

Second. That Congress should enact legislation approving the plan and such modifications thereof as may hereafter be recommended by the proper engineering department of the United States and giving jurisdiction and control over the plan to the California Débris Commission.

Third. That the recommendations of the débris commission appertaining to the expense is fair and just to the United States.

Fourth. Recommending appropriations from time to time as the work progresses to meet the expenses in accord with the supplemental report of the débris commission.

Respectfully submitted.

FLOOD-CONTROL COMMITTEE OF CALIFORNIA.
V. S. MCCLATCHY, *President.*
A. E. ANDERSON.
A. L. SHINN, *Secretary.*

EXHIBIT F.

RECLAMATION BOARD ACT, STATE OF CALIFORNIA, AS IN EFFECT ON AND AFTER AUGUST 8, 1915.

Explanation: The original act creating the reclamation board was passed at the first extra session of the thirty-ninth legislature, which convened on November 27, 1911. That act was approved December 24, 1911, and went into effect March 24, 1912. It is found in chapter 25 at page 117 of the published statutes passed at the extra session of 1911, and is referred to herein as the "Act of 1911."

That act was amended and supplemented by an act approved May 26, 1913, which went into effect August 11, 1913, and is found in chapter 170 at page 252 of the published statutes of 1913, and is referred to herein as the "Act of 1913." By this amendatory act the Sacramento and San Joaquin drainage district was created and the reclamation board increased from three to seven members and its powers greatly enlarged.

The original act of 1911, as amended and supplemented by the act of 1913 was further amended and supplemented by an act approved June 9, 1915, which went into effect August 8, 1915, and is found in chapter 686 at page 1338 of the published statutes of 1915, and is referred to herein as the "Act of 1915."

The amendatory act of 1915 provides that the whole act, as now amended, may be cited and referred to as the "Reclamation board act."

The titles in full of the acts of 1911, 1913, and 1915 are as follows:

Chapter 25, Statutes of 1911: An act approving the report of the California Débris Commission, transmitted to the Speaker of the House of Representatives by the Secretary of War on June 27, 1911, directing the approval of plans of reclamation along the Sacramento River or its tributaries or upon the swamp lands adjacent to said river, directing the State engineer to procure data and make surveys and examinations for the purpose of perfecting the plans contained in said report of the California Débris Commission and to make report thereof, making an appropriation to pay the expenses of such examinations and surveys, and creating a reclamation board and defining its powers.

Approved December 24, 1911.

Chapter 170, Statutes of 1913: An act to amend an act entitled "An act approving the report of the California Débris Commission transmitted to the Speaker of the House of Representatives by the Secretary of War on June 27, 1911, directing the approval of plans of reclamation along the Sacramento River or its tributaries or upon the swamp lands adjacent to said river, directing the State engineer to procure data and make surveys and examinations for the purpose of perfecting the plans contained in said report of the California Débris Commission, and to make report thereof, making an appropriation to pay the expenses of such examinations and surveys, and creating a reclamation board and defining its powers," approved December 24, 1911; by amending sections 1, 3, and 4 of said act and adding 16 new sections to said act, to be designated as sections 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 16½, 17, 18, and 19; creating a drainage district to be known as Sacramento and San Joaquin drainage district, appointing of a reclamation board, providing for the management and control of said district, and defining the powers and duties of the reclamation board

and the State engineer, the acquisition of rights of way and property by said drainage district, the reclamation and protection of the lands therein which are subject to overflow from the Sacramento and San Joaquin Rivers and their tributaries and control of the floods thereof; the making of assessments; also defining the rights and powers of certain municipal corporations, levee, drainage, and protection districts therein, and making an appropriation to pay the expenses of the State engineer and the reclamation board; also providing for the approval and creation of plans of reclamation and the examination of the security afforded to bonds of reclamation and drainage districts and others; to prevent the diversion of the waters of any stream into the Sacramento and San Joaquin Rivers; to prevent the construction of and to require the removal or regulation of obstructions in streams, by-passes, and overflow channels; to repay money contributed for the purchase of rights of way for enlargement of the outlet of the Sacramento River, and making an appropriation for carrying out the purposes of this act.

Approved May 27, 1913.

Chapter 686, Statutes of 1915: An act to amend sections 1, 3, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16½, 17, and 18 of an act entitled "An act approving the report of the California Débris Commission transmitted to the Speaker of the House of Representatives by the Secretary of War on June 27, 1911, directing the approval of plans of reclamation along the Sacramento River or its tributaries, or upon the swamp lands adjacent to said river, directing the State engineer to procure data and make surveys and examinations for the purpose of perfecting the plans contained in said report of the California Débris Commission and to make report thereof, making an appropriation to pay the expenses of such examinations and surveys, and creating a reclamation board and defining its powers, approved December 24, 1911, as amended by an act approved May 26, 1913, and to add 12 new sections to said act to be numbered 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, and 31, relating to the organization, powers, and duties of said reclamation board, and creating a revolving fund and appropriating money therefor.

Approved June 9, 1915. As in effect on and after August 8, 1915.

CALIFORNIA RECLAMATION BOARD ACT.

[As in effect on and after Aug. 8, 1915.]

SECTION 1. The report of the California Débris Commission, transmitted to the Speaker of the House of Representatives of the United States by the Secretary of War on the 27th day of June, 1911, with such modifications and amendments and such additional plans as have been or may hereafter be adopted by the reclamation board, is hereby approved as a plan for controlling the flood waters of the Sacramento River and San Joaquin River and their tributaries, for the improvement and preservation of navigation and the reclamation and protection of the lands that are susceptible to overflow from said rivers and their tributaries. (Original section in act of 1911, as amended by acts of 1913 and 1915.)

SEC. 2. There is hereby created a board, to be known as the reclamation board, consisting of three persons to be appointed by, and to hold office at the pleasure of, the governor. It shall be the duty of said reclamation board, and it is hereby empowered to pass upon and approve plans of reclamation that contemplate the construction of levees, embankments, or canals along or near the banks of the Sacramento River or its tributaries or connected therewith, or upon any land adjacent thereto or within any of the overflow basins thereof. Any original plan of reclamation hereafter adopted that includes or contemplates the construction of any levee, embankment, or canal along or near the banks of the Sacramento River or its tributaries or connected therewith, or upon any lands adjacent thereto or within any of the overflow basins thereof, must be approved by the reclamation board before such plan of reclamation shall have been adopted by the trustees of any reclamation, levee, protection, or drainage district, or by any person, corporation, or association. Any such plan of reclamation shall be void unless first approved by said board, and the construction of any levee, embankment, or canal at any of the places hereinbefore mentioned, without such approval, is hereby declared to be a public nuisance, and the reclamation board is hereby empowered to prosecute any suit or suits in the name of the people for the prevention or abatement of such nuisance. (Original section, act of 1911.)

SEC. 3. The State engineer is hereby directed to procure data and make surveys and examinations upon said rivers and tributaries and the adjacent overflow basins for the purpose of perfecting the plans contained in the report mentioned in section 1 of this act, and making additional plans for the San Joaquin and Sacramento Rivers and their tributaries, and to make a report thereof to the reclamation board. He shall advise and assist the reclamation board, and shall be reimbursed by said board for any necessary expenses incurred by him under the directions of the board. He may, at his option, appoint the chief engineer of the reclamation board to act also as his assistant in the performance of the duties required of him by this section; in which case the compensation of said chief engineer while acting also as such assistant to the State engineer shall be apportioned as may be agreed upon between the reclamation board and the State engineer. All maps, records, and engineering data prepared or obtained by the State engineer for the use of the reclamation board shall be deposited in the office of said board and remain part of its records. (Original section, act of 1911, as amended by acts of 1913 and 1915.)

SEC. 4. There is hereby created a drainage district to be known and designated as "Sacramento and San Joaquin drainage district," the boundaries of which said district are as follows. (Description by metes and bounds follows.)

* * * * * * *

Said drainage district is hereby declared to be a body corporate and politic and shall have power to sue and to be sued; to acquire, own, hold, use, and enjoy for the purposes mentioned in this act any and all properties herein mentioned or necessary for the purposes of said district. [Sec. 4 of the original act of 1911 contained an appropriation and was amended by the act of 1913 to read as above.]

SEC. 5. The management and control of said drainage district shall be vested in the reclamation board, which shall hereafter consist of seven members. The members of the present reclamation board shall be members of the board as hereby enlarged. The remaining members shall be appointed by the governor of the State within 30 days after this act shall take effect. All the members, whether herein named or appointed by the governor, shall hold office at the pleasure of the governor. In case of a vacancy, the same shall be filled by the governor of the State. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 6. The reclamation board shall appoint a secretary, who may be a member of the board, and may appoint a general manager, a chief engineer, and an assistant secretary, and may employ an attorney for the board, and such assistant engineers, consulting engineers, special attorneys, and other assistants, employees, and advisers as may appear necessary to said board, and shall fix their compensation. The compensation of any attorney or engineer employed by the board may be fixed at a monthly rate of compensation, or fees for special services rendered, or both. The secretary, assistant secretary, general manager, chief engineer, and two assistant engineers, all consulting engineers, the attorney for the board, and all special attorneys employed by the board, and such employees as may be otherwise exempted by law, shall be exempt from the provisions of the civil-service laws of this State. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 7. The State of California and the people thereof are hereby declared to have a primary and supreme interest in having erected, maintained, and protected on the banks of the Sacramento and San Joaquin Rivers and their tributaries and the by-passes and overflow channels and basins mentioned herein good and sufficient levees and embankments or other works of reclamation, adequately protecting the lands overflowed or subject to overflow by said streams, and confining the waters of said rivers, tributaries, by-passes, and overflow channels and basins within their respective channels and boundaries, and it shall be the duty of the reclamation board at all times to enforce on behalf of the State of California and the people thereof the erection, maintenance, and protection of such levees, embankments, and channel rectification as will, in their judgment, best serve the interests of the State of California. The purposes and objects of this act are to carry into effect the plans of the California Débris Commission with such modifications and amendments and such additional plans as have been or may hereafter be adopted by the reclamation board for the control of the flood waters of the Sacramento and San Joaquin Rivers and their tributaries and said basins, and to vest in said reclamation board control and jurisdiction over said plans and such other plans as may be adopted by said board, excepting such portions of said plans as relate to channel excavation, enlargement, rectification, and control in the Sacramento River and the construction of weirs, it being the intent of this act that all work and control in the said stream and the construction of weirs shall remain with the United States and the State of California concurrently, but this exception does not apply to the San Joaquin River and its tributaries.

This act and every part thereof shall be liberally construed to promote its objects and to carry out its intents and purposes. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 8. It shall be unlawful for a member of the board to vote upon any contract or other matter in which he may have an interest or share, or for any employee of said board to receive directly or indirectly for his own use or benefit any portion or share of the money or other thing paid under any contract; but having an interest in lands within said drainage district shall not disqualify a member for voting to execute any part of said plans of flood control or carrying out the objects of this act.

SEC. 9. The reclamation board shall have its office at the city of Sacramento, which shall be the principal place of business and legal residence of said board and of the said Sacramento and San Joaquin drainage district. The reclamation board shall elect one of its members as president, and may also elect another of its members as vice president, who shall have the powers and perform the duties of the president during his absence or inability to act or at his request or when so authorized by the board. The regular meetings of said board shall be held at such times as shall be fixed by the board, and a majority of the board shall constitute a quorum, but no action of said board shall be effective unless the same shall be concurred in by a majority of the members thereof. Special meetings of the board may be called at any time by the president or by a majority of the members upon notice by mail or telegraph to each member at his place of residence or business, and there received at least 12 hours before the hour fixed for such meeting. Any other meeting of the board, at its office, when all of the members are present, shall be considered a legal meeting at which any business may be transacted. It shall be the duty of the reclamation board to keep full and correct minutes of all proceedings and transactions of all meetings of the board, which minutes shall be open for public inspection during office hours. Each member of the board shall receive the necessary expenses incurred by him in the performance of his duties, and $20 for each day attending the meetings of the board, but such per diem shall not exceed $1,000 in any one year. The reclamation board shall have a seal of such device as said board may adopt, and any seal heretofore adopted by the reclamation board shall be the seal of said board, and said seal shall also be the seal of the said Sacramento and San Joaquin drainage district. A copy of any record of said board, when certified by its secretary or assistant secretary to be a true copy thereof, and attested by the seal of the board, shall be prima facie evidence of the existence and contents of such record. For making a copy of any record of said board to which any person may be entitled by law, or which may be made at the request of any person, the reclamation board may charge and collect the actual reasonable cost of making such copy, including the time of its employees and materials used, and $1 for the certificate thereto, if a certified copy be requested, and may require a deposit in advance sufficient to cover such charges. All money so collected shall be paid monthly to the State treasurer and be by him credited to the balance remaining unexpended of any appropriation or assessment available for the general administrative expenses of said board. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 10. Whenever so required and notified by the reclamation board it shall be the duty of the owner of and of the person or corporation maintaining or operating any railroad, electric railroad, wire line, wagon road, or other structure crossing any of the by-passes or overflow channels herein provided for, to provide and maintain one or more suitable draws or other appliances within any such by-passes or overflow channels to permit the passage of water craft, dredgers, or other machines used in the construction of reclamation works, and to open said draws or appliances upon reasonable notice given by any person desiring to pass the same and payment of a fee of $50. Said draws or appliances shall be located at such points as shall be designated by said board. A failure to comply with this section shall render such owner of or person or corporation maintaining or operating any of said structures liable to any person for the damages caused to such person by such failure. Compliance with the provisions of this section may be enforced by mandamus or by mandatory injunction, or by any other appropriate remedy authorized by law, in an action or proceeding brought by the reclamation board, which action or proceeding may be

commenced and maintained by said board in the name of the people of the State of California. The remedies provided by this section shall not be exclusive of, but shall be concurrent with and in addition to any other remedy which may exist by law. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 11. Any plan of reclamation, flood control, drainage, or other improvement that includes or contemplates the construction, enlargement, revetment, or alteration of any levee, embankment, canal, or other excavation along or near the banks of the Sacramento or San Joaquin Rivers or any of their tributaries or connected therewith, or upon any land adjacent thereto, or within any of the overflow basins thereof, or upon any land susceptible to overflow therefrom, must, unless heretofore approved by the reclamation board, be approved by said board before construction of the same shall be commenced. Any such plan shall be void until approved by said board, and no such work shall be done or constructed without the permission of said board first obtained.

No river or by-pass levee at any of the places hereinbefore mentioned, nor any levee forming part of any of the plans of flood control adopted by this act or by said reclamation board shall be cut or altered without permission of said board first obtained.

Notwithstanding any provision hereinbefore in this section contained, the owner of any existing levee at any of the places above mentioned shall have the right to raise, widen, or strengthen the same to such extent as such owner may desire: *Provided*, That before such work is commenced the plans, specifications, and method of construction therefor shall be submitted to and approved by the reclamation board, and that the work shall be done subject to the supervision of said board, and that no claim shall ever be made against said reclamation board or said Sacramento and San Joaquin drainage district for compensation, through or by any assessment or otherwise, for any part of such work which may be in excess of the requirements of the plan of flood control for that locality finally adopted and approved by said board: *And provided further*, That any such existing levee may be protected or strengthened in case of emergency during the season of flood water, where it is in danger of injury or destruction therefrom: *Provided*, That notice of such work shall be immediately given to the reclamation board, and provided that all such emergency work shall be subject to the subsequent approval of the reclamation board, and that said board shall have power to require its removal or alteration if not so approved: *And provided further*, That no levee, embankment, or other structure within any by-pass or overflow channel adopted by said reclamation board shall be raised, widened, strengthened, or altered without permission of said reclamation board first obtained.

The construction, enlargement, revetment, or alteration of any levee, embankment, canal, or other work of reclamation, flood control, or drainage at any of the places hereinbefore mentioned, or the doing of any act or construction of any work in this section mentioned, or permitting the same to remain after such construction, which shall be done without the permission of the reclamation board and in violation of any of the provisions of this section, is hereby declared to be a public nuisance, and the reclamation board is hereby empowered to commence and maintain any suit or suits in the name of the people of the State of California for the prevention or abatement of such nuisance. Any person who shall do any act contrary to or in violation of any of the provisions of this section shall be guilty of a misdemeanor. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 12. The reclamation board shall have power to acquire either within or without the boundaries of the district by purchase, condemnation, or by other lawful means, in the name of the Sacramento and San Joaquin Drainage District, from private persons, corporations, reclamation, swamp land, levee, protection, or drainage districts, or other organizations or associations, all lands, rights of way, easements property, or material necessary or requisite for the purpose of by-passes, weirs, cuts, canals, sumps, levees, overflow channels, and basins, reservoirs, and other flood-control works, and other necessary purposes; to construct, clear, and maintain by-passes, levees, canals, sumps, overflow channels, and basins, reservoirs, and other flood-control works; to make contracts in the name of said district to indemnify or compensate any owner of land or other property for any injury or damage caused by the exercise of the powers by this act conferred, or arising out of the use, taking, or damage of any property for any of such purposes; to maintain actions in the name of the people of the State of California to restrain the doing of any act or thing that may be injurious to any of the works necessary to said plan of flood control or that may interfere with the successful execution of said plan or for damages for injury thereto, and any damages so recovered shall be deposited with the State treasurer to the credit of said district and shall be applicable to the payment of warrants against any assessment for the particular portion or project affected by such injury; to establish a standard of levee construction; to do any and all things necessary or incident to the powers hereby granted or to carry out the objects specified herein; to maintain actions in the name of the people of the State of California to compel by injunction the owner or owners of any bridge, trestle, wire line, viaduct, or embankment or other structure which shall be intersected, traversed, or crossed by any by-pass, drainage canal, or overflow channel, so to construct or alter the same as to offer a minimum of obstruction to the free flow of water through any such by-pass, drainage canal, or overflow channel, and wherever necessary in the case of existing works, to compel the removal or alteration of any such embankment or other structure; to maintain actions in the name of the people of the State of California to restrain the diversion of the waters of any stream that will increase the flow of water in said Sacramento or San Joaquin Rivers or their tributaries, and such diversion of the waters of any stream into said rivers or either of them or any of their tributaries, is hereby declared to be a public nuisance which may be prevented or abated by the reclamation board. In case any land, right of way, or easement is or shall be needed for any work of channel excavation, enlargement, rectification, or control, or for the construction of any weir, which is a part of the plans to be carried out as contemplated by this act, and which is to be done or constructed in whole or in part by the United States, and it is or shall be necessary or be required by the United States, before doing such work or constructing such weir, that such land, right of way, or easement be conveyed to the United States free of cost, the reclamation board shall have power to acquire such land, right of way, or easement and cause the same to be conveyed to the United States free of cost, or to be condemned for the use of the United States in the manner provided by the laws of this State or of the United States, and to pay the cost and expense of acquiring such land, right of way, or easement out of the funds of any assessment by said board applicable thereto; or if such land, right of way, or easement is or shall have been already acquired by said reclamation board in the name of the Sacramento and San Joaquin Drainage District, the said board shall be and is authorized to cause the same to be conveyed by said district to the United States free of cost. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 13. Whenever in the opinion of the reclamation board it shall be necessary to levy an assessment upon any lands within said drainage district for any of the purposes herein specified, said board shall cause an assessment to be levied upon such lands within said drainage district for such purposes. The plans to be carried out shall be divided by said board into separate portions or projects in such manner as will in its judgment best facilitate the levying of assessments for each particular portion or project in a just and equitable manner according to benefits upon the lands in said district. Said board shall enter in the minutes of the board a resolution to the effect that the execution of each such separate portion or project which they may determine upon is a public necessity. Each such particular portion or project shall be designated by the board in such resolution by name and number. All assessments, plans, and funds intended for or connected with the execution of each particular portion or project shall be designated by such name and number and shall be kept separate and shall be used only for the purpose of carrying out such particular portion or project. For the purpose of making any such assessment the board shall appoint three assessors who shall be disinterested persons, and shall have no interest in any real estate within said drainage district, and each of whom, before entering upon his duties, shall make and subscribe an oath that he is not in any manner interested in any real estate within said district, directly or indirectly, and that he will perform the duties of an assessor to the best of his ability. Said assessors shall be exempt from the provisions of the civil-service laws of this State. Said assessors must assess upon the lands within said drainage district the said sums so levied by the board, and shall apportion the same according to the benefits that will accrue to each tract of land in said district, respectively, by reason of the expenditure of said sums of money. After said assessors have examined the plan or plans of the works contemplated and the estimates of the cost, they shall make a preliminary report to the reclamation board indicating the exterior boundaries of the lands that in their opinion will be benefited by the expenditures. The assessors shall then appoint a time and place in each county in which any of said lands are situated, when and where they will hear objections to the said report, and also evidence concerning the manner in which said assessment should be apportioned. They shall give notice of such hearing in each of such counties by publication in a newspaper published in such county once a week for three weeks, the first publication to be not later than the twenty-first day before the day of hearing, which notice shall contain a general designation of the lands which will in their opinion be so benefited, as aforesaid, and shall refer to said preliminary report on file in the office of the reclamation board for such exterior boundaries. They shall exclude any land that will not be benefited by the expenditure of said sums and shall assess all lands that will be benefited thereby.

Said assessors shall make a separate list of the lands so assessed in each county, which list shall contain a description of the tracts of land assessed by swamp-land surveys, legal subdivisions, or other boundaries or references sufficient to identify the same, the name of the owner, if known, or if unknown, that fact, and the amount of the charge assessed against each tract. The name of the owner of land which is or is supposed to be property of the estate of a deceased person in course of administration may be stated as estate of (such person, naming him), deceased. When there are two or more owners or supposed owners of any tract of land, partly known and partly unknown, the assessment may be to such known owner or owners by name and to other owners unknown. No mistake in the name of the owner or supposed owner of any real estate shall invalidate the assessment. In the assessment list for any county the assessor may make use of any abbreviation in common use in that county, without explanation thereof. The assessor may also in the assessment list for any county make use of other abbreviations, provided a schedule and explanation thereof with reasonable certainty shall, unless printed on each page of such assessment list, be prefixed to said assessment list and a reference thereto written, printed, or stamped on each page of said assessment list whereon any such abbreviation is used. In case any land shall in the assessment list for any county be described in whole or in part by reference to a map, plat, or survey, which map, plat, or survey shall be on file or of record in any public office, it shall be sufficient in such description to designate such map, plat, or survey by name, number, or other designation sufficient to identify the same in a schedule of such maps, plats, and surveys, which schedule shall be prefixed to said assessment list and shall set forth with reasonable certainty where each such map, plat, or survey may be found, and shall be referred to by a reference written, printed, or stamped on each page of said assessment list whereon such method of description is relied upon. The assessors appointed for any assessment may also prepare or cause to be prepared a map or maps of the whole or any part or parts of the lands to be assessed with sufficient detail to indicate thereon and identify the several tracts of land to be separately assessed, or any of them, each of which such separate tracts shall be designated on such map or maps by a distinctive number. Each of such maps shall be inscribed and designated as "Reclamation board assessment map No. —," giving each map a distinctive number. Any such map may consist of any number of sheets attached together and designated as one map. Such map or maps when approved by the reclamation board shall be certified by the secretary of said board as having been so approved, and shall be filed for record in the office of the county recorder of the county wherein the land indicated on such map or maps is situated. Thereupon and thereafter, for the purpose of said assessment, or of any future assessment levied by said reclamation board, the assessment list for any county may, for the description of any tract of land so indicated on any such map, refer to such map and to the number by which such tract is designated on such map, and such reference, if used for that purpose, shall be a sufficient description of such tract for the purposes of such assessment list, and for the purposes of the notice of delinquent sale, certificate of sale, and deed in pursuance of such sale, and all other proceedings under this act based upon such assessment. No provision of any other statute of this State relative to the filing or recording of maps in the office of the county recorder shall apply to the maps in this section referred to: *Provided, however*, That the maps herein referred to shall have no legal effect for any purpose except for the convenient reference to and description of the tracts of land indicated thereon for the purposes of description of such tracts of land by reference thereto in the matter of assessments levied by the reclamation board and acts and proceedings based thereon as herein provided. No fee shall be charged by any such county recorder for the filing for record of such map as in this section provided.

Said lists when completed shall be filed with the secretary of the board and said secretary shall forward to the county treasurer of each county in which any lands so assessed are situated the assessment list for such county, and the same shall be open for inspection by the public for at least 30 days. The compensation of said assessors shall be fixed and allowed by the board. The reclamation board shall appoint a time and place not less than 30 days after said list has been filed with the county treasurer when and where it will meet in each county wherein any of the lands so assessed are situated for the purpose of hearing objections to said assessments, and notice of such hearing in each county shall be filed with the county treasurer and published once a week for two weeks in some newspaper published in such county. At any time before the date of such hearing any person interested in any land upon which any charge has been assessed may file in the office of the reclamation board written objections to such assessment stating the grounds of such objections, which said statement shall be verified by the affidavit of such person or some other person who is familiar with the facts. At such hearing the board shall hear such evidence as may be offered touching the correctness of such assessment or the manner of its apportionment, and may modify or amend the same, and may reapportion all or any part of the entire assessment. If said assessment shall be reapportioned, the board shall give two weeks' notice as before and proceed to hear objections in each county affected, as before, and shall then reconsider said assessment and make an order approving said assessment as finally fixed; and the decision of said board shall be final, and thereafter said assessment list shall be conclusive evidence, except in the suit hereinafter provided, that the said assessment has been levied and apportioned according to law. Any person interested, as aforesaid, in any land upon which any charge has been so assessed, aggrieved by the decision of the board approving said assessment, may commence an action against the district in the superior court of the county in which said land or the greater part thereof is situated, to have said assessment upon such land modified or annulled. Such action must be commenced within 30 days after the reclamation board has approved such assessment and the assessment list for such county has been deposited in the office of the county treasurer as provided in the next section, and shall have preference over all civil actions in fixing the time of trial. No objection to said assessment shall be considered by the court unless such objection shall have been made in writing to the reclamation board as hereinbefore prescribed, and, excepting in the action above mentioned, no action or defense shall ever be maintained attacking the said assessment in any respect. Whenever an assessment has been levied by the reclamation board upon lands in said district for general administrative expenses and other expenses not pertaining to any particular project, and the boundaries of said district have been or shall be extended so as to include lands other than the lands included within said district at the time such assessment was levied, the reclamation board shall make an estimate of the fair and equitable amount which should be contributed by the lands so included in the district by such change of boundaries for the purposes of such assessment previously levied by said board for general administrative expenses and other expenses not pertaining to any particular project, and shall levy and cause to be assessed, equalized, and collected in the manner in this act provided an assessment to the amount of such estimate upon lands so included in the district by such change of boundaries, according to benefits in the manner in this act provided. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 14. After such hearing has been had by the board in any county, said assessment list shall be certified by the secretary of the board to be correct, and said list shall be deposited in the office of the county treasurer of said county, and such assessment shall thereafter constitute a lien upon the lands so assessed and shall impart notice to all subsequent purchasers or incumbrances or other person acquiring any interest in or lien upon said land, and all unpaid assessments shall bear interest at the rate of 7 per cent per annum from the time when the assessment list is so deposited in the office of the county treasurer, and shall be paid to the county treasurer in one or more installments of such amounts, and at such times, respectively, as the board, from time to time, in its discretion, may, by order entered in its minutes, direct; if any such installment shall remain unpaid at the expiration of 30 days from the date of the order, then said installment shall become delinquent, together with the accrued interest thereon to date of delinquency and 10 per cent of the amount of said installment and interest, and the sum of 50 cents upon each tract of land separately assessed to cover cost of publication of notice of sale, shall be added thereto, and collected for the use of the district: *Provided*, That if an action is pending in any court to have the assessment on any tract of land reviewed, modified, or annulled as provided herein, such assessment, if not annulled in said action, may in the discretion of the board become delinquent 30 days after any judgment rendered therein shall become final. After the said installment has become delinquent, the board shall publish a notice at least once a week for three weeks in some newspaper of general circulation published in the county where the land is situated, which notice shall contain a description of the property assessed as described in the assessment list or by other description sufficient to identify the same, the name of the person to whom it is assessed or a statement that it is assessed to unknown owners, if such is the fact, the amount of the delinquent installment, the amount of the interest at the date of delinquency, the amount of the penalty and cost of publication that has been added as above provided, and notice that the property assessed will be sold on a date therein stated, in front of the courthouse of said county, to pay said installment with accrued interest and the penalty and cost of publication hereinbefore specified. At the time stated in said notice, or such other time to which said sale may have been postponed, the board must cause said property to be sold to the highest bidder for gold coin of the United States. If not completed on the first day the sale may be continued from day to day and over Sundays and legal holidays until completed. The sale may be conducted by such person as the board may appoint for that purpose, whether a licensed auctioneer or not, and no license shall be required of such person for conducting such sale. Out of the proceeds of said sale the board must pay the amount of said installment with accrued interest thereon and the penalty and cost of publication herein provided for to the county treasurer of such county, and the board must pay to the owner of said property any surplus remaining after such payment to the county treasurer. The board may postpone said sale from time to time by announcement at the time and place of sale and by a written notice posted at or near the place of sale, which written notice shall be substantially as follows:

The sale of property for delinquent assessments under (name and number of assessment) of the Sacramento and San Joaquin drainage district, which was fixed for (time and place of sale) has been postponed to (time to which postponed) at the same place. If no bid is made for said property equal to the amount of said installment, accrued interest, and penalty and cost of publication, the district shall become the purchaser, and the said property must be struck off to the district for the amount of said installment, accrued interest, and penalty and cost of publication. A certificate of such sale shall be executed by the president of the board to the purchaser, or to the district if the property shall have been struck off to the district, and said certificate of sale shall be recorded in the office of the county recorder of the county in which the land is situated. Any person interested in said property may redeem the same at any time within one year after the date of said sale, by paying to the county treasurer the amount for which said property was sold, and interest on the said sum at the rate of 10 per cent per annum from the date of said sale. If no redemption shall be made within said one year, the purchaser, or the district, if said property shall have been sold to the district, shall be entitled to a deed executed by the president of said board. The effect of such deed shall be to convey said property free of all liens and incumbrances, excepting State, county, and municipal taxes, assessments levied or assessed by statutory authority, and the unpaid balance of the said or any assessment made by said drainage district, which said balance must be called in and collected in the same manner as other assessments: *Provided*, That where property shall have been so deeded to the district and shall not have been sold, the same shall not be offered for sale for subsequent installments of the said or any assessment so long as the district shall remain the owner of said property, but the board may sell said property at any time at public auction after notice given for the same period and in the same manner as herein provided for sale for delinquent installments, but not for a sum less than all delinquent unpaid installments of all assessments thereon, with accrued interest and penalties, and the deed executed in pursuance of such sale shall convey said property free of all incumbrances except State, county, and other municipal taxes, assessments levied or assessed by statutory authority, and the unpaid balance of all assessments of said drainage district, which balance must be called in and collected in the same manner as other assessments. The remaining portion not yet ordered paid by said board of the assessment upon any tract of land may be voluntarily paid in full, with the accrued interest thereon, at any time after the lien of such assessment has accrued, and if the total amount of the whole of such assessment on any tract shall be paid in full within 30 days after the first installment of such assessment has been by said board ordered paid, no interest shall be charged. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 15. All money collected upon sales or otherwise shall be paid to the county treasurer of the county in which the land is situated, and said money, together with all other money collected by the county treasurer shall, within one month after its receipt by the county treasurer, be by him deposited in the State treasury to the credit of said drainage district in a fund which is hereby created and known as the Sacramento and San Joaquin Drainage District fund, specifying the name and number of the assessment from which such money was derived, and shall be paid out upon warrants of the State controller, and the controller is hereby directed to issue warrants upon said funds whenever drafts of the reclamation board shall be presented to him, and the State treasurer is hereby directed to pay such controller's warrants when there is sufficient money in the funds of said drainage district: *Provided*, That all moneys collected from assessments shall be paid out only on warrants issued for works or other expenses covered by the assessment from which such money was derived, which assessments must be numbered consecutively, to the end that all moneys raised by assessment upon any of the lands embraced in said drainage district, shall be expended only for the works of reclamation or other expenses beneficial to the lands so assessed, and for the payment of warrants issued for the construction of the works and other expenses for which such assessment was levied, and each warrant must designate the name and number of the assessment from which it is to be paid. Drafts of the reclamation board may be presented to the controller and warrants drawn, as aforesaid, against the funds to be raised by an assessment as soon as the reclamation board has passed its order or resolution for the levy of such assessment and appointed the assessors therefor. In case there are not sufficient funds applicable thereto for the payment of such warrants when presented to the State treasurer he shall indorse on such warrants the date of presentation and register the same, and thereafter such warrants shall bear interest at the rate of 7 per cent per annum, and must be paid in the order of their registration. Such warrants shall be considered as contracts in writing for the payment of money, and the period prescribed for the commencement of an action based upon said warrants, or connected therewith, is and shall be four years from the date of their issuance or renewal as hereinafter provided. Said warrants shall, at any time within four years after their issuance or renewal, be received in payment of any assessment for work or expenses for which such warrants were issued. The reclamation board may, at its option, at any time within four years after the date or previous renewal thereof, renew any warrant for an additional period of four years upon application of the owner or holder of such warrant, by an indorsement thereon of the fact and date of such renewal and notice thereof to the State treasurer and controller. Whenever there is sufficient money in the treasury applicable to the payment of any outstanding warrants of the district, the State treasurer shall give notice that there is money in the treasury to pay certain warrants, giving their numbers in the order of their registration; said notice shall be published for 10 days in one newspaper published in the city of Stockton and one published in the city of Sacramento. After the last publication of said notice the warrants therein mentioned shall cease to bear interest.

The reclamation board shall designate a paper in each of said cities which shall be the official papers of said district for the purpose of such publication. Whenever in the opinion of the reclamation board it shall appear that the total amount of any assessment previously levied and assessed and which has become a lien upon lands in said drainage district will be greater than required for the purposes for which such assessment was levied, the reclamation board may by resolution entered in its minutes release the lien of and abandon such assessment as to any part thereof not required as aforesaid and not previously ordered to be paid; and a copy of such resolution, certified by the secretary of said board and attested with its seal, shall be deposited in the office of the county treasurer of each county wherein is situated any land affected by such assessment, and shall be by such county treasurer annexed to the assessment list of such assessment for that county; and in any such case, when any payment has been voluntarily made upon the part of such assessment upon any tract of land so

abandoned and released the amount of such overpayment shall be repaid to the person by whom the same was paid, his heirs or assigns; and upon production of the county treasurer's receipt therefor and indorsement thereon by the reclamation board of the fact of such repayment, the reclamation board shall draw a draft on the State comptroller and the comptroller shall draw a warrant upon the State treasurer therefor, and the State treasurer shall pay such warrant in the same manner as other warrants against the funds of such assessment. The reclamation board may also, in its discretion, abandon further proceedings under any assessment at any time prior to the time when the lien of such assessments has accrued. In case of any change of county boundary lines, or creation of any new county, all acts and proceedings in this act provided for in the matter of or relating to or in pursuance of or founded upon any assessment upon lands affected by such change of county boundary lines, or creation of such new county, shall be done and conducted as if such lands were situated in the same county as at the time of appointment of the assessors to make such assessment. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 16. In all cases in which an assessment shall be levied upon the lands embraced within said district, and if the assessment upon any tract or tracts of land shall have thereafter been adjudged invalid by any court of competent jurisdiction, or if for any reason such tract or tracts of land shall not have been legally charged with said assessment, then such tract or tracts of land shall be charged in any subsequent assessment with such proportion of the former assessment as the benefits derived by said land from the purposes for which said former assessment was levied bears to the whole amount of said former assessment, or a subsequent reassessment of such tract or tracts of land may be made separately for the purpose of charging said land with its proper proportion of the said assessment. [New section, added by act of 1913.]

SEC. 16½. One of the first projects to be considered by said board shall be that portion of the plans of the California Débris Commission relating to the Sacramento River and Cache Slough below the junction of Yolo Basin by-pass and Cache Slough, known as the project to enlarge the outlet of the Sacramento River. In the estimate of the sum necessary for the project last named, the board shall also ascertain the amount of any expenditures that have heretofore been made by the State of California, any municipal corporation, reclamation district, and by any owner of lands within said drainage district, or by any of them, for the purpose of purchasing rights of way for the enlargement of the outlet of the Sacramento River and actually applied to said purpose, which said sums so expended shall be legal claims against said district upon execution by the claimant of a quit-claim deed of rights of way to the district, and shall be paid from the moneys arising from the assessment for the project in this sectoin first above mentioned. The governor is hereby authorized to execute such quit-claim deed on behalf the the State of California: *Provided, however*, That in cases where such rights of way or lands for use as such rights of way have already been conveyed to or the title thereto has already been vested in the United States for use in carrying out said project the quit-claim deed from any claimant above referred to shall not be required. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 17. It shall be the duty of the reclamation board to promote the construction, completion, maintenance, and repair of levees along all rivers, streams, overflow channels, and basins and by-passes where, in the opinion of the board, such levees are insufficient or necessary for the purpose of the plans for flood control to be carried out by said board under this act. Whenever any such levee is in the opinion of said board insufficient or necessary for the purpose aforesaid, the reclamation board shall give notice, by publication in the manner hereinafter provided, that such levee is insufficient or necessary and that it is the intention of said board to construct, repair, or complete such levee and pay the cost thereof out of an assessment levied or to be levied and assessed upon the lands within said drainage district directly or indirectly benefited by such levee. Such notice shall be signed in the name of the reclamation board by its president and secretary and shall be published once a week for three weeks in some newspaper published in the county wherein such levee or the greater part thereof is situated or is to be constructed, and the giving of such notice by publication shall be deemed completed on the twenty-first day after the first publication thereof. Any landowner or owners, and any reclamation district, drainage district, levee district, municipal corporation, or other organization or association authorized by law to construct, repair, or complete such levee shall have 30 days after completion of the giving of such notice by publication as aforesaid within which to apply to said reclamation board for leave to construct, repair, or complete such levee, which application shall be in writing and signed by such applicants or their respective executors, administrators, guardians, trustees, or duly constituted and authorized officers, and filed in the office of the reclamation board; and in case such application be filed within 30 days, as aforesaid, such applicants shall have 60 days after the filing of such application, or such further time as said reclamation board may by order entered in its minutes allow, within which to present to said reclamation board their plans and specifications for the construction, repair, or completion of such levee, and obtain the approval by said board of such plans and specifications, and to commence the work. Each such application for leave to construct, repair, or complete such levee shall designate the name and post-office address of at least one and not more than three of the applicants signing the same as the person or persons to whom any notice or communication may be addressed by the reclamation board in the matter of such application. In case there shall be two or more such applications filed in the office of the reclamation board within said period of thirty days last above mentioned, the reclamation board may determine which of such applications shall be recognized and may reject the others. Any such levee constructed or work done by such applicants as hereinbefore provided, pursuant to such notice from the reclamation board and according to plans and specifications approved by said board, shall be considered as constructed or done with the permission of said board within the meaning of section 18 of this act. If such application shall not be filed in the office of said reclamation board for permission to do such work, as aforesaid, within 30 days after completion of the giving of such notice by publication, or if such applicants shall fail to present to said board and obtain its approval of such plans and specifications and to commence the work as aforesaid, within said period of 60 days or such further time as the board may allow, or shall fail to complete such work with reasonable diligence after the same shall have been so commenced, the reclamation board shall thereupon be and is hereby empowered to proceed with the construction, repair, or completion of such work and to pay the cost thereof by assessment upon the lands within said drainage district directly or indirectly benefited by such levee according to such benefits, as in this act provided, which assessment may be either an assessment specially levied and assessed for that purpose, or any assessment levied and assessed by said board and applicable to the payment of such work. Notwithstanding anything in this section provided, if in the opinion of the reclamation board a case of emergency exists requiring immediate action to preserve life or property or to protect or preserve the safety of any such levee along any river, stream, overflow channel, or basin, or by-pass, the reclamation board may cause the necessary work to be done immediately for the protection or preservation of such levee, without giving the notice hereinbefore provided, and may pay the cost thereof, and any damage that may have been done by the performance of such work, by an assessment to be levied and assessed as above provided, or out of the funds of any assessment available for that purpose under the provisions of this act. [New section, added by act of 1913 and amended by act of 1915.]

SEC. 18. Notwithstanding any provision in this act, any reclamation district, levee district, drainage district, or municipal corporation, wholly or partly within the said Sacramento and San Joaquin drainage district, now or hereafter existing, shall have the right, within the permission of the reclamation board, to acquire by grant or eminent domain or otherwise any right of way or other easement included in any of the plans for controlling the flood waters of the Sacramento and San Joaquin Rivers or their tributaries to be carried out by said reclamation board as in this act provided, which right of way or other easement is or shall be required by the plans of such reclamation, levee, or drainage district, or municipal corporation for the consummation of its purposes as authorized by law, and shall also have the right, with the permission of the reclamation board, to construct such levees, cuts, canals, or gates as may be required to complete any by-pass forming part of said plans to be carried out by said board as aforesaid, or to complete any part of any such by-pass which may in the judgment of said reclamation board be safely and economically constructed as a separate unit or portion thereof, and the title to any such right of way or other easement or levees, cuts, canals, or gates shall be conveyed to the said drainage district upon compensation being made at the actual reasonable cost thereof.

If any reclamation district, levee district, drainage district, municipal corporation, private corporation, association, or person within said Sacramento and San Joaquin drainage district, with the consent of the reclamation board, has provided or left, or shall hereafter provide or leave, any land for a by-pass or waterway, storage basin, or sump for the purpose of complying with the plans to be carried out by said board as aforesaid, or for carrying out in whole or in part any of the plans or works adopted by it, or shall hereafter, with the consent of the reclamation board, erect any levee or levees along said by-pass or waterway, storage basin, or sump, the said by-pass, waterway, storage basin, or sump and levees shall be considered as a part of the work to be done pursuant to the provisions of this act, and proper compensation shall be made for the right of way or easement through, over, and upon such by-pass, waterway, storage basin, or sump and for the actual reasonable cost of construction of said levees, cuts, canals, or gates. When such compensation shall have been made, such reclamation district, levee district, drainage district, municipal corporation, association, private corporation, or person shall convey to the said Sacramento and San Joaquin drainage district a perpetual easement in, over, and upon said by-pass, storage basin, or sump and levees for all purposes necessary to accomplish the said plans to be carried out by said reclamation board as aforesaid.

In the event that any such reclamation district, levee district, drainage district, municipal corporation, private corporation, association, or person, shall, with the consent of the reclamation board, expend any sum of money in the acquisition of such right of way or other easement, or in the construction of such levees, cuts, canals, or gates, and shall convey the same to the Sacramento and San Joaquin drainage district, or in the event that it, he, or they has or have allowed, or shall allow, any land to be used for the purpose of a by-pass or waterway, storage basin, or sump to comply with the plans to be carried out by said board as aforesaid, or shall, with the consent of said board, construct levees along any line of any such by-pass or storage basin, and shall convey a perpetual easement therein to said Sacramento and San Joaquin drainage district, it, he, or they shall have a claim against the said drainage district for the reasonable value or cost of such right of way or other easement or of such levees, cuts, canals, or gates, and an assessment shall be levied upon the lands in said drainage district benefited thereby so that the same may be paid, or such cost may be included as one of the items in any assessment that may be levied in the said drainage district.

The words "with the permission of the reclamation board" or "with the consent of the reclamation board," as used in this section, shall be construed to mean and are hereby declared to mean the express permission or consent of said board in each particular case, evidenced by resolution or order entered in its minutes, and granted upon application of the particular district, corporation, association, or person desiring to obtain benefit of the provisions of this section.

Before granting its permission for the acquiring of any right of way or easement or for the construction of any of the levees or other works in this section mentioned, the reclamation board may require the applicant for such permission to furnish and submit to said board complete and detailed plans and specifications therefor and estimates of the cost thereof, and said board may in its order granting such permission designate a maximum limit of the amount of compensation to be so allowed therefor.

In case the reclamation board shall determine that the ownership in fee of, instead of the right of way or easement over, any land required for use as a by-pass, or overflow channel or basin, or for any part of the works of flood control to be carried out by said board, is necessary, or that the absolute ownership by said Sacramento and San Joaquin drainage district of any levees, cuts, canals, gates, or other flood-control works is necessary, for the purposes of said district, then said board may require that such title in fee and absolute ownership shall be conveyed to said Sacramento and San Joaquin drainage district before any compensation shall be allowed therefor pursuant to any of the provisions of this section. (New section, added by act of 1913 and amended by act of 1915.)

SEC. 19. The sum of $100,000, in addition to the sums heretofore appropriated, is hereby appropriated for the use of the reclamation board, at least $20,000 of which shall be used by the board to pay the expenses of the State engineer in carrying out the directions of this act. The comptroller is hereby directed to draw warrants upon the State treasurer whenever drafts of the reclamation board are presented to him, and the treasurer is hereby directed to pay said comptroller's warrants. In the first assessment levied in said district the sum of

$50,000 shall be levied, collected, and paid to the State treasurer as reimbursement of one-half of the above appropriation.

The State of California shall not be liable, directly or indirectly, for any obligation, claim, or liability of any kind or character, arising under or by reason of this act or any of the provisions thereof, in excess of the $100,000 in and by this act appropriated. [New section, added by act of 1913.]

SEC. 20. When and as soon as the sum of $50,000 has been collected and paid to the State treasurer as reimbursement of one-half of the appropriation for the use of the reclamation board made by section 19 of said act hereby amended, or when and as soon as any part or parts of said sum shall be so repaid from time to time, if the same shall be so repaid in installments, the money so repaid to the State treasurer shall be and is hereby reappropriated for the use of said reclamation board and may be used by said board as a continuing revolving fund in the manner hereinafter provided. The controller is hereby directed to draw warrants upon the State treasurer whenever drafts of the reclamation board therefor are presented to him, payable out of such revolving fund, and the State treasurer is hereby directed to pay said warrants. The said revolving fund may be used by said reclamation board from time to time for any purpose for which the funds of said board or of the Sacramento and San Joaquin drainage district, whether raised by assessment or otherwise provided, may be lawfully used. Whenever any assessment has been or shall be levied or ordered by said board applicable to the payment of any expenses or charges so prepaid out of said revolving fund, and such proceedings shall have been taken in the matter of such assessment that it shall be lawful to draw warrants against the funds of such assessment as hereinbefore provided, the reclamation board shall make and present its draft to the controller and the controller shall draw his warrant upon the State treasurer upon the funds of such assessment for the amount of such expenses or charges so prepaid out of said revolving fund, which warrant shall be drawn in favor of the State treasurer. Such warrant may be registered and renewed and shall bear interest and be paid in the same manner as other warrants against the funds of such assessment, as hereinbefore provided, and when so paid the amount of such warrants and the interest thereon, if any, shall be by the State treasurer credited to said revolving fund and form a part thereof.

The reclamation board may from time to time draw such sum from the State treasury out of such revolving fund not to exceed the sum of $5,000 as shall be approved by the board of control, which sum may be drawn without the submission of estimates, receipts, vouchers, or itemized statements, to be used as a special cash contingent fund out of which may be advanced any proper expenses or charges in and about the conduct of its business, requiring prompt payment in cash. All charges and expenses so advanced out of such cash contingent fund must be accounted for and proper vouchers therefor produced to the board of control, and when approved by the board of control the amount thereof shall be paid out of said revolving fund and returned to said cash contingent fund. Said special cash contingent fund must be accounted for by the said State reclamation board at any time upon demand by the controller or State board of control and refunded to the said revolving fund. [New section, added by act of 1915.]

SEC. 21. Any construction or repair work to be undertaken or done upon the initiative of the reclamation board under any of the provisions of this act may, at the option of said board, be undertaken and done by said board under the sole charge and direct control of said board, its officers, agents, and employees, free from any jurisdiction or control of the State department of engineering over the same. Any such work to be so undertaken and done by the reclamation board may be done wholly or partly by contract let by the board in such manner as the board may determine, or may be done wholly or partly by day labor or force account if deemed advisable by the board. Said board is hereby authorized to construct, purchase, rent, sell, or exchange, from time to time as may be found necessary or convenient, any and all such dredgers, machines, appliances, tools, apparatus, and other property as may be necessary or convenient for doing any such work; and the cost thereof shall be apportioned to and paid from the funds raised from the several assessments levied or to be levied by said board in a just and equitable manner according to the use made of the same in carrying out the several separate portions or projects for which such assessments are levied, respectively.

Any such dredgers or other equipment, when not in use on any work of the reclamation board, may be by said board rented for use by others, and the rental received therefrom by said board shall be paid over to the State treasurer and by him credited to the balance or balances remaining unexpended of the assessment or assessments against which the cost of such equipment has been paid or is to be charged, as indicated to him by said board.

The reclamation board may also, at its option, determine that any such construction or repair work shall be taken charge of and constructed by the State department of engineering, in which case the plans and specifications for such work shall be prepared and approved by the reclamation board and by said board delivered to the State engineer, together with a request that such work be taken charge of and done by the State department of engineering; and thereupon such work shall be done or constructed under the sole charge and direct control of the State department of engineering in the manner provided by law for the doing of such work by the department, and the cost thereof and any necessary and proper expenses incurred by said department of engineering in connection therewith shall be a legal charge against the Sacramento and San Joaquin drainage district and paid out of any assessment or other fund applicable thereto: *Provided, however,* That any contract let by the State department of engineering for the doing of any such work shall be approved by the reclamation board before becoming effective: *And provided further,* That any cash, bond, check, or other security forfeited by any bidder or contractor for failure to enter into or to perform any contract for the doing of any such work shall be forfeited to and recovered by the reclamation board for the use of the Sacramento and San Joaquin drainage district, and as soon as received or recovered shall be paid to the State treasurer and by him placed to the credit of the assessment out of which the cost of such work is to be paid.

In the case of any such work so done or constructed by said department of engineering, the reclamation board may furnish to said department of engineering for use in such construction any of its dredgers, machines, appliances, tools, apparatus, or other property which may be necessary or convenient for doing such work. [New section added by act of 1915.]

SEC. 22. The reclamation board shall have the right to inspect and supervise, as the same progresses, any work done or constructed pursuant to any of the provisions of this act, and may insert a stipulation for such inspection and supervision in any order, contract, or other instrument permitting or providing for or relating to the doing or construction of any such work. [New section added by act of 1915.]

SEC. 23. Any plans or specifications heretofore or hereafter adopted or approved by the reclamation board for any work to be done or constructed pursuant to any of the provisions of this act may be changed or altered, with the consent of said board, at any time before commencement or during progress of the work if deemed advisable by said board for the purpose of avoiding obstacles or to conform to conditions discovered or existing where such work is to be done, or for any purpose approved by said board; and said board may in like manner and for like purpose at any time change or alter the plans or specifications for work undertaken by the board upon its own initiative. [New section added by act of 1915.]

SEC. 24. The president or any member of said reclamation board, and the secretary and assistant secretary, general manager, and chief engineer of said board are, and each of them is hereby, authorized to administer oaths and to take and certify affidavits relating to any matter pending before said board, or in which said board or the Sacramento and San Joaquin drainage district may be interested. [New section, added by act of 1915.]

SEC. 25. Any hearing before the reclamation board shall, if deemed advisable by the board, be conducted upon sworn testimony of the applicants or witnesses except in the case of reports or investigations made by the members, employees, or special advisers of the board.

Whenever in the opinion of the board it shall be necessary or proper for the convenience of applicants or witnesses, the reclamation board may meet at any place in this State for a hearing or partial hearing of any application coming before said board; or the board may, in its discretion, authorize such hearing or partial hearing to be had before a committee of one or more members of the board, or before the general manager or chief engineer of the board, at any place within this State, who shall take and report the evidence to the board. The board may require that all, or such part as it deems proper, of the expenses of any such outside hearing, if held at the request of the applicant, including traveling expenses of the members, officers, or employees of the board, and the expenses of stenographic reporting and transcribing evidence taken at such hearing, shall be paid by the applicant, including a proportionate allowance, according to their usual rate of compensation, for the time of the members, officers, and employees of the board required for such hearing. All money so collected as compensation for the time of the members, officers, or employees of the board shall be paid by said board into the State treasury and by the State treasurer credited to the balance remaining unexpended of any appropriation or assessment available for the general administrative expenses of the board.

The reclamation board may also provide, in such manner and upon such terms as to said board may seem proper, for the taking at any place of the deposition under oath of any witness for or against any application pending before the board, which deposition shall be taken before a notary public or other officer or person authorized by law or by this act to administer oaths, and when so taken the same shall be certified and returned to the office of said board in the manner provided by law for the certifying and returning of depositions in civil actions; and when so taken, certified, and returned the said deposition may be read in evidence before said board at the hearing of such application. [New section, added by act of 1915.]

SEC. 26. An affidavit may be used to prove the service or publication of any notice required or provided for by any of the provisions of this act in the same manner and to the same extent as provided for in sections 2009 to 2015, inclusive, of the Code of Civil Procedure, and such affidavit shall be received as prima facie evidence of such service or publication in any court or elsewhere. (New section, added by act of 1915.)

SEC. 27. Besides and in addition to the notices required by this act, the reclamation board may in its discretion give such notice as it may deem proper, by publication, mailing, or otherwise, of any of its assessments, orders, proceedings, hearings, or other acts done or contemplated. (New section, added by act of 1915.)

SEC. 28. The reclamation board may from time to time adopt rules to promote the convenient, orderly, and just conduct of the business of said board and of the Sacramento and San Joaquin drainage district, and may amend or repeal the same or any part thereof from time to time, and any such rules or any part thereof may be suspended or compliance therewith may be waived by said board at any meeting to such extent as may be deemed proper. Any rules heretofore adopted by the reclamation board shall be the rules of said board until amended or repealed or until new rules are adopted. (New section, added by act of 1915.)

SEC. 29. The property of the reclamation board or of said Sacramento and San Joaquin drainage district shall be exempt from execution or attachment. (New section, added by act of 1915.)

SEC. 30. If any section, subsection, sentence, clause, or phrase of this act shall for any reason be held or found to be unconstitutional, the validity of the remaining portions of this act shall not be thereby affected. The legislature hereby declares that it would have passed this act and each section, subsection, sentence, clause, and phrase thereof, notwithstanding that any one or more sections, subsections, sentences, clauses, or phrases be held or found to be unconstitutional. (New section, added by act of 1915.)

SEC. 31. This act shall be known and may be cited and referred to as the "Reclamation board act." (New section, added by act of 1915.)

MEMORANDUM.

To the amendatory act of 1915 are appended the following general provisions:

It is hereby declared by the legislature that some of the provisions of this amendatory act are for the purpose of more clearly expressing what was intended by the legislature in certain provisions of said act which is hereby amended, and therefore if any provision of said act hereby amended, when properly construed, shall be held to have the same meaning as a corresponding or any provision of this act, although differently expressed, the amendment thereof by this act shall be construed to be an amendment in form only and not in substance.

All acts and parts of acts inconsistent with said act as heretofore and now hereby amended are hereby repealed to such extent as they may be so inconsistent.

EXHIBIT G.

EXTRACTS FROM BIENNIAL REPORT STATE RECLAMATION BOARD OF CALIFORNIA.

SACRAMENTO, *April 1, 1916.*

Hon. HIRAM W. JOHNSON, *Governor of California:*

The State reclamation board offers for your consideration the following report of its activities from the date of its previous report,

April 1, 1914, up to the 1st of April, 1916, together with certain suggestions in the interest of the work in its charge.

The work of the board as at present developed has a three-fold character.

POLICE POWERS OF BOARD.

First, it exercises unusual police powers conferred by the reclamation board act in directing private reclamation so that it may not interfere with flood control or unnecessarily injure the safety of existing reclamation in the Sacramento and San Joaquin Valleys. Under the law plans for new levees or for changes in the old levees must receive the approval of the reclamation board before work thereon may commence. So, too, for bridges and roads crossing by-passes or overflow channels, and for works of any kind likely to interfere with flood flow, or to jeopardize reclamation works essential to the project. The board has jurisdiction in these matters, not only along the Sacramento and San Joaquin Rivers and on the tributaries thereof, but also in the adjoining basins.

Power is given to the board to enforce the construction of draws in highway and railroad trestles crossing the by-passes and overflow channels, wherever, in its judgment, such draws are necessary to allow the passage of dredges and other craft utilized in reclamation work. It is evident that prompt access to levees and reclamation works along the by-passes, as well as on the rivers, must be had in order to insure permanent protection to the flood-control project and the interests served thereby.

In pursuance of that provision of the law the Oakland, Antioch & Eastern Electric Railway has constructed a movable span with an opening of 80 feet in that portion of its trestle crossing the east borrow pit of the Yolo by-pass. A similar span of 70 feet width was placed, prior to the adoption of the law, in the trestle of the Sacramento & Woodland Railroad where it crosses this borrow pit. Similar provision has been made in the bridge crossing the canal between districts 1000 and 1001, and similar provision will be made, under the board's order, in the new bridge which will be constructed by Yolo County across the mouth of Sycamore Slough, near Knights Landing.

An 80-foot removable span has been constructed in the highway bridge crossing the Knights Landing Ridge cut under plans approved by the board.

The State highway commission has provided for a bascule bridge in its causeway where the same crosses the east borrow pit of the Yolo by-pass.

It has also left at the western end of such causeway a trestle which may be replaced, in the future if necessary, where it crosses the determined site of the western borrow pit of the by-pass, by a bascule bridge.

The trestle of the Southern Pacific Co. crossing the Yolo by-pass had been constructed prior to the passage of the reclamation board act, and this board has been unable to induce that company to act in the matter of providing a draw in such trestle, unless the cost thereof is met by the district. Even should the reclamation board approve of the equity of so meeting the expense there are no funds for the purpose.

In pursuance of this same police power, the board has ordered the removal of all trees from levees wherever they offer an element of danger, and has called attention to defective construction and dangerous conditions wherever they were found to exist, even where it lacked the power to enforce correction of the defects.

The board in the fall of 1915 entered into a contract with the Natomas Co., under which that company undertook to clear the Yolo by-pass, in the neighborhood of the Fremont Weir, of brush and trees, the work to be done under supervision of the flood-control engineer and to be paid for in warrants of the Sacramento and San Joaquin Drainage District, payable out of an assessment to be hereafter levied for the Yolo by-pass. This work was undertaken in order to prevent congestion of flood waters at the upper end of the Yolo by-pass with consequent danger to the river channel and reclaimed lands.

The work was practically completed before January 1, 1916, and the good effects are already apparent. It is desirable also to clear this by-pass each year through its entire length, of tule, by burning or otherwise. The run-off could be so improved thereby as to materially decrease the flood plane in the by-pass; but it can not be done in the absence of funds for the purpose, unless interested districts are willing to undertake the work, partly for their own protection, and to accept warrants in payment therefor. District 1500 proposes to do a certain amount of clearing in the Sutter by-pass. Similar choke conditions exist in the Butte by-pass and elsewhere, and material benefits could be secured in each case by clearing.

The ill effects of the independent method of reclamation, which was recognized by State law prior to the creation of the reclamation board, are everywhere apparent. There are some large reclamation districts whose lines of levee have been so unwisely planned or placed, or improperly constructed, that these districts must either entirely change their plans or meet heavy annual expense to repair wash. There are certain districts whose levees have been so placed that no repair or construction, reasonably practical, can in the future, while the levees remain in that location, protect the districts from inundation. Levees have been so constructed on overflow channels as to cause ensmallment and choke of channel at certain points, making inevitable a breach of the levee in heavy flood on one side or the other. ("Overflow channel" as used in this report has reference to the space left in places between the natural bank of the stream and the levee to accommodate the excess flow in flood season.) Again, with the hope of saving an acreage of rich land, or because the river bank offered better foundation for a levee, levees have been constructed without proper berm on the water side, or without revetment, and are subject to such wave action and wash that they must be every year repaired at heavy expense, and perhaps ultimately moved farther back. In many of these cases, if for any reason it was desirable or necessary to maintain the levee on or near the river bank, economy would have been served had such bank been strongly revetted.

There is apparent on the part of a number of reclamation districts and landowners a misconception as to the scope of the board's duties. It has been called upon for decision or relief in cases of difference between landowners in a district as to the the internal administration of the affairs of such district. With such matters the board has nothing whatever to do, the intent of the law being evidently to allow the reclamation districts to administer their own affairs in the future, as they have in the past, and to limit the jurisdiction of the reclamation board in connection with such districts to such supervision of district levee plans and construction as would safeguard the flood-control project from interference and other districts from danger or injury.

FLOOD CONTROL IN THE SAN JOAQUIN.

The second element of the board's duties consists in promotion of a comprehensive flood-control project for the San Joaquin River.

A certain amount of study has been given to this subject, but little could be done in advance of completion of surveys of the valley, which were undertaken in 1914, under joint action of the California Débris Commission, representing the Federal Government, and the State engineering department, representing the State of California. A fund of $64,557 was available for the purpose, half of which was appropriated by Congress and the other half supplied by the State engineering department from its appropriation for river work.

Those surveys are now practically complete and the engineering force of the reclamation board is engaged in working up data to serve as basis for the comprehensive flood-control project which will be worked out by the California Débris Commission in conjunction with the State engineering department. As soon as that has been accomplished and a plan adopted, with means provided for carrying it out, either under joint Federal and State action, or by the State alone, the reclamation board can proceed with the active promotion of those portions of the project which are necessary for the protection of existing districts.

Until such a plan has been formulated and adopted the board is necessarily handicapped in granting permission for private reclamation projects in the San Joaquin Valley because of the possibility that they may interefere with such flood-control plan when developed.

The Calaveras problem: In the San Joaquin Valley, too, outside of the section now contained within the Sacramento and San Joaquin drainage district, there is the problem of the floods of the Calaveras River, which threaten a serious menace to the city of Stockton. Those floods are at present being diverted to the north and west of the city and discharged into the San Joaquin River through the so-called diverting canal completed by the Federal engineers in 1910.

This diverting canal, while not insuring entire safety to the city of Stockton, causes annual inundation of a large farming section outside of the city. Through her chamber of commerce and official representatives, Stockton came to the legislature of 1915 and asked that she be admitted to the district and placed under the jurisdiction of the reclamation board, believing that thereby and only in this way could she speedily and satisfactorily solve the Calaveras flood problem and provide means whereby the safety of the city of Stockton could be permanently assured. Because of a complication of issues, which are elsewhere referred to in this report, the legislature failed to comply with her request.

Freeport levee protection: The proposed work of levee protection on the Sacramento River at Freeport under the board's assessment No. 5 will very materially assist in securing protection to the reclamations in the northern part of the San Joaquin Delta.

SACRAMENTO FLOOD-CONTROL PROJECT.

The most important work of the reclamation board has been in promoting the prosecution of work on the Sacramento River flood-control project, which constitutes the third element of the duties of the board. This has been done in various ways—by completing, in cooperation with the California Débris Commission, cross-section surveys of the basins and overflow channels, and adopting, with approval of Federal and State engineers, necessary modifications of the original by-pass plan as tentatively proposed in the report of the Chief of Engineers, United States Army, 1910; by approving the construction by private capitalists of river and by-pass levees necessary for reclamation of their own lands, but which are incidentally necessary parts of approved units of the flood-control project; by itself undertaking field work where necessary in important matters; by securing desirable modifications of the law; by conducting a campaign of education among the people of the State, and particularly of the Sacramento and San Joaquin drainage district, so that their necessary cooperation might be had; by coordinating its work with that of the Federal engineers, and keeping Nation, State, and landowners in touch and in harmony with each other.

SCOPE OF THE SACRAMENTO PROJECT.

The State, and even those citizens most directly interested, have only recently commenced to thoroughly appreciate the magnitude of the Sacramento River flood-control project, and what it means in State development. In problems presented and solutions offered, in results promised to many interests—National, State, and local—in nature of the work and the expense involved it is the greatest project in progress or contemplated west of the Missouri River, and is exceeded in the particulars named by but few projects in the United States.

The project is necessary, first, for restoration and maintenance of navigability in the Sacramento River. Ocean freighters came up the river to Sacramento city, 125 miles from the sea, several times during the high stage of water in 1914. Light-draft craft originally ran up to Red Bluff, 200 miles above Sacramento, except in late summer and fall, but now go no farther than Chico Landing, 141 miles above Sacramento city. The most favorable conditions indicated could be made more or less permanent.

The project promises necessary protection for the San Joaquin River, as well, since the two rivers have a common delta, and overflow of the Sacramento may cause inundation on the San Joaquin up to Stockton.

The project is necessary for the safety of the lower lands on the floor of the two valleys, including the cities of Sacramento and Stockton.

Upon the project depends any inland waterway system for California, since the two rivers must form the arteries of any such system. The development of the valleys of the Sacramento and San Joaquin, and, to a certain extent, that of the commerce of the State, are dependent upon inland waterways, with consequent low freight rate to the ocean port, and access thereby to the markets of the world.

In the Sacramento Valley and the adjoining portion of the San Joaquin Valley are 1,300,000 acres of rich alluvial lands below the flood plane whose future protection depends upon the completion of the project. Of this acreage 595,731 acres are low river lands, reclaimed or in process of reclamation, and 149,600 acres include higher lands, partly protected, over which floods would pass in absence of protection, but on which they would not remain. The annual crop from these 745,331 acres is valued at $30,000,000. Of low lands entirely unreclaimed which must remain permanently waste unless the flood-control project is completed, there are 160,600 acres. For taxable purposes, the value of these lands would be increased twentyfold by the project, and they would yield ultimately annual crops worth $5,000,000. There are 182,785 acres of the higher lands over which floods pass but on which they do not remain, which are entirely unprotected and for whose protection the flood-control project is more or less necessary. There are 202,311 acres of waste lands in by-passes and overflow channels, rich in character, but now practically useless for revenue, the greater portion of which will become available for valuable crops on completion of the system of by-passes and weirs. These lands would add greatly

in crop and taxable wealth to the State's resources. It is quite evident therefore that the early completion of the Sacramento River flood-control project means an enormous increase to the resources of the State in addition to the taxable lands of most productive capacity in increased annual crops and in insurance against injury to towns and to possible normal crops on lands now enjoying some measure of reclamation.

The Sacramento River flood-control plan contemplates a unique co-operation between State and Nation, under which the entire expense will be shared, about one-seventh by the Nation, one-seventh by the State, and five-sevenths by the landowners whose lands will be benefited through ability to secure permanent reclamation.

PROGRESS IN CONSTRUCTION—FEDERAL UNITS.

Notwithstanding the magnitude of the Sacramento project and various obstacles encountered—including lack of knowledge on the part of those who would be most benefited by its completion, opposition for various reasons in a number of quarters, and lack of congressional approval and appropriation—work on the project has materially progressed.

In connection with that portion of the work assigned under the plan to the United States engineers, and to be paid for jointly by State and Nation, there has been progress, notwithstanding the fact that in the absence of approval of the project by Congress there could not be congressional appropriation directly for such purpose. The project has been recommended by the Board of Engineers and the War Department, by the Rivers and Harbors Committee of the House of Representatives and Commerce Committee of the Senate in their reports of 1914; was passed by the lower House of Congress in the same year but failed of passage in the Senate through filibuster. Since that time there has not been approval of new projects and no direct appropriation for old projects, but simply an appropriation each session of a lump sum placed to the credit of the Chief of Engineers to be allotted in his discretion for the continuance of existing projects.

It has been possible to continue the operations in opening the mouth of the river under these conditions, because in 1910 Congress approved a project recommended in the Report of Chief of Engineers, 1907, for the purpose of taking care of the débris in the channel of the Sacramento River, which project contemplated the use of two suction dredges for 56 months. The work contemplated and being done by the California Débris Commission under this project (locally referred to as the minor project) may be considered as a part of the work included within the Sacramento River flood-control project (referred to locally as the major project). For this minor project Congress appropriated in 1910 $400,000, which was supplemented by a similar appropriation from California. In 1913 the legislature appropriated $200,000 for this purpose, which was met by allotment from the Chief of Engineers in 1914 and 1915 of $60,000 and $140,000, respectively, under recommendation of the California Débris Commission. The legislature of 1915 made a further appropriation of $250,000, which will doubtless be met by allotment of such amount as may be deemed necessary by the Chief of Engineers under recommendation of the débris commission for continuance of the present operations. Further appropriation will be necessary from the legislature in 1917, even for the minor project. If the major project should be approved by Congress at the next session, the legislature of 1917 should appropriate not less than $1,000,000 in accordance with recommendations already made and to insure completion of the project within a reasonable time.

Under this minor project the California Débris Commission has, in effect, removed the principal obstructions to flow for high-water conditions over a nearly straight channel about 3,000 feet wide, diverging from the river across the Horse Shoe Bend between Rio Vista and Bakers Point on Sherman Island. In the course of this work some of the material has been so disposed of as to serve as the core of a levee about a mile in length across the base of Bakers Point, and the old levee outside thereof has been breached in several points to permit it to be attacked and eroded by flood waters should flood conditions develop to further facilitate the flow. This would tend to afford the necessary relief. Similar work was done at the corresponding projection formed by the lower extremity of Sherman Island. Corresponding work toward the same end has also been done at other places between Bakers Point and Collinsville, where it would afford the most relief.

In progress of this work the débris commission has moved with the two dredges 13,000,000 yards of material up to January 1, 1916, and has worked 26 months of the 56 months contemplated by the project.

The plan of operation and results accomplished are shown in a map accompanying his report, the data for which was furnished through the courtesy of the California Débris Commission.

The beneficial effects of the work already done in this way toward "uncorking" the river's mouth—one of the objects contemplated by the major project—are noticeable in improved run-off of the floods.

The progress of the work at the mouth of the river offers an indication of the manner in which the National and State authorities are cooperating so as to secure the most effective results.

Through delays in procuring certain property needed for spoil bank, to afford the best sequence of operations toward the flood-control idea, it had been necessary for the Federal engineers to anticipate their needs in this matter at other points, where they had constructed retaining embankments to hold the spoil from returning to the river. Operating under the minor project only they could not construe the law to permit them to abandon this work for the time being, which had cost several thousand dollars, and repeat the expense to procure a similar new spoil bank at the Horse Shoe Bend, after the lands there necessary had become available. It was desirable that the work at the Horse Shoe Bend which would afford the most relief to the flood situation (under the major project) should be done at the earliest possible moment. On recommendation of the reclamation board the State engineering department appropriated from its river funds on hand $12,868.96 for the purpose of building the necessary retaining levee 4 miles along the west side of the channel mentioned. The Government dredges, following the construction of this levee, were enabled to deposit the material on the spoil bank behind such levee so that, without extra expense to the minor project, the work thereof was made available to the major project in opening the large channel necessary for the run-off of floods.

Similarly, the California Débris Commission found itself prevented, by the limitations of the minor project from surfacing the levee constructed across Bakers Point, and in the absence of such surfacing with soil there was question as to the advisability of permitting the sand embankment to be exposed to the wave wash that might result with the destruction of the outer levee, to enlarge the channel. The reclamation board arranged with the trustees of district No. 341 (Sherman Island), to advance $3,028.13, half of the necessary funds for this soil surface and issued to them warrants of the Sacramento and San Joaquin Drainage District, to be paid out of Sacramento River outlet assessment No. 2, while the State engineering department provided a similar amount. That soil surface having been placed and the levee thereby protected to the satisfaction of the landowners in the district, the outer levee will be cut so that the high waters may escape across the point and cause further erosion to increase the area available for flood relief flow.

The State engineering department has provided during 1915, and the latter part of 1914, $53,021.03 to assist in various ways the work of the débris commission in opening the river's mouth. Of that amount $37,123.94 was paid in condemnation proceedings and purchase of rights of way, and $15,897.09 for dredging operations.

In the matter of weir construction, which is also a portion of the work contemplated in the major project and to be placed under Federal supervision, while no construction has been done, in the absence of congressional appropriations therefor, rights of way for three of such weirs have already been secured, that for the Tisdale Weir having been in the possession of the State for some years, that for the Fremont Weir having been acquired through the operations of the reclamation board, and that for the Sacramento by-pass having been purchased by the city of Sacramento, which has also undertaken to construct the Sacramento Weir itself, as herein elsewhere explained.

THE PROGRESS IN BY-PASS AND LEVEE CONSTRUCTION.

Notwithstanding the difficulties and obstacles referred to in this report, the progress in construction of units of the project under supervision of the reclamation board has been marked. Much of this progress has been due to the work of private capital, which has been undertaken under practical invitation of the State and assurances that the old plan of independent reclamation, involving danger to each district and ultimate destruction to all, has been replaced by a comprehensive plan looking toward safety to all and providing a competent authority with power to enforce completion of the plan.

Of the 519.42 miles of river levees contemplated by the project, there has been already constructed and up to approved grade as fixed by the reclamation board 78.58 miles; constructed but not up to standard, 213.31 miles; in course of construction, 98.57 miles; projected, 11.85 miles; unprovided for, 46.40 miles; data lacking, 70.70 miles.

Of the 193.71 miles of by-pass levee there have been constructed and up to approved grade, 9.47 miles; constructed but not up to standard, 15.72 miles; in course of construction, 44.77 miles; projected, 25.38 miles; unprovided for, 74.37 miles; not yet located (Butte Basin), 24 miles. In addition there may be counted as by-pass levee, completed to grade, 7 miles of the west levee of district 1001, which is, in effect, the east levee of the lower portion of the Sutter by-pass.

Butte Basin: In the Butte Basin the location of the weir and by-pass has not been finally determined by the engineers and the board. Tentative plans appearing in the report of the Chief of Engineers, 1910, are subject to modifications to be made by this board on recommendation of the engineers, Federal and State, and while such plans as to all other parts of the project have received the necessary modification and been finally approved there has been no action taken in the Butte Basin. This was because there was not the immediate necessity therefor, while there was necessity for immediate determination and action as to other portions of the project, the local interests in the Butte Basin seemed to be generally content with existing conditions; no danger was involved to other portions of the project, and there is a possibility that an early completion of the Iron Canyon Reservoir may obviate the necessity for by-passes in this particular basin.

Colusa Basin: The Colusa Basin has been subject to disastrous floods due to the hill waters from the west and the absence of adequate provision for handling the same, and the imperfect river levees between Colusa and Knights Landing, particularly in those portions not included within organized districts. These difficulties are being very rapidly remedied.

The Knights Landing Ridge cut, a unit of the Sacramento River flood-control project, intended to convey the hill waters of the Colusa Basin through the Knights Landing Ridge and into the Yolo By-pass, is now nearing completion and in operation, and giving already the necessary relief. The completion of this cut by the Knights Landing Ridge drainage districts was fought through injunctions by some districts and private owners, and its completion delayed until the litigating districts and owners were, in the winter of 1914–15, inundated, a disaster which would have been avoided had they cooperated earlier in completion of the project. This case furnishes a striking instance of the results which may be expected to follow lack of cooperation on the part of interested property owners and districts in securing completion of units of the project.

For a number of years past district 108 has endeavored to maintain for its own protection the entire stretch of river levee on the west side of the Sacramento River from Meridian down to Knights Landing, a large portion of which was entirely without its own boundaries and a protection to the lands of others. In the winter of 1914–15 this levee broke at several points near Meridian, because, while district 108 was willing to pay the expense and to undertake the work of strengthening such levees, the owners thereof refused to permit the necessary work in connection therewith. In consequence by special act of the legislature of 1915 there was created the West Side levee district, including all the lands to be benefited and with power to construct and maintain 50 miles of levee on the west side of the Sacramento River from Colusa down to Knights Landing. That district has had dredges working for a year past to so strengthen the levee that it might afford protection against the floods of this season (1915–16). It is intended to complete the work during the present year.

Yolo Basin: In the Yolo Basin there has been since the date of the last report practically no progress in construction of the unfinished portions of the eastern levee of the Yolo By-pass. These unfinished portions consist of 15.46 miles at the lower end (being the west levee of the Netherlands district, No. 999), and 6.25 miles at the north (being the west levee of Mull district, No. 1600). District 999 has been delayed partly by condemnation suits for rights of way. District 1600 has already arranged to push construction work during 1916. There has been no construction of any portion of the west levee of this by-pass. The river levees in this basin are unfinished on the frontage of district 1600 and are defective at points in two districts. Otherwise they are generally good in condition.

Sutter Basin: District 1500 reports construction of 24½ miles of the 34½ miles on her Sacramento River frontage. Construction of the bal-

ance is delayed by complications as to rights of way. The north and east levees of the district, forming, respectively, the south levee of the Tisdale By-pass and the southerly 20 miles of the west levee of the Sutter By-pass are reported as 50 per cent finished, but are now stopped by injunction, as is elsewhere explained.

District 1500 has also recently commenced work on 3 miles of the east levee of the Sutter by-pass, within the limits of district No. 1. This work is necessary for the protection of district No. 1, and is required by the act creating district No. 1500.

American Basin: Work in the American Basin has been finished and the entire basin closed to flood waters by the completion a year ago of the levees of districts 1000 and 1001, owned or controlled by the Natomas Consolidated. The first-named district comprises 52,128 acres and the second 31,203 acres.

The levees of these districts along the Sacramento River for 18 miles furnish fine examples of modern levee construction. They are placed 100 feet or more back from the river bank, the intervening space being grown up with brush and timber, to guard against wave wash. The levees have a crown of 24 feet, average height of 15 feet, and slope outside of 3 to 1 and inside of 2 to 1.

In construction a drag-line excavator was used to excavate a central trench 10 feet below the natural surface and 12 to 15 feet wide at bottom and 30 to 35 at top, the material being thrown up on each side in the shape of a levee. This trench and the core between the clay levees was then filled in with sand pumped by suction dredge from the river bottom. This sand core levee is a valuable safeguard against burrowing by gophers, one of the obstacles to maintenance of strong levees in the Sacramento Valley, and also diminishes seepage by offering a barrier to the flow through pervious strata. The expense per cubic yard is said to be no greater than that experienced in clamshell work. The cross section calls for more material than would a clamshell levee, because of the drag-line trench, but this is partly offset by the slippage of the clamshell material.

In district 1000 last year for the first time since the sixties the sea of flood waters was replaced by a sea of waving grain.

SACRAMENTO BY-PASS.

The Sacramento by-pass, 1.83 miles long, situated a few miles above Sacramento city, and intended to discharge excess floods into the Yolo by-pass, is necessary for the safety of Sacramento city and of the neighboring districts on both sides of the river above and below her. It is intended as an easement for the American River, which river in extreme flood will carry, it is estimated, 180,000 second-feet, augmenting the flood which the Sacramento River channel below the mouth of the Feather can accommodate (now 75,000 second-feet, but to be increased on completion of the river levees of district 1600 to 107,000 second-feet). The maximum capacity of the river channel below Sacramento city is but 110,000 second-feet, and no levees practicable in the neighborhood of Sacramento city could under present conditions long remain above the rising flood plane which would follow the choke produced by the flow of 287,000 second-feet indicated.

Because of her critical position and the uncertainty of congressional appropriation for weir purposes, Sacramento city voted, in 1912, over $500,000 to be used in opening the Sacramento by-pass. There were delays because of rights of way negotiations and changes in city administration, but the entire rights of way have now been purchased by the city and she has perfected plans for the weir which have received approval of the Chief of Engineers and War Department. The weir structure is designed to carry also a public roadway for Yolo County and the trackway of the Sacramento and Woodland Railway. Its sill is fixed at elevation 25 U. S. E. D., and above that, in 40-foot sections, are 48 movable gates which permit retaining the flood in the river channel up to elevation 31 U. S. E. D., or discharging it through one or more of these gates. The gates are so devised that automatically a steadily increasing number will drop for each half-foot rise in flood plane above elevation 32 feet U. S. E. D., all being open when the flood plane reaches 36½ feet U. S. E. D.

The reclamation board will build the lateral retaining levees of the by-pass and adjust the matter of compensation for drainage plants, etc., with reclamation districts Nos. 785 and 537, through both of which the by-pass cuts.

Some fears were expressed by Yolo County landowners as to possible increased damage to their lands from the operation of the Sacramento by-pass in conjunction with the Yolo by-pass, but there is apparently no good ground therefor, as indicated by reports made in connection with the subject in September, 1912, by Maj. S. A. Cheney, United States Army, then executive officer of the California Débris Commission, and Hon. W. F. McClure, State engineer, to be found in the report of the reclamation board published in 1912.

According to the statements of these engineers with the various levees as they are now, and holding intact, no water could go over the Sacramento Weir as planned until the Yolo Basin had been filled through existing breaks at Grays Bend and Woods Bend and at Elkhorn Weir; water would have to be pouring more than 4 feet deep over Elkhorn Weir before it would begin to go over the Sacramento Weir; the extra amount which could go into the Yolo Basin, because of the Sacramento Weir, would be, under such circumstances, small; the operation of the Fremont Weir, with the corresponding construction of river levees, which will follow construction of the Sacramento by-pass, would be of great value to Yolo Basin, diminishing the amount of water going into the basin by forcing the river channel to carry more, and maintaining conditions under which in any year there would be water in the basin for less time than under existing conditions, and in some seasons none at all; and the speedy construction of the Sacramento Weir should be therefore promoted by all who are interested in the development of Yolo Basin.

BASIN RECLAMATION AND BOARD POLICY.

While the intent of the reclamation board act is obviously that the reclamation board should promote in every practicable way the early completion of the Sacramento River flood-control project, the board has not taken the initiative in advancing reclamation in the river basins, even when such reclamation would incidentally construct works which are integral parts of units of the project.

It has followed this policy for two reasons: First, there was obviously a possibility that reclamation in the upper basins, if it progressed too rapidly, would so diminish the basin reservoir capacity in flood season as to cause increased danger to the river and to existing reclamations in the delta, until the work of opening the mouth of the river had progressed far enough to permit the rapid run-off of augmented flood; second, the board deemed it best to have reclamation work of this character incidental to the project done, so far as possible, by the districts and landowners themselves, under approval and supervision of the board and its engineers. Such a plan is obviously more satisfactory to the districts, while it utilizes their organization and facilities, relieves the board of much detail, and permits it time and attention for supervision of this work and for consideration of the larger features of the problem. For the reasons indicated, the board has thus far avoided, save in case of necessity, taking itself the initiative in actual construction of by-pass works. If, when the river's mouth has been sufficiently opened, the work in the basins has not kept pace therewith through private and district initiative the board can, under its authority, force completion of basin and river work wherever necessary to secure flood control.

It is evidently not the intent of the act, however, notwithstanding the consideration above mentioned, that the board should disapprove plans of reclamation districts for reclamation in the upper basins if the plans are in conformity with the flood-control project, and particularly where levees necessary to units thereof are part of such plans. The act plainly invites cooperation from the districts in such work. The board has assumed that each reclamation district or owner of overflow lands has the right, under the law and in conformity with the act, to reclaim its lands, provided the plans therefor should be approved by the State and Federal engineers as in conformity with the Sacramento River flood-control project adopted by the State. It has, therefore, approved plans of this character when presented to it by reclamation districts or owners, even in advance of the necessary opening of the mouth of the river, but has endeavored to provide for safety of all interests by restricting the closing of the reclamation levees in the upper basins until a time so remote that there would be opportunity to secure the necessary relief in run-off below. For instance, a delay of two years each was enjoined on district No. 1500 in Sutter County, on the Knights Landing ridge district for making the Knights Landing ridge cut, on the Mull district No. 1600, and the Netherlands district No. 999 in Yolo County, on the assumption that within that time, under the appropriations made and provided for, sufficient increased capacity would be secured in the river's mouth to compensate for withdrawal of basin reservoir capacity, and that in the meanwhile Sacramento city and interests concerned would complete the construction of the Sacramento by-pass for which measures had already been inaugurated.

Under a recent decision of Judge Emmet Seawell, presiding in the superior court of Sutter County, in the case of Samuel Gray et al. v. Reclamation District No. 1500, if upheld by the Supreme Court, it would appear that reclamation in the basins can not proceed by individual district work which raises the flood plane, even though it constructs necessary parts of units of the flood-control project, unless there be completed at the same time the entire work in by-pass and levee construction for the particular unit of the project involved. For only in this way can all lands threatened be protected from the effects of such raise in flood plane. It may become necessary now, in fairness to districts which have, under the State's invitation, expended large sums of money in this work and which may not complete it for their own protection under the Seawell decision, and it will certainly be necessary in the future, when the time is opportune for completing all by-passes, that the reclamation board abandon the policy above indicated, and itself assume the initiative in constructing at one time all remaining portions of large units of the project.

ASSESSMENTS.

The board has levied five assessments as follows:

General assessment No. 1, $250,000 levied June 9, 1914; assessors, A. E. Chandler, Max W. Enderlein, Alex Brown. First installment called, $150,000, delinquent July 15, 1915; amount collected to December 31, 1915, $111,523.36, a small portion of which is payment in advance on the second installment, which has not yet been called.

In levying this assessment the board complied with the specific provision of the act of 1913, providing that out of the first assessment levied by the board there must be returned to the State treasury $50,000, or one-half of the appropriation made by that act for the running expenses of the board. The assessment was necessitated further by the facts that the legislature, in passing the act of 1913, clearly intended that future administrative expenses of the board should be paid out of assessments; that the legislature of 1915, in amending the act, made no change in such policy; and that the funds in the board's hands were about to be exhausted, while the work, vital to the project, had to continue. We believe this method of assessment for providing funds for the administrative work of the board to be a serious mistake, to which attention is hereafter called.

Of the amount collected through this assessment, $50,000 was paid into the State treasury, in accordance with the terms of the act of 1913, and afterwards placed to the credit of a revolving fund for certain uses of the reclamation board, as provided in the act of 1915. The balance, $61,523.36, remained to meet the various expenses of the board.

Sacramento River outlet assessment No. 2, levied August 4, 1914, $367,000; assessors, A. E. Chandler, Max W. Enderlein, and Alex Brown.

In levying this assessment the board complied with the direction of the act of 1913, which provided that one of the first projects to be given consideration by this board shall be the Sacramento River outlet project, and that it shall provide in the assessment therefor for the return to the State of California, municipalities, reclamation districts, and landowners of amounts expended by them previous to passages of the act in purchase of rights of way in connection with such outlet project.

The amounts thus subscribed for rights of way, as referred to in the act, aggregate $240,188.19, of which $75,000 was furnished by a bond issue by the city of Sacramento, and most of the balance obtained through efforts of the San Joaquin and Sacramento River Improvement Association. In addition assessment No. 2 covers estimated cost of additional rights of way under condemnation suits (since decided), spoil banks, elimination of Wood Island, levee work not covered by contemplated congressional and State appropriation, assessment expenses, etc.

A warrant has been issued against this assessment for $3,028.13 in favor of the trustees of district No. 341 (Sherman Island), who advanced half of the amount necessary for surfacing the new Bakers Point Levee prior to cutting off such point. The other half was furnished by the State engineering department from its appropriation for river work.

Sacramento by-pass assessment No. 3, levied August 4, 1914, $900,000; assessors, A. E. Chandler, Max W. Enderlein, and Alex Brown (subsequently canceled and relevied, as indicated below).

This assessment was levied in order to hasten, in cooperation with the city of Sacramento, the completion of the Sacramento by-pass, which by-pass is recognized as necessary to secure the safety of Sacramento city and the surrounding districts more particularly from the menace offered by the floods of the American River, and is preliminary to installation of the Fremont weir. Sacramento city, in the absence

of congressional appropriation for weir construction, had offered to construct the Sacramento weir with funds secured from a bond issue passed by the city on behalf of the completion of the Sacramento by-pass. She has already purchased the necessary rights of way for the entire by-pass, amounting to $275,000.

Assessment No. 3 is intended to reimburse Sacramento city for the purchase of these rights of way and also to cover the cost of construction of the two lateral levees and such additions to the weir structure as are intended for the purposes of the Yolo County road and the trackway of the Sacramento & Woodland Electric Railway, now having rights of way across the by-pass, and also to compensate reclamations districts Nos. 537 and 785, which are cut by such by-pass, for damage incurred thereby.

This assessment was canceled January 29, 1916, and a new assessment for $1,095,000 levied, covering the changes necessitated by the plans for the weir, submitted by Sacramento city and approved by the Chief of Engineers. The assessors named for this assessment are Max W. Enderlein, F. C. Herrmann, and B. A. Etcheverry.

It is contemplated that collection will be made on this assessment this fall.

Fremont weir-site assessment No. 4, levied August 25, 1914, $180,000; assessors, Max W. Enderlein, F. C. Herrmann, and B. A. Etcheverry.

This assessment was levied in order to purchase the lands known as the Freitas and Caffaro lands, and some other lands at the head of the Yolo by-pass, which are necessary to provide the site for the Fremont Weir, and an opening 8,000 feet wide from the Sacramento River near the mouth of the Feather into the Yolo by-pass. Options had been secured on the Freitas and Caffaro properties in 1913 and 1914, which options were expiring, necessitating an assessment for the purpose of securing the necessary funds. A warrant has already been issued for the payment of the amount due on the Freitas contract, $102,930.20, and the deed therefor placed in escrow pending the payment of the warrant. The assessors are now proceeding to the spreading of the assessment, and it is expected that collection thereof will be made in the fall of 1916.

Freeport levee assessment No. 5, levied January 18, 1916, $58,163.70; assessors, Max W. Enderlein, F. C. Herrmann, and B. A. Etcheverry.

This assessment was levied for the purpose of securing the funds necessary to strengthen and revet a certain stretch of levee, 3,550 feet long, on the east side of the Sacramento River below Freeport, between districts Nos. 824 and 744. A break in the levee at this place would not only inflict injury to the navigability of the river and damage to a number of districts in the neighborhood and below, but would also very seriously injure a territory extending into San Joaquin County. Temporary repairs, which it is hoped will be sufficient to protect the levee during the current floods, are being carried on by the State engineering department under funds to be provided as follows: $1,750 by the State engineering department, $1,000 by the supervisors of Sacramento County because of interest in public roads; an amount not exceeding $400 by private subscribers, to be reimbursed by warrants from the Sacramento and San Joaquin Drainage District, payable out of this assessment. Work on permanent construction and revetment will be commenced after the winter season. The assessors are engaged in the work of assessment; and collection, it is expected, will be made in the fall.

STORAGE AND FLOOD CONTROL, SACRAMENTO VALLEY.

One fruitful cause of opposition to the flood-control project, and of apathy on the part of those who otherwise would have cooperated in promoting its completion, is the declaration that the by-pass plan recommended by the Federal engineers and adopted by the State is not the proper plan of flood control for the Sacramento River; that it carries in waste to the sea the flood waters which could be stored for power, irrigation, and municipal purposes; and that there is ample reservoir capacity in the Sierra Nevada Mountains to store all these flood waters. This declaration has been for years insistently made by those ignorant of the facts and by those who ignored them, and has been used as a stock argument for the abandonment of the present plan and the promotion instead of the Newlands-Broussard bill which has been for many years before Congress without action.

Some support has been given to this belief by the fact that there is in the Sierra storage capacity which if available for the purpose would go far toward controlling the floods of the Sacramento River.

The report of the Chief of Engineers, 1910, declares that storage reservoirs can not be utilized for flood control of the Sacramento, because (1) the storage available would care for only a small portion of the flood, and (2) the expense as to available storage would be from two to ten times as great as that involved in caring for the same amount of flood by the by-pass system.

Because of the large apparent storage capacity in the mountains and the failure of the report of 1910 to explain the limitations created by the word "available" the Federal engineers have been accused by some of misrepresentation or incompetency. The explanation of the apparent discrepency lies in the fact that most of the storage of the Sierra is not available for control of the Sacramento River flood for one or more of the following reasons:

(a) It is above or can not be reached by the flood flow.

(b) It duplicates in whole or in part the service of other storage draining the same area.

(c) Its capacity is greatly in excess of any flow of the season which can drain into it.

d) It is fed not by flood waters in time of river flood but by melted snow after the danger of river flood has passed.

(e) Its use would involve the sacrifice of homes and agricultural lands of such value as to make it impracticable.

A few instances will illustrate the conditions. Big Meadows Reservoir, draining a small section of one fork of the Feather River, with a credited capacity of over 500,000 acre-feet, is practically negligible as a factor for control of the Sacramento River. It receives its supply largely from melting snow late in the season, and its capacity is from two to three times as great as the season's run-off which can drain into it.

Again, on the upper Pitt River are four reservoir sites, Big Valley, Jess Valley, Warm Spring, and Round Valley, with an aggregate surveyed capacity of 4,186,000 acre-feet. The aggregate total of the mean annual flow which could be received by each is 1,100,000 acre-feet. Of the 770,000 acre-feet flow accessible to the largest reservoir, 340,000 can be stored also in the three smaller reservoirs. These facts developed under a joint survey made by the United States Reclamation Service and the State engineering department, because of the protests of landowners at having their lands and homes in these reservoir sites, included in Federal reserves. As a result the Government retained in reserve the three smaller reservoirs to the extent only of their available capacity, 340,000 acre-feet (their actual surveyed capacity is 990,000 acre-feet), and abandoned entirely the Big Valley, which, with a capacity of 3,196,000 acre-feet, could have received and stored of the flow, in excess of that stored by the smaller reservoirs, not more than 430,000 acre-feet. So in this case the United States Reclamation Service, which is particularly concerned in reserving all available storage capacity, found that an apparent capacity of 4,186,000 acre-feet dwindled down in practice to 340,000 acre-feet.

E. G. Hopson, formerly supervising engineer of the United States Reclamation Service on the Pacific coast and now consulting engineer in the same department, thus expressed himself on this subject before the California State Water Problems Conference at its session on October 27, 1915:

"As to the possibility of reservoirs holding back the floods of the Sacramento Valley there have been some very definite statements. We have collected a mass of information. All the reservoir sites are known to us and have been surveyed. It is impossible to hold back the greater part of the Sacramento floods by use of reservoirs. There are only two effective reservoir sites that I know of, that at Iron Canyon and one on the Pitt River, and these could take care for only the peak of the floods. Reservoirs never could hold back the great mass of flood water, and on that we can not lay too much emphasis. I think there is more fallacy abroad on that point than on any other point having to do with water problems. We could use all the sites available for the storage of flood waters and they would affect only to an insignificant extent the flood problems."

Opposition to and criticism of the project based on this misconception of the availability of storage reservoirs is fast disappearing as the facts become known and understood.

The Iron Canyon Reservoir, as projected by the United States Reclamation Service, is one of the few storage reservoirs which could be made of value to the Sacramento River flood-control project. Concerning the measures of that value there is practical agreement between this board and the Reclamation Service, as is evidenced by correspondence attached to the report of the Iron Canyon project published in 1915. The early completion of that project, with satisfactory operation in the interest of flood control, would justify material modification and possibly entire elimination of the by-pass system, so far as it applies to the Butte Basin, but would not justify changes elsewhere.

It should be said, however, that the Reclamation Service report offered a number of alternative plans, some of which do not provide for any measure of flood control. The particular plan which was recommended by the Board of Review named by Secretary of the Interior Lane—"B 3"—does not provide any measure of flood control and does interfere with navigation. It would cost $3,600,000 additional to add the features which would make this plan care for the excess flood beyond the quantity the river can accommodate and $4,000,000 to pay for improvement to navigation necessitated by adoption of the plan.

It is true that reservoirs hereafter constructed may prove additional factors of safety to the Sacramento flood-control project, but only to the extent of the flood which they will hold back at flood stage, and that project has been so planned that they can fit into it when built.

V. S. McClatchy,
A. G. Folger,
W. T. Ellis,
Peter Cook,
G. A. Atherton,
Louis H. Frankenheimer,
M. K. Zumwalt,
State Reclamation Board, State of California.

Exhibit H.

[Extracts from hearing before the Committee on Rivers and Harbors of the House of Representatives, July 23 and 24, 1915, during the inspection of the Sacramento, Feather, and San Joaquin Rivers by the committee.]

STATEMENTS BY MAJ. L. H. RAND, UNITED STATES ARMY, OF CALIFORNIA DÉBRIS COMMISSION; G. A. ATHERTON, MEMBER STATE RECLAMATION BOARD; A. E. ANDERSON, PRESIDENT CALIFORNIA TRANSPORTATION CO.; P. J. HARNEY, PRESIDENT SACRAMENTO TRASPORTATION CO.; HON. CHARLES F. CURRY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA; AND P. C. DRESCHER, OF SACRAMENTO, CAL.

On Board the Steamship "Colusa,"
On the Sacramento and San Joaquin Rivers,
July 23, 1915.

[Notes taken by and dictated to the stenographer at different times en route from Meridian to Sacramento and Stockton on examination of Sacramento and San Joaquin Rivers, Cal.]

Mr. Atherton. The only thing at the present time that I care to call your attention to is the marking on this plan in red—the navigable channels between this point here [pointing] and up to Stockton. These channels have in every instance 9 or more feet of water and are 500 to 600 feet in width. They are navigated every day in the year. The lands are in a high state of cultivation, and all of the traffic with this territory is done by boats. The produce is largely potatoes, onions, beets, and barley, and it is shipped to San Francisco. There are about 200,000 acres in this territory, and of these channels there are 210 miles. The shoalest channels that we have in this territory are the 6 miles from here [pointing] into the city of Stockton. There the Government has to do considerable work to maintain 9 feet. The distance is about 45½ miles from Stockton to the mouth of the San Joaquin. We go down 61 miles from Sacramento to the junction of the two rivers, or to Collinsville. Very many of these channels have been constructed by private enterprise in connection with the reclamation of these lands through the raw tules. I think in this interior territory there is not a place where the farmer has to haul more than 3 miles to water. Between Stockton and the mouth of the river I think there is no difficulty at all in getting economically the necessary cross sections to take care of the flood waters that have ever occurred. There is one place on the river where a by-pass is necessary. The head of navigation is practically in Stockton, but this summer the river has been operated 20 miles above Stockton, and all of the year for about 15 miles above Stockton there is navigation. * * *

The Chairman. The captain of the boat said the new cut we just passed through is better for navigation purposes than the old one.

The river is like the Mississippi. If it makes a cut-off in one place, it will lengthen at some place else; so that it is ever practically the same length.

Mr. ANDERSON. The two large companies that handle commerce below Sacramento are the Southern Pacific and California Transportation Co., my company. I should say that we handle, combined, about 500,000 tons between Sacramento and San Francisco.

Capt. RAND. The commerce for the Sacramento is 720,000 tons, with a valuation of $38,000,000, and for the San Joaquin 772,000, valued at $35,479,000.

Mr. ANDERSON. The California Transportation Co.'s tonnage is all from Sacramento and below. Then there is also quite a tonnage on the lower river carried by schooners and gasoline boats towing barges. There are something like 200 boats of all kinds—schooners, barges, etc. Four companies operate 26 steamboats, including California Transportation Co. and the Southern Pacific. The Sacramento Transportation Co. operates 24 barges in addition. There are two regular lines operating above Sacramento—the Sacramento Transportation Co. and the Farmers' Transportation Co. The Farmers run twice a week from San Francisco to Colusa, each boat taking one week for the round trip, and the Sacramento Transportation Co. operates regularly twice a week from San Francisco to Colusa and above. Each boat makes one round trip a week. Above Colusa the business is all handled by Sacramento Transportation Co. on flat barges towed by light-draft steamboats. One boat and barge operate regularly to Chico Landing from Sacramento. When more boats are needed they are sent up. Chico Landing has been the highest upriver point any company has operated to in the last two years. No boat has gone to Red Bluff in the last two years and possibly last four years. They have found it unprofitable to operate up that far. The water dropped too fast on them, and snags found their way into the channel. The freight on the Sacramento, northbound, consists of merchandise of every type—seed, grain, cereals of all kinds, bags to put the crops in, and, of course, supplies of all kinds for those towns along the river. The southbound tonnage is grain, beans, dried fruits, rice, canned fruit, etc. The barges have a capacity of 800 tons.

Maj. HARNEY. Our total tonnage was 184,000 tons. Of the volume of tonnage that we carry from Sacramento to all points in the Sacramento River, more than half of that total volume is destined for and shipped from points above Sacramento. The last trip to Red Bluff we made June 23, 1911. It took us 30 days to make the run. We had a very big freight on that trip. We got up to Tehama, 13 miles from Red Bluff, and we could not make that 13 miles. We had to haul all the freight by team to the cars and ship it by rail. In the early days the river came up usually about the 1st of November. Since 1906 or 1907 we do not have high river until about the middle of January. That is the reason we have not been operating to Red Bluff.

(NOTE.—At 10 o'clock we passed the steamer *Sacramento* loading grain at Nelsons Landing. She carries 500 tons. The boat we are on, the *Colusa*, can carry 600 tons when fully loaded.)

Maj. HARNEY. We carry grain on light-draft barges. We go up to the upper reaches of the river with those barges and load 100 or 150 tons and keep on loading that barge as we come down the river, loading it to its full capacity, which is 800 to 850 tons. We built those barges so that we are able to take out 400 tons on a draft of 20 inches. In some places on the river we only have 26 inches. This boat draws about 29 inches light (*Colusa*).

Colusa has the largest tonnage of grain above Sacramento. So far as merchandise is concerned, that is determined by the population. The steamship transportation trucks the freight 8 or 10 miles from each bank of the river to their docks and carries it to San Francisco 20 per cent below the railroad rates.

We passed canneries yesterday that are full of canned fruit. Last year they were empty.

Capt. ANDERSON. Tonnage was less and passenger traffic was less in 1914 than in 1913. The answer is, merchants in the interior of the State were not doing the business in 1914 they were in 1913 and travel was not as great.

The Interstate Commerce Commission took from certain interior points in California their terminal rates. In the readjustment of the rates the railroads were to apply to an interior point, like Sacramento, the terminal rate plus the local. The rate on canned goods from the terminal to New York was 85 cents. A canal boat line put in a rate of 35 cents on canned goods and similar freight, and the Southern Pacific, fearing that the canned goods would get away from them, applied to the Interstate Commerce Commission for permission to issue a 40-cent rate. The local rail rate on canned goods from Sacramento to San Francisco is $2.20; from Fresno, $5. Now, then, a cannery in Sacramento gave me 200 tons of canned goods to bring to San Francisco and deliver to the Southern Pacific Co. for shipment to New York. My rate was $1.50 per ton from Sacramento to San Francisco. Inside of a week the Southern Pacific applied to the Interstate Commerce Commission for permission to put in a proportional rate of $1.50 on canned goods from Sacramento to San Francisco.

Maj. HARNEY. Eight or ten years ago the commerce was mostly grain on this upper Sacramento River. One farmer owned 54,000 acres. The result is that practically all of that land has been sold. With crops of grain it would produce 30,000 to 40,000 tons of freight. With diversified farming and irrigation that land will raise 150,000 tons of freight.

Between Sacramento and Colusa the river is in good shape. We can operate night and day on this river.

(NOTE.—Maj. Harney built this boat, the *Colusa*, two years ago, in anticipation of increased traffic on the river.)

Sacramento is the distributing center for the fruit industry in California. There are about 15 warehouses on the river. The farmers hold their grain until winter sometimes for good prices.

The boats carry 22 carloads of freight and take it promptly alongside of the ships in San Francisco Bay and other places. The railroads can not give the dispatch as there are delays in furnishing cars and delays in transferring and switching alongside of ships. Our boats run in to any bank and take freight from any farm.

Mr. DRESCHER. The lands in the valley produce from four to five crops of alfalfa a year, each crop giving from 1½ to 2 tons per acre, making a total production of from 7 to 10 tons a year. Two years ago this hay brought $12 and $13 a ton on the banks. Barley, they can produce 20 bags to the acre, each weighing from 100 to 110 pounds. That would be a moderate estimate. Potatoes, from 80 to 150 bags to the acre, weighing about 110 pounds to the bag, or about 2 bushels to the bag. Onions from 125 to 300 bags to the acre, 100 to 110 pounds to the sack. Vegetables of all kinds are raised and they run from 6 to 10 tons to the acre. With barley and wheat it is about 1 ton to the acre. With intensified farming it is sevenfold. One man at Meridian said his crop of sugar beets would be 15 to 20 tons per acre. The average production of Colorado is 10 tons to the acre, of California, a little over 10 tons to the acre. Two hundred and eighty pounds of sugar are produced from 1 ton of beets.

JULY 24, 1915.

NOTE.—We departed from Sacramento this morning at 8.30.

Mr. CURRY. Ninety per cent of all the asparagus canned in the United States is grown in this district from Courtland down. Two hundred carloads of fresh asparagus has already been shipped this year. Out of Courtland last year there was $10,000,000 worth of all kinds of deciduous fruits shipped, mostly pears, peaches, and fruits of that kind. The asparagus carloads consisted of 10 tons each. It costs about 7 cents a pound to land it in New York. The farmer gets 4 cents a pound for the asparagus in crates on his ranch. The crates weigh 7 pounds. Three cents is for handling, freight, and refrigeration. It is shipped by buyers and middlemen. They assume all the responsibility, paying the farmer 4 cents a pound, and they pay 10 cents a crate to sell it after it gets to New York. Three cents includes handling, hauling, refrigeration, and haulage at both ends of the route. We grow more potatoes, more beans, and more onions in through here than in any other section of similar size in California. The people on the east side have taken better care of their land, and all this produce is raised there. It is cultivated a little more intensively than other lands. This is all shipped by water, most of it going to San Francisco and Stockton, and is shipped by railroad from those points.

There is a mosquito fleet on the San Joaquin, as well as on the Sacramento, the tonnage of which can not be gotten. Every farmer has a landing place, and if they have got freight for this line they will put up a flag which will invite boats of this line to drop in and pick up the freight. Each line has its own flags. The boats will stop for one bag of potatoes. Every town or city water front on the river is owned by the municipalities. All the levees that have been put up have been put up by the owners of the land themselves. Around Sacramento and Marysville a levee is made. Sacramento contributed $75,000 toward purchasing a point 65 miles below for improving the nevigation of the river. The land back of the levees slopes down as it goes back to about 22 feet below the high-water level. That land has a sedimentary deposit of about 12 to 14 feet. Below that is a muddy deposit. They do not have to irrigate that land out there at all, but if you do irrigate it a little it will do better. The land here does not need fertilization, but there are some very peculiar streaks in the soil along here. On the east side of the river is a famous cherry belt. In the cherry belt, which is a narrow strip about 12 to 14 miles long, these trees grow very well and bear very well, but when you get out of that strip you can not grow them at all. They have experimented with the land, so that they have got it planted in what it will grow the best and most of. They raise fruits and berries of all kinds. The citrus fruits are not raised here, but they do better farther north. Almonds and English walnuts are raised here. It takes a nut tree five or six years before they bear good. They find here that it is best to take the pear trees out when they are 20 years old. They will bear when they are 30 or 40 years old. The pear tree will be growing at its best when it is from 8 to 20 years old. Here they take them out when they are 20 and put in a new tree. The best the farmers can get this year for their peaches is $10 a ton for about one-third of their crop. They will get $25 a ton for their pears. Last year they got $40 for pears and $25 for peaches.

Capt. ANDERSON. In 1909 the River Improvement Association paid $120,000 and the State appropriated $80,000 for rights of way down here, which have been turned over to the United States. These rights of way are in territory now being worked by the United States dredges.

Maj. RAND. The dredges take out 300,000 yards a month each. The dredges cost about $50,000 more than the estimate.

About $4,500,000 is to be expended on dredging down here, and the other $1,300,000 is to be expended on weirs.

Mr. CURRY. Mr. Chairman, the Committee on Flood Control tried not to be narrow, sectional, or provincial, or more than ordinarily selfish. The reason why the Mississippi River and the Sacramento River are included in this bill, and no other projects, is because they are the only two projects in the United States that have been thoroughly investigated and surveyed and reported upon to Congress by the Chief of Engineers with an itemized estimate of cost.

In the third section of this bill we have tried to provide for the investigation and report of other projects throughout the United States. The Mississippi project is of paramount importance on account of the number of States interested and the immense amount of land that will be reclaimed for agriculture.

Recognizing that fact, although I was a member of the committee, and knowing how much the Sacramento River project meant to my people, my district, my State, and the Nation, I stated before the committee that if the inclusion of the Sacramento River project would jeopardize the success of the Mississippi River project, I did not want it to be considered. As a matter of equity and right and justice it was, however, included in the bill.

The gentleman from Pennsylvania [Mr. MOORE] says that it is a navigation project pure and simple, and should be in the river and harbor bill. It was in the river and harbor bill at the second session of the last Congress and passed this House without a dissenting voice or vote. The gentleman from Wisconsin [Mr. FREAR], on the other hand, says that it is a reclamation project pure and simple. Now, they can not both be right, but possibly, like Ananias and Sapphira of old, they are both partly right. [Laughter.]

It is partly a navigation project and partly a reclamation project and partly a flood-control project; and I will read to you what has been stated on that proposition by the Army engineers.

Mr. SMITH of Michigan. Mr. Chairman, will the gentleman yield for a question?

Mr. CURRY. I will.

Mr. SMITH of Michigan. Do you have in mind the number of acres that will be reclaimed by the Mississippi River project, and also the number of acres that will be reclaimed by the Sacramento project?

Mr. CURRY. Yes. The Mississippi River project will permit of the reclamation of about 15,000,000 or 16,000,000 acres of land. On the Sacramento River at the present time there are 350,000 acres reclaimed and 400,000 acres in the course of reclamation, and this project will permit of the reclamation of 1,000,000 more by private enterprise.

I want to impress upon the minds of the Members of the House that every dollar of this $5,600,000 is to be used on the Sacramento River itself for widening and straightening and deepening the river and for the construction of four weirs, over which the surplus water will flow into the by-passes, and the State of California will also contribute $5,600,000 for the widening and deepening and straightening of the river and the construction of these weirs. The by-passes will be 90 miles long and from 1,000 to 14,000 feet wide. The property owners on the Sacramento have already constructed 519 miles of levees, at a cost of $20,000,000. Under the proposed project they will construct 90 miles of by-passes from 1,000 to 14,000 feet wide within 190 miles of levees, at a cost to them of about $30,000,000 more.

In the report of the Chief of Engineers dated July 17, 1913, Rivers and Harbors Document No. 5, Sixty-third Congress, first session, appears the following:

This commission knows of no way of maintaining navigability with certainty and permanence except under a plan which is part of a plan for flood and débris control.

Reference has been made to the fact that in isolated cases individual property owners may be injured. That is true, but they will be compensated. Section 12 of the California reclamation board act provides as follows:

SEC. 12. The reclamation board shall have power to acquire either within or without the boundaries of the district, by purchase, condemnation, or by other lawful means, in the name of the Sacramento and Jan Joaquin drainage district, from private persons, corporations, reclamation, swamp land, levee, protection or drainage districts, or other organizations or associations, all lands, rights of way, easements, property or material necessary or requisite for the purpose of by-passes, weirs, cuts, canals, sumps, levees, overflow channels, and basins, reservoirs, and other flood-control works, and other necessary purposes; to construct, clear, and maintain by-passes, levees, canals, sumps, overflow channels, and basins, reservoirs, and other flood-control works; to make contracts in the name of said district to indemnify or compensate any owner of land or other property for any injury or damage caused by the exercise of the powers by this act conferred, or arising out of the use, taking, or damage of any property for any of such purposes.

The CHAIRMAN. The time of the gentleman from California has expired, and all time has expired. The question is on the motion to strike out the paragraph.

The question was taken, and the amendment was rejected.

Mr. MOORE of Pennsylvania. A parliamentary inquiry, Mr. Chairman.

The CHAIRMAN. The gentleman will state it.

Mr. MOORE of Pennsylvania. Was all debate on the last paragraph ended by agreement?

The CHAIRMAN. It was.

The Clerk read as follows:

(a) All money appropriated under authority of this section shall be expended under the direction of the Secretary of War, in accordance with the plans, specifications, and recommendations of the California Débris Commission, as approved by the Chief of Engineers, for the control of floods, removal of débris, and the general improvement of the Sacramento River: *Provided*, That no money shall be expended under authority of this section until assurances have been given satisfactory to the Secretary of War (a) that the State of California will contribute annually for such work a sum equal to such sum as may be expended annually therefor by the United States under authority of this section; (b) that such equal contributions by the State of California will continue annually until the full equal share of the cost of such work shall have been contributed by said State; and (c) that the river levees contemplated in the report of the California Débris Commission, dated August 10, 1910, will be constructed to such grade and section and within such time as may be required by said commission: *Provided further*, That said State shall not be required to expend for such work, for any one year, a sum larger than that expended thereon by the United States during the same year: *And provided further*, That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

Mr. HUMPHREY of Washington. Mr. Chairman, it so happens that I am more or less familiar with the Sacramento project. I presume, outside of the members of the California delegation, I am probably more familiar with it than any other Member of the House. I have been up and down the river several times, and I have been through the Sacramento Valley a great many times. This question of improving the river was considered by the Committee on Rivers and Harbors on several occasions, and twice was included in the river and harbor bill.

I want to make this explanation to the House: As near as it is possible to arrive at it, the money proposed to be expended on the Sacramento is equal to the amount necessary to improve it for navigation. I am thoroughly convinced that the Government by expending this amount of money will improve the Sacramento for the purposes of navigation for a considerably less amount than it would if it continued the present plan. That is the reason for including it in the river and harbor bill. The money going into this project, while it helps reclamation, will be entirely for navigation and be the cheapest way of improving the river for that purpose. For that reason I hope the appropriation will be made.

Mr. TILSON. Will the gentleman yield?

Mr. HUMPHREY of Washington. Yes.

Mr. TILSON. How much commerce is there on the Sacramento River?

Mr. HUMPHREY of Washington. It is very large. The gentleman smiles as though he had struck a river without any commerce. It is not one of those rivers, I assure the gentleman, that is improved mainly upon the purpose of prospective commerce. As I stated, the River and Harbor Committee came to the unanimous conclusion that it would be cheaper for the Government to join in this project than it would to continue in the way they are doing now. Last year the commerce upon the river was 720,000 tons, with a value of $38,000,000.

The CHAIRMAN. The time of the gentleman from Washington has expired.

Mr. CANNON. Mr. Chairman, there are rivers and rivers. The Mississippi River rises in the northern boundary of Minnesota and flows into the Gulf. It has no more respect for State boundaries than a duck has for a June bug. [Laughter.] It is exceptional, and therefore I have always voted for appropriations for the construction of levees. It is said that it is to improve navigation. That is a good deal of a myth in point of fact. I do not believe that the rivers in the United States are to be benefited by improvements from the standpoint of navigation, but I think the Mississippi River is exceptional.

The Sacramento River rises in California, practically, and flows through California into the Bay of San Francisco. The Wabash rises in Indiana—a gentleman near me says in Ohio, but I take it is in Indiana—and empties into the Ohio River. The Eel River rises in Indiana and empties into the Ohio River, and the Sangamon and Rock Rivers rise in Illinois—and many other rivers—and empty in the Mississippi.

In my judgment this bill, so far as it pertains to the Mississippi River, is a good project, and I am heartily in favor of it for the reasons assigned. I could give a good many other reasons if I had the time.

But what I do not like about the bill is its possibilities looking to the future. It seems to me that it is to beget appropriations, perchance, in the future by combination, breeding appropriations that localities ought to bear. In my State and your State, Mr. Representative FOSTER, it has cost us $15 to $20 an acre to drain the swamp lands and other lands which have an outlet. I fear, looking to the future, that the bill, although dealing only with the Mississippi River and the Sacramento River, is to cover a great lot of appropriations for the drainage of swamp lands that the State on the one hand and the people on the other hand ought to bear. [Applause.]

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I ask unanimous consent that all debate on this paragraph and amendments thereto close in five minutes.

Mr. FREAR. I want five minutes.

Mr. HUMPHREYS of Mississippi. Has the gentleman an amendment to offer to this paragraph?

Mr. FREAR. I want to read in from the record of California some things on this very proposition.

Mr. MANN. We would like to have 20 minutes on this side on the paragraph.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I ask unanimous consent that all debate on this paragraph and amendments thereto close in 40 minutes—20 minutes to be controlled by the gentleman from Illinois and 20 minutes by myself.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and amendments thereto close in 40 minutes—20 minutes to be controlled by himself and 20 minutes by the gentleman from Illinois. Is there objection? [After a pause.] The Chair hears none.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, do I understand the gentleman from Wisconsin [Mr. FREAR] has an amendment which he desires to offer?

Mr. FREAR. No.

Mr. HUMPHREYS of Mississippi. I yield five minutes to the gentleman from North Carolina [Mr. SMALL].

Mr. SMALL. Mr. Chairman, I am not opposed to the principle contained in this bill. I think the time has come when it is necessary that there should be a wise and fair cooperation between the Federal Government and the localities in flood control. I do wish, however, that in this particular bill a scheme had been presented for consideration applicable to all meritorious cases of flood control, and I think the bill is defective in that respect. I further wish that in this particular item for the Mississippi River the matter of its improvement for navigation had not been included, but that the bill had devoted itself exclusively to flood control. I understand the difficulties pointed out by the chairman of the committee, but still it seems to me they were not insuperable. I think further that the amendment which was adopted in the Committee of the Whole last Wednesday, increasing local cooperation as to the Mississippi River from one-third to one-half, was a wise amendment; but subject to those criticisms I think the principle is right and the bill as a whole will receive my support.

As to the matter of flood control of the Sacramento and the San Joaquin River and Valleys, I believe the proposition as contained in the bill is meritorious. Gentlemen must remember that the entire cost of this project amounts to $33,000,000; that of that $33,000,000 about $22,000,000 is assumed outright by the landowners embraced in the territory to be served.

Mr. MOORE of Pennsylvania. Mr. Chairman, will the gentleman yield?

Mr. SMALL. Yes.

Mr. MOORE of Pennsylvania. How does the gentleman from California interpret the last proviso in this paragraph:

> That the total contributions so required of the State of California shall not exceed in the aggregate $5,600,000.

Why limit the contribution of the State of California?

Mr. SMALL. I will answer: The total expenditure resulting in benefit to navigation is $11,717,000, of which one-half is to be borne by the Federal Government. I call the attention of the chairman of the committee to that in order that he may explain it. It should have been $5,858,500 instead of $5,600,000.

Mr. HUMPHREYS of Mississippi. That amount has been appropriated.

Mr. SMALL. In other words, the cost of the entire project is $33,000,000, $22,000,000 to be borne outright by the lands to be affected, leaving $11,717,000, and of that amount one-half, or $5,858,500, is to be borne entirely by the State of California. In other words, Congress is to appropriate one-half of the $11,717,000.

Mr. PARKER of New York. Mr. Chairman, will the gentleman yield?

Mr. SMALL. Yes.

Mr. PARKER of New York. Knowing the gentleman as an expert on river and harbor matters, I wish to ask him if in his judgment this whole bill, to all intents and purposes, is not for the same purpose as the river and harbor appropriation bill?

Mr. SMALL. Except as to the Sacramento. As to the item here for the Mississippi River, it is simply a supplementary river and harbor appropriation bill. It is different as to the Sacramento River.

The CHAIRMAN. The time of the gentleman from North Carolina has expired.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Wisconsin [Mr. FREAR].

Mr. FREAR. Mr. Chairman, it is hard to discuss an important matter like this in five minutes, and I do not feel able to do more than to make a suggestion. Take, for instance, the request for information by the gentleman from Connecticut a few moments ago as to the commerce on this river. There is commerce on the Sacramento River, largely around the mouth of the river. I went up that river last summer and passed just one small steamboat on the whole trip. I assume it has a substantial commerce, but this bill proposes $5,600,000. I have here a protest from the Sutter County Board of Supervisors opposing the proposition, and I have a number of reports that have been handed to me. I have no interest in it, and I know that the people who gave them to me had no financial interest in it. I want to read from a statement made by Mr. Ellis, who is a member of the California commission. On November 9, 1915, in the public hearing, he said:

> I am going to voice one more objection, and that is that the construction of the by-pass in the Sutter Basin is going to be a direct menace to the city of Sacramento, which is already in an admittedly dangerous situation on account of the delay in constructing the Brytes Bend by-pass, and which will have no unnecessary margin of safety even after that by-pass is constructed.

Mr. Chairman, this is for land reclamation, not for flood control, and that is the trouble with the bill.

Mr. GREEN of Iowa. Mr. Chairman, will the gentleman yield?

Mr. FREAR. I can not yield, as I have not the time. I want to read now from the statement of Mr. Von Geldern, who was also before the committee at this public hearing. He says:

> The people realize that it is necessary to have a plan of flood control, and that under any plan they would be subject to some danger, but they object to the unnecessary added danger caused by the shifting of the location of the by-pass. It is the unnecessary flooding of 20,000 acres of highly cultivated land at any time that a break should occur in the west levee of the Feather River that they object to.

Mr. RAKER. Mr. Chairman, will the gentleman yield?

Mr. FREAR. That, I understand, is because the armor people have insisted and you have been compelled to adopt the proposed eastern by-pass.

Mr. RAKER. Is it not a fact that the only by-pass kept up is the weirs, out of the Yola, and that it absolutely protected the river and made it navigable?

Mr. FREAR. The Feather River is not to any appreciable extent a navigable river, and where this by-pass has been proposed is near the Feather River and not the Sacramento, as I am informed, and I have quoted from the record to show that, according to the engineer, we are to increase the danger to the city of Sacramento.

Mr. RAKER. Then is it not peculiar that the people of Sacramento are in favor of this legislation, for they know it will not endanger but will help to protect it?

Here is a protest which comes from the people of Sutter County, which I would like to read and put in the RECORD, showing what injustice has been done to those people, and which has been done over their protest, where they say 20,000 to 30,000 acres of land is to be flooded out there—their land—valued at $20,000,000; and they are to be subject to this unnecessary charge by reason of the project that is to be put through. Now, this is not flood-control, but land reclamation. There is some navigation at the entrance of the river, I understand, but there is very little, and yet we are to expend $5,800,000. Have there been any lives lost out there? Have there been any——

Mr. CURRY. Scores of lives have been lost.

Mr. FREAR. When?

Mr. CURRY. In 1904 and 1909, and $11,000,000 worth of property destroyed.

Mr. FREAR. I will accept that; I do not question the gentleman's statement.

Mr. CURRY. If the gentleman will read the report, he will see the destruction of property.

The CHAIRMAN. The time of the gentleman has expired.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Iowa [Mr. GREEN].

Mr. GREEN of Iowa. Mr. Chairman, I move to strike out the proviso beginning with the word "and," in line 23, page 5, and continue to the end of the paragraph.

Mr. Chairman, while I am not in favor of this provision for reclamation of land along the Sacramento River as it stands, it has some features in it that are more to be commended than the provisions which are contained in reference to the Mississippi River. I refer more particularly just now to the provisions with reference to the construction of by-passes and the amount to be paid by the locality benefited. I have never believed—and I know of a large number of people along the Mississippi who have never believed—that it would be possible to control the floods of that river and keep it within bounds with any levees which could possibly be constructed. The effect of the construction of levees is naturally to raise not only the height of the flood itself but also in the long run by reason of the caving of the banks to raise the level of the stream bed than to lower the bed itself and also to widen it.

I have a letter here which I received this morning from a man I never heard of before who seems to live at Hernandez, Miss. I think he is in Mr. STEPHENS's district; I am not certain, however, about that. This man says:

> The revetment system is the only thing that will solve the river problem. You can build your levees until they reach to the moon, and the river head will rise accordingly, and the same old trouble will always be with us like before and will call for an annual "pork-barrel" appropriation for the benefit of the levee contractors.

Mr. HUSTED. Mr. Chairman, will the gentleman yield for a question?

Mr. GREEN of Iowa. I will.

Mr. HUSTED. Does the gentleman realize that if this project is completed as provided in the bill that the flood height in the Mississippi River would not be raised to exceed 3 inches?

Mr. GREEN of Iowa. I know exactly to the contrary. The gentleman is in error about it, and that is the testimony of most of the people living along the Mississippi who have had any opportunity to observe it. There is only one way you can lower the level, and that is by controlling in some kind of way the headwaters by either reservoirs or——

Mr. RAKER. Will the gentleman yield for just one question?

Mr. GREEN of Iowa. I shall have to decline to yield; I regret that I have to do so. The only other method is that which is adopted in reference to the Sacramento River, which I entirely approve, and that is to establish by-passes which permit the water to pass off to one side. The system that is proposed to be adopted in reference to the Sacramento River is practicable. The system which is proposed to be adopted in reference to the Mississippi River is not practicable, and will not, in my judgment, control the flood waters. Now, something was said the other day in reference to the difference between the levee and the revetment system, and, to my surprise—although I ought not to have been surprised—I found a number of Members of the House did not understand the difference between a levee and a revetment. Of course those who live along the Missouri and Mississippi Rivers understand it perfectly. The levee system is one which raises the natural bank and seeks to prevent floods in that way. The revetment system is building out into the water over the natural bank to protect it; and, without raising the natural bank, it tends to deepen and scour out the channel and keeps the river in the place where the revetment is built.

Now, in these rivers in the East you find the Potomac, the Connecticut, the Hudson in the same place in six months that they are now. On the Missouri or Mississippi, in five months or six months or a year they may be 5 miles away from the channel which they now occupy. This makes it necessary to use the revetment system. The revetments are large willow mats extending out into the water 20 or 30 or even more feet, covered in the first instance with rock. They are not in the first instance intended to prevent overflow, for they do not raise the bank; but in the long run they are a help in this direction, because, as I have said, they confine and deepen the channel. For the same reason revetments are of great aid to navigation, while the levees as used along the Mississippi a mile or more from the channel banks, in case of flood always cause them to cave, fill up the channel, and widen it, instead of deepening. Some day the river will reach the levees with its main channel, unless the banks are revetted. For these reasons I think the levee plan will be a failure and result in the expenditure of enormous sums without any corresponding benefit.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Pennsylvania [Mr. MOORE].

Mr. MOORE of Pennsylvania. Mr. Chairman, I agree with the gentleman from California [Mr. CURRY] that this is an Ananias and Sapphira proposition, and I think he fits both designations in his very elaborate report, which in the matter of eloquence and argument vies with that of the distinguished gentleman from Mississippi on the Mississippi River proposition. It is both a navigation and a reclamation project. It will involve an expenditure in the end of $35,000,000 at least. There is a limitation as to what the State of California shall expend, although I think any careful observer will admit the State of California has participated very liberally and fairly in the improvement made. But if anyone thinks this is a navigation proposition, let him read page 31 of the report of the Committee on Flood Control, headed "A business investment for the United States."

The gentleman from California admits that this project was taken care of in the rivers and harbors bill. He admits that the navigation features were looked after there, but he saw very cleverly, just as the gentleman from Mississippi saw, the short cut to prosperity, the short cut to the end, by deserting the Rivers and Harbors Committee, leaving the "pork barrel" stand in the middle of the road, and going out alone with these two new and separate projects. They make a fine team. Hitched together, they are doing pretty well toward the passage of this bill, which the gentleman from California very naturally says is a proper bill. Some other gentlemen have intimated that other projects ought to be brought under consideration in this bill. As it is, however, the bill specializes. It first takes care of these two particular projects and leaves "the devil to take the hindmost." That is one of the things that subjects it to criticism.

Mr. HUSTED. Will the gentleman admit that there are only two projects involving the flood control that are ready for action at this time?

Mr. MOORE of Pennsylvania. I will not admit that, because in my own State of Pennsylvania there are frequent floods on the Susquehanna River and its tributaries, in which life is lost and in which there is great destruction of property. I could throw into the balance dozens of other rivers throughout the country needing improvement and protection, just as these two rivers do.

Mr. HULBERT. Will the gentleman yield for a question?

Mr. MOORE of Pennsylvania. For a question.

Mr. HULBERT. Has the gentleman recently read in the public press of the flood conditions on the upper Hudson at Albany, and on the Genessee River at Rochester, and has the gentleman any knowledge as to whether any effort was made by this committee to meet those conditions or not?

Mr. MOORE of Pennsylvania. There are constant floods on the upper Hudson that sometimes carry away lumber yards, and sometimes do the same kind of damage that the Mississippi River does in the South. They carry away the little huts along the river banks, encroaching upon the river, and push them back, and the people run away, just as they do down on the Mississippi. I do not throw this up to the gentlemen from Mississippi, but on the Hudson they do not come to the Government and ask for aid along this line; they suffer their own loss.

I want to call attention to the fact that on page 31, referring to "the navigation advantages to the United States" of this expenditure of money, the committee in its report refers to the valleys of the Sacramento and San Joaquin, as operated together for the benefit of the State of California. The fact is there set forth that these two valleys, comprising about 10,000,000 acres, will grow to advantage any product called for by the necessities or desires of the Nation. This is a valuable statement, because we are to spend $5,600,000 of Government money for the 10,000,000 acres to be reclaimed in two valleys of California, and $45,000,000 for the 16,000,000 acres to be reclaimed along the Mississippi River.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Ohio [Mr. GARD].

Mr. GARD. Mr. Chairman, I want to readvise the committee as to the pleasure I have in voting for any legislation to protect any community against flood ravage or damage. The great trouble which I find in this bill is not that it is not a flood protection, but that it alternates between a navigation bill and a land-reclamation bill. The gentleman from California who has just spoken has said very frankly that the State of California contributes $5,000,000 toward the navigation end of it; that it is a navigation bill; and that the interests of the State of California are in the direction of navigation.

Mr. CURRY. The gentleman entirely misunderstood me.

Mr. GARD. I said "the gentleman from California," meaning the gentleman's colleague, Mr. RAKER, who first spoke, and who said it was entirely in the interest of navigation. I comprehend that the gentleman, and I think that other gentlemen on the other side, did say that it was a combination of navigation and reclamation.

Mr. CURRY. As to flood control, the people of California in that part pay the property owners $30,000,000 for the flood control, and the State pays $5,600,000, and the Government $5,600,000 on the navigability of the river.

Mr. GARD. My purpose in speaking is largely to procure information, and therefore I would ask of the gentlemen who represent California, any of them, whether or not this $5,000,000 which the State contributes is to be levied in benefits upon any of the land adjoining this proposed improvement?

Mr. CURRY. No, sir. That is an appropriation from the State treasury, and the benefits to the land come under the commission—that is, the land is to be reclaimed according to the plans and specifications of the Army engineers, but to be reclaimed at private expense. The landowners pay for all the reclamation.

Mr. GARD. What I want to know is whether this $5,000,000 is to be reassessed upon adjoining property and paid back into the revenues of the State?

Mr. CURRY. No.

Mr. RAKER. Will the gentleman yield now?

Mr. GARD. For just a moment. My time is limited, but I will yield.

Mr. RAKER. The statement is made, and it is all through the bill that $5,000,000 is to be paid by the Government and $5,000,000 by the State for the purpose of keeping the river navigable. The $22,000,000 handles the flood control, and therefore the joint action.

Mr. GARD. Therefore this bill is entirely outside the purview of a flood-control bill, as I view it.

Mr. CURRY. We are willing for the Government to pay for the flood control if they want to do so.

Mr. GARD. I have no doubt the gentleman would be very glad to have the Government do that.

Another question, which I would like to ask of the chairman of the committee. On page 8 of this bill it provides that before anything is to be done by Government action, three things must appear, as follows:

(a) What Federal interest, if any, is involved in the proposed improvement; (b) what share of the expense, if any, should be borne by the United States; and (c) the advisability of adopting the project.

Now I will say, entirely as a matter of principle, that we have no report here from this committee upon any of these different propositions. It does not appear what Federal interest is involved, or what expense is entailed, or what share the Federal Government will have in either project. It is simply stated there are two rivers existing, and that they have large interests which should be cared for.

The committee should have handled the subject in a larger way and in a fairer way, and should have given the House the benefit of their information as to whether these are Federal interests, and what the expense should be, and the advisability of adopting the project. Those are the big things which the House wants to know.

The CHAIRMAN. The time of the gentleman from Ohio has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, in answer to the gentleman from Pennsylvania [Mr. MOORE], and also in answer to the questions that were propounded to him, or rather the interjections made by the gentleman from New York [Mr. HULBERT], I will say that these two projects are the only projects that have been worked out by the engineers and reported upon to the Committee on Flood Control and are now ready for congressional action.

Mr. GARD. Mr. Chairman, will the gentleman yield?

Mr. HUMPHREYS of Mississippi. Yes.

Mr. GARD. The gentleman intends to say that these are the only projects that have been worked out by the Army engineers?

Mr. HUMPHREYS of Mississippi. By the United States Government. Of course the United States Government can act only through an agency.

Mr. GARD. The gentleman does not mean to say that there are not other projects that have been worked out far better than these?

Mr. HUMPHREYS of Mississippi. I say no projects on the face of the earth have been better worked out than these.

In 1893 the Federal Government created the California Débris Commission. It has been at work since that time upon this proposition and has evolved this plan. It is for flood control and navigation, and the two branches of the project can not be separated. It would be a thoroughly stupid thing, in my opinion, to undertake to separate them, and to provide this $5,600,000 for the improvement of navigation there without requiring that the rest of the plan be carried out.

The Federal interest is shown very clearly in the reports of the California Débris Commission, and the amount of the local contribution is set out very fully. I do not know upon just what the gentleman bases his criticism. I agree with him in regretting that we have not a better bill than this. I am sorry that gentlemen do not suggest a better bill rather than criticize us for a failure to report a better bill.

Mr. GARD. I would be very glad to if I had the opportunity.

Mr. HUMPHREYS of Mississippi. The gentleman is a Member of Congress and has been here several years, and he has had very distinguished service. We are waiting for him to act.

Now, the gentleman from Pennsylvania [Mr. MOORE] refers to the floods on the Susquehanna. The gentleman ought to know, if he does not, that the Army Engineers are to-day investigating that river with a view to devising some means of flood control there, but they have not yet reported. On the Allegheny and Monongahela and tributaries very elaborate investigations are in progress, authorized by the Committee on Rivers and Harbors, of which the distinguished gentleman from New York [Mr. HULBERT] is a member. He should know that. But the reports have not come in. Surely the gentleman from Pennsylvania will not say that the people's Representatives in Congress ought to undertake the improvement of any river or harbor in this country for navigation, or adopt a project for the control of floods anywhere in the United States until that matter has been throughly investigated and a report has been had from the engineers showing how it will be done and the cost. The gentleman will not state that he believes a contrary course should be pursued.

The CHAIRMAN. The time of the gentleman from Mississippi has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I yield two minutes to the gentleman from Ohio [Mr. SWITZER].

The CHAIRMAN. The gentleman from Ohio [Mr. SWITZER] is recognized for two minutes.

Mr. SWITZER. Mr. Chairman, the gentleman who has just preceded me [Mr. HUMPHREYS of Mississippi] has covered fully what I was desirous to say upon one proposition, but I desire to call the attention of the committee to this fact: That the Committee on Rivers and Harbors adopted this provision after a thorough consideration of every feature of it in the second session of the Sixty-third Congress, after giving it careful consideration, and in last July about half of the members of the Committee on Rivers and Harbors, at the expense of the State of California, took a trip through the Sacramento Valley and personally inspected this proposition. I do not believe there is a member of the Committee on Rivers and Harbors who was on that trip and who went up and down the Sacramento River and conversed with the Army engineers and had pointed out to him what was expected to be done and what was expected to be accomplished but that fully indorses the proposition.

Here is a comprehensive scheme not only for improving but taking care of the navigability of the Sacramento River, but for reclaiming those waste lands along either side at this time, as well as controlling the floods, and that plan has been adopted, as I said, once.

Mr. GARD. Mr. Chairman, will the gentleman yield?

Mr. SWITZER. Yes.

Mr. GARD. Is the gentleman a member of the Committee on Rivers and Harbors?

Mr. SWITZER. I am.

Mr. GARD. Does the gentleman understand that the Committee on Rivers and Harbors reported out a bill carrying appropriations for the Sacramento and Feather Rivers in California this year?

Mr. SWITZER. That is all correct. But I understand no appropriation will be made under the authority given by this bill that will take effect until next year.

The CHAIRMAN. The time of the gentleman from Ohio has expired.

Mr. GARD. Does the gentleman know what the appropriation is?

The CHAIRMAN. The time of the gentleman from Ohio has expired.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from California [Mr. KAHN].

Mr. HUMPHREYS of Mississippi. I yield another minute, first, to the gentleman from Ohio [Mr. SWITZER].

Mr. SWITZER. So far as complaints coming in here from certain owners along the Sacramento Valley are concerned, that they will be injured by the adoption and enforcement of this scheme to reclaim the lands along the Sacramento Valley, there is no system that can be devised by man but will cause injury to some landowners. The lands of some will be taken by these by-passes, and the lands of others may be overflowed, but I have no doubt that those people will be recompensed for any injury they may suffer. Those details will be worked out by the State of California and under the laws and decisions of the courts of that State. The question should not be taken into consideration by this committee at this time.

Mr. PARKER of New York. Mr. Chairman, will the gentleman yield?

Mr. SWITZER. Yes.

Mr. PARKER of New York. Are not the motives in this bill for the improvement of the Sacramento River precisely the same as they were during the consideration of the river and harbor bill?

Mr. SWITZER. Certainly. We knew then it was a reclamation project as well as a navigation and a flood-control project.

Mr. PARKER of New York. In other words, you have shut out every other portion of the country except those two projects.

Mr. SWITZER. I am very much interested in the Ohio River project. The act adopting it recites that it is to be completed in 12 years' time, and I have no objection to taking any project out of the control of the Committee on Rivers and Harbors that we have passed upon favorably and saying that we will complete it within a certain time—one, two, three, or four years; in other words, put it under the continuing contract system.

Mr. HUMPHREYS of Mississippi. There is provision made for the Sacramento and Feather Rivers in the river and harbor bill, but this project has not been adopted

This project was carried in the river and harbor bill which was adopted by the House, but it failed in the Senate, and it only provided a small initial appropriation. This particular project is not carried in the river and harbor bill now, and has never been in any river and harbor bill which was enacted into law.

Mr. PARKER of New York. Will the gentleman yield?

Mr. HUMPHREYS of Mississippi. Yes.

Mr. PARKER of New York. The point I wanted to make is that the improvement of the Sacramento in this bill is a duplicate of the motive in the river and harbor bill. I am in accord with both of them, but you bring in two propositions here, and while in New York we have to pay 30 per cent of

the cost of these improvements, you do not give us a chance to get one dollar of appropriation.

Mr. HUMPHREYS of Mississippi. If I understood the debate in the House when the river and harbor bill was considered, there was complaint that we had singled out New York and given it the only new project in the bill and excluded everybody else. Did the gentleman find fault at that time?

Mr. PARKER of New York. No; not at all; but this is another proposition and you do not let us in on it.

Mr. HUMPHREYS of Mississippi. Yes; the gentleman did not find fault with the first, but he finds fault with this, because he is not in on it.

The CHAIRMAN. The time of the gentleman has expired.

Mr. KAHN. Mr. Chairman, the gentleman from Wisconsin [Mr. FREAR] has stated that there was a protest on the part of the people of Sutter County on this proposition because it might injure the city of Sacramento.

Mr. FREAR. That was Mr. Ellis, a member of the commission.

Mr. KAHN. As a matter of fact, the people of Sacramento are unanimous in their request for this legislation. The question was asked as to the extent of the commerce on the Sacramento. I believe that the reports show that the value of the trade on that river last year was $38,000,000, and that it carried 720,000 tons. That is river transportation. Of course the transportation over the railroads in the Sacramento Valley was many times greater.

One of the difficulties of the Sacramento is that every two or three years the river overflows its banks and causes very serious damage. The gentleman from Ohio [Mr. GARD] asked whether the Government of the United States was interested in this matter. I say to him, yes. Last year, in the spring of 1915, there was a sudden flood on the Sacramento which washed out the railroad tracks on the railroad line running between California and the States to the north. About 12 miles of road were destroyed. For about 10 days not a single mail train could pass north or south. The United States mails were stopped. The passenger traffic overland from San Francisco to Portland, Oreg., and Puget Sound cities was stopped, due to the floods of the Sacramento River.

Mr. GARD. Will the gentleman yield?

Mr. KAHN. Certainly.

Mr. GARD. I notice the river and harbor bill carries appropriations for the Sacramento and Feather Rivers of $200,000. Is that intended to do the same work as the appropriation in this bill will do?

Mr. KAHN. I do not think so; I think that is other work altogether. That is purely navigation work, and this is flood-control work as well as navigation work. If the gentleman could see the delta at the mouth of the Sacramento any year when it is in flood he would realize the necessity for this legislation. The water extends for miles over some of the best agricultural land in the universe. The crops are entirely destroyed. The farmer does not get a 5-cent piece out of his land on account of the overflow of the waters of the river.

The floods of the Sacramento occur every two or three years. This legislation will help the people of the State of California to control these floods. The Government of the United States, as I said before, is vitally interested in having these floods controlled.

Mr. PARKER of New York. Will the gentleman yield?

Mr. KAHN. Certainly.

Mr. PARKER of New York. Will the gentleman explain the difference between flood control and improvements in the interest of navigation?

Mr. KAHN. There is some difference, in my opinion. When the Sacramento is in flood great quantities of silt are carried in the waters of the stream, greater quantities than at ordinary times. Mare Island Navy Yard is beyond the mouth of the Sacramento, toward the southeast. The great quantities of silt that are carried down by reason of the flood fill up the channel, and the Government of the United States is put to great expense in keeping the channel to Mare Island clear.

Mr. PARKER of New York. Would not the improvement for navigation answer the same purpose as for flood control?

Mr. KAHN. I imagine that it would. But the gentleman seems to feel that other sections of the country ought to have been taken care of in this bill——

Mr. PARKER of New York. I think they should have been considered.

Mr. KAHN. And that seems to be his grievance. I feel that this Flood Control Committee will have a long existence. I hope it will become one of the greatest and most important committees of the House. It is to-day a great committee; and all these projects in connection with the Hudson, the Delaware, and the Susquehanna can be brought to that committee from time to time, and gradually the flood-control work can be done throughout the entire United States. [Applause.]

The CHAIRMAN. All time has expired, and the question is on the amendment of the gentleman from Wisconsin to strike out the paragraph.

Mr. FREAR. Mr. Chairman, that was a pro forma amendment, which I withdraw.

The CHAIRMAN. The gentleman from Iowa [Mr. GREEN] has an amendment, which the Clerk will report.

The Clerk read as follows:

Page 5, line 23, after the word "year," strike out the remainder of the paragraph.

The CHAIRMAN. The question is on the amendment offered by the gentleman from Iowa.

The question was taken, and the amendment was rejected.

The Clerk read as follows:

(b) All money contributed by the State of California, as herein provided, shall be expended under the direction of the California Debris Commission and in such manner as it may require or approve, and no money appropriated under authority of this section shall be expended in the purchase of or payment for any right of way, easement, or land acquired for the purposes of this improvement, but all such rights of way, easements, and lands shall be provided free of cost to the United States: *Provided*, That no money paid or expense incurred therefor shall be computed as a part of the contribution of the State of California toward the work of improvement herein provided for within the meaning of paragraph (a) of this section.

Mr. MOORE of Pennsylvania. Mr. Chairman, I move to strike out the proviso.

The CHAIRMAN. The gentleman from Pennsylvania offers an amendment, which the Clerk will report.

The Clerk read as follows:

Amend, on page 6 line 11, after the word "States," by striking out the proviso.

Mr. MOORE of Pennsylvania. Mr. Chairman, several members of the Committee on Rivers and Harbors having indicated that they propose to vote for this bill and that they are entirely in favor of the principle involved, I think it fair to compliment the chairman of the Committee on Flood Control at this time upon his foresight and acumen in organizing this Flood Control Committee. It looks very much as if the statement I made in response to the Speaker of the House of Representatives and the distinguished ex-Speaker, the gentleman from Illinois [Mr. CANNON], a little while ago, is true, namely, that this Flood Control Committee and this important bill for $50,600,000 marks the passing of the Rivers and Harbors Committee. It may be a good thing if we are all to be driven to the Flood Control Committee to be relieved of the charge of seeking "pork," which afflicts us when we go to the Committee on Rivers and Harbors. Then, of course, the influence of the Flood Control Committee will increase as that of the River and Harbor Committee diminishes. But it is for the members of the Committee on Rivers and Harbors themselves, I presume, to say whether they propose thus to pass into innocuous desuetude. I am not a member of that committee, never could become a member of that committee, and never expect to be, and, therefore, I can speak freely from the outside. I desire to read from the report of the Committee on Flood Control on page 31, which rather indicates——

Mr. SLOAN. Mr. Chairman, will the gentleman yield?

Mr. MOORE of Pennsylvania. I yield to the gentleman from Nebraska.

Mr. SLOAN. I just want to inquire if it was not the gentleman's foresight that impelled him to leave the Committee on Rivers and Harbors and go to another committee?

Mr. MOORE of Pennsylvania. I have just explained that I never was a member of the Committee on Rivers and Harbors—never could be—and now, of course, being associated with the gentleman from Nebraska on the Ways and Means Committee, never expect to be; but I shall always have business with the Committee on Rivers and Harbors, or, in the event of its being passé, the new and powerful Committee on Flood Control.

Mr. GOOD. Mr. Chairman, will the gentleman yield?

Mr. MOORE of Pennsylvania. Yes.

Mr. GOOD. The gentleman heard the statement of the gentleman from California [Mr. KAHN] as to the number of acres of land—the richest, he said, in all the world—that would be reclaimed in California, and also the statement of the gentleman from Mississippi [Mr. HUMPHREYS] in his speech, in which he stated that there were 16,000,000 acres of the cream of the world but awaiting the magic touch of the opening of the Treasury. The gentleman realized that they have no such land as that along the Delaware.

Mr. MOORE of Pennsylvania. That "cream awaiting the magic touch" was a poetic dream of the gentleman from Mississippi, the Pegasus of the Mississippi Valley. So far as the Delaware lands are concerned, they are not to be compared for a moment with these lands in the Sacramento or the San Joaquin or the Mississippi Valley. While we are on this subject of land values and productivity, about which our western and southern friends are wont to boast, I wish to say that the census of 1910 shows that Massachusetts is first in the value of farm products per acre of all the States of this Union, Rhode Island is second, Connecticut is third, and the little State of New Jersey is fourth. The West and South have no monopoly in the value of farm products.

We hear a great deal about the value of these reclaimed lands of the West and South, but we have lands for hundreds of thousands of people—yes, for millions—in the East. These lands are going begging in the East while we are spending eastern and western money—$45,000,000 of it, in addition to what has already been appropriated—to reclaim 16,000,000 acres down the Mississippi Valley, and $5,600,000, which is to grow to $35,000,000, to reclaim 10,000,000 acres in California wholly within the State.

The CHAIRMAN. The time of the gentleman from Pennsylvania has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I ask unanimous consent that all debate on this paragraph and amendments thereto be now closed.

Mr. GREEN of Iowa. Mr. Chairman, I would like to have five minutes on this.

Mr. HUMPHREYS of Mississippi. Is the gentleman going to talk to an amendment or to talk generally upon the subject?

Mr. MANN. I may want 10 or 15 minutes on this.

Mr. HUMPHREYS of Mississippi. On what?

Mr. MANN. On this Sacramento proposition. This is next to the last paragraph.

Mr. HUMPHREYS of Mississippi. Let us conclude the reading of the next paragraph, and then the gentleman may have 15 minutes.

Mr. MANN. I have no objection to taking it on the next paragraph. I will state to the gentleman that 15 minutes are desired over here on this side.

Mr. HUMPHREYS of Mississippi. Very well. We will yield that as soon as we conclude the reading of the next paragraph.

Mr. MANN. I mean that there are three gentlemen here who desire to talk five minutes each on this particular paragraph.

Mr. HUMPHREYS of Mississippi. Would they not be willing to read the next paragraph, and then take the 15 minutes?

Mr. MANN. Oh, we have plenty of time.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I ask unanimous consent that debate on this paragraph and all amendments thereto close in 25 minutes—15 minutes to be controlled by the gentleman from Illinois and 10 minutes by myself.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and amendments thereto close in 25 minutes—15 minutes of that time to be controlled by the gentleman from Illinois and 10 minutes by himself. Is there objection?

Mr. SMALL. Mr. Chairman, reserving the right to object, I desire to modify that request for unanimous consent by making it 30 minutes, of which I shall have 10.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I will modify my request in accordance with that suggestion—15 minutes to be controlled by the gentleman from Illinois and 15 minutes by myself.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and amendments thereto close in 30 minutes, 15 minutes of that time to be controlled by the gentleman from Illinois and 15 minutes by the gentleman from Mississippi. Is there objection?

There was no objection.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Iowa [Mr. GREEN].

Mr. GREEN of Iowa. Mr. Chairman, as I was saying a short time ago, there are many features in connection with this project for improvement of the Sacramento that commend themselves in comparison with the project for the improvement of the lands along the Mississippi, and the amount to be paid by the State of California being absolutely fixed is one that I commend. In the case of the Mississippi, there is no definite fixed amount of money which is to be contributed, or how the money which is to be contributed is to be obtained. Gentlemen have spoken here with reference to the amount to be expended by the owners of lands along the Mississippi and also along the Sacramento with reference to the amount that the people living on that land would expend. I think one gentleman said, in relation to lands along the Sacramento, that the settlers were going to put in some thirty-odd million dollars. The bill, of course, provides for nothing of that kind, and I believe in both cases that what is meant is that the settlers will have to expend a large amount in order to get land ready for cultivation. Now, that is exactly what occurred in reference to reclamation projects by irrigation or otherwise. Let me say here, that when I spoke last Wednesday with reference to this being a reclamation project one gentleman, who apparently was not very familiar with the subject, took decided exceptions, and some gentleman upon the other side, for whose opinion I have great respect, afterwards endeavored to show, somewhat unsuccessfully I thought, that the bill did not present a reclamation project. I am not opposed to these projects because they are reclamation projects.

I think the gentleman from Mississippi [Mr. HUMPHREYS] was correct when he said that if a project of this kind is too large for a State to handle that the Government ought to take hold of it, because that is the only way it can be carried out. But, Mr. Chairman, when that is done the Government ought only to advance the money with the expectation and hope of having it repaid, as in the case of irrigation-reclamation projects. That is not the case in reference to either of these projects. It is true the owners of these lands have expended and will expend large sums of money, but this is also the case with these irrigation-reclamation projects. When the Government furnishes the water for irrigation they have not furnished one-half of the expense that is necessary to bring the land under cultivation. The land has to be leveled, ditches have to be dug, other work has to be done upon it, so the actual expense in reference to any land under consideration of this kind will be some $20, $30, or $40 an acre. The Government does not pay all expenses with reference to these irrigation projects for that reason, and ought not to do so. All of these plans ought to provide that all the money expended by the Government will be repaid by the parties who get the benefit of it, and that is the only manner in which such a project would receive my approval.

Mr. BENNET. Mr. Chairman, I am much in favor of these improvements, and in a few moments I am going to assist other gentlemen by asking them to join me in improving the bill.

This House does not seem to realize that east of the Allegheny Mountains there is a very considerable portion in area and a very large portion in the population of the United States. I realize fully that the opinion of this House in relation to the people of New York, particularly of New York City, is that we are all hell-deserving sinners, hair hung and wind-shaken over the bottomless pit. However, we are residents of and, in the main, citizens of the United States and contribute to the taxes. Now, we have floods up our way, and I do not know whether my colleague [Mr. PARKER]—I did not hear all of his speech—alluded to the fact that up in his district there was great flood destruction.

Mr. PARKER of New York. About $2,000,000.

Mr. BENNET. About $2,000,000 in the cities of Troy and Albany, and the city of Albany, represented here by my colleague [Mr. SANFORD], was compelled to remove all buildings from the water front at public expense and raise the level of that part of the city at public expense on account of the floods. Now we are going—I am going, at least—to offer a suggestion in relation to flood control. The expense will not be very great, somewhere around $150,000,000. It will not be narrow and provincial because my plan when it is presented to the House will reach any point north to Boston that the President picks out, and any point south to Savannah that the President picks out, and just simply leaves it in the hands of the President to construct such ways and works, including an intracoastal canal, as will take care of the flood problem.

Mr. LOBECK. Does that include the Missouri River?

Mr. BENNET. Yes.

Mr. GREEN of Iowa. Has the gentleman examined the Newlands bill?

Mr. BENNET. I have not examined the Newlands bill, but I doubt if it is as good as the one I suggest; at any rate, if it is as good as the one I suggest, why then they will recommend the Newlands bill to the House. If we are going to start in to control floods, let us control them; but let us not be narrow and sectional.

Mr. MOORE of Pennsylvania. Will the gentleman yield?

Mr. BENNET. I do.

Mr. MOORE of Pennsylvania. The Newlands bill carried $60,000,000 a year for 10 years; that is $600,000,000. As a general proposition why not have the Newlands bill at once?

Mr. BENNET. I am a little bit cautious myself. [Laughter.] I would not want to propose anything I did not think

there was a reasonable chance of the House voting. Now this would be $150,000,000.

Mr. MOORE of Pennsylvania. Why not $600,000,000?

Mr. BENNET. Because that is a little too large.

Mr. MOORE of Pennsylvania. Not in the present state of the Treasury.

Mr. BENNET. We have got "hope" in the Treasury anyhow, and I am going to test the sense of the House——

Mr. MEEKER. Has the gentleman got any "faith" in the Treasury? The gentleman said he had "hope."

Mr. BENNET. The gentleman is now sitting on the right side of the House for "faith." That is about all they will have there after the 30th of June.

Mr. MADDEN. The gentleman from New York has "charity."

Mr. BENNET. The gentleman should come over on this side; here is where he belongs. When I get the gentleman from Missouri and the gentleman from Illinois talking about "faith, hope, and charity" it mixes me up in my speech.

Mr. MEEKER. You think the Treasury needs charity?

Mr. BENNET. No. I think we are a rich country, and I hope when my proposition comes before the House, everybody will vote for it.

Mr. LA FOLLETTE. Mr. Chairman, the gentleman from Iowa [Mr. GREEN] made a few remarks that I expected to make in regard to the reclamation features of this bill. I had expected to call to the attention of the committee that we were reclaiming thousands of acres of land in the West and we expected the people who got the benefit of that reclamation to eventually pay each and every dollar back to the Treasury. Now, if we go into a scheme of reclamation along any of the streams of the United States we should segregate the money which is allowed for reclamation and say that when the land is really reclaimed it shall pay back that money to the Government. And if it goes for navigation, which is for the benefit of all the people, that the Government should, and legitimately, pay for it. I am inclined to think that we are making a mistake in regard to flood control.

Mr. FOSTER. Will the gentleman yield?

Mr. LA FOLLETTE. Yes, sir.

Mr. FOSTER. How much money has the reclamation fund turned back to the Treasury?

Mr. LA FOLLETTE. I can not give the figures.

Mr. FOSTER. How much interest has it paid on the $100,000,000 the Government has given them?

Mr. LA FOLLETTE. They have paid considerable, but not all they should have paid, probably. But it is well secured.

Mr. FOSTER. I am not finding fault with that.

Mr. LA FOLLETTE. I understand; but it was a new proposition which had to be worked out. It is all expected to be paid back in time.

Mr. FOSTER. I understand that; but do you not remember that Congress passed a law extending the time of it 20 years within which they should not pay any interest?

Mr. LA FOLLETTE. I understand that. That has nothing to do with this question.

Mr. FOSTER. I think it has nothing to do with it, either.

Mr. LA FOLLETTE. The land reclaimed along a river or anywhere else by the aid of the Government should in time pay back the money used.

Mr. FOSTER. I think the money is well expended, and I am for it.

Mr. LA FOLLETTE. I think so, too, and I am for all proper methods of reclamation; but I think where land is reclaimed, the people owning the land should eventually pay the Government for that reclamation. Now, on last Wednesday the gentleman from Mississippi [Mr. HUMPHREYS] in talking about flood control made light of the question of controlling by reservoirs, and he said that the engineers all gave their testimony against the feasibility of that method. I have here testimony from Army engineers, stating that flood control by the construction of reservoirs is feasible, and that they would prevent a great deal of the damage done throughout the country year after year. They thought that the control of one-fifth of the water would require $54,000,000. At the time that report was made the appropriating of $54,000,000 for that purpose was considered an insurmountable obstacle. Now you would appropriate four times that much money on the other side of the aisle and consider it a mere bagatelle.

Mr. HUMPHREYS of Mississippi. What report does the gentleman refer to?

Mr. LA FOLLETTE. I have extracts from a report made by a special board of engineers, and I have extracts from the H. N. Chittenden report.

Mr. HUMPHREYS of Mississippi. Do either of those reports say it will be possible to control floods in the lower Mississippi by the construction of reservoirs costing $54,000,000?

Mr. LA FOLLETTE. Control one-fifth of the water. If you can control one-fifth of the water that runs past Cairo you could prevent the larger part of the damage by flood on the Mississippi.

Mr. HUMPHREYS of Mississippi. That would be very interesting.

Mr. LA FOLLETTE. I will be pleased to put it in the RECORD. I think if you could get it out of your head that you have got to build levees as high as the moon, in order to control the lower Mississippi, and would really take the upper ends of the river and improve those first by a comprehensive reservoir system, you could solve this question much more scientifically than you are doing under this bill.

Mr. Chairman, the Chittenden extracts referred to are interesting and supplemented by extracts from the report of the Chief of Engineers to the Secretary of War, as set forth in House of Representatives Document No. 50, Sixty-first Congress, show conclusively that many of our Army engineers consider flood control by the construction of reservoirs to be eminently practicable.

[Extracts from the Chittenden Reservoir Report, by Capt. (war general) H. M. Chittenden, H. Doc. No. 141, 55th Cong., 2d sess., entitled "Preliminary examination of reservoir site in Wyoming and Colorado," transmitted to Congress by the Secretary of War on Dec. 9, 1897.]

It is apparent, therefore, that a reservoir system which should exercise any appreciable influence on the lower-river floods must embrace the three great upper tributaries, and particularly the Ohio. What the magnitude of the storage required would have to be may be inferred from the fact that the total discharge of the Mississippi at Cairo above the bankful stage during the late floods was 2,368,000,000,000 cubic feet, or 4,250 square miles 20 feet deep, the assumed average depth of reservoirs. The largest artificial reservoir ever built, viz, that at Lake Winnebigoshish, Minn., has a capacity of 45,000,000,000 cubic feet. To store all this excess would take 52 such reservoirs.

While it might seem at first thought that this amount of storage could be found, still it would be very difficult to find it. Particularly on the upper Ohio and its southern tributaries favorable sites are understood to be of rare occurrence. It is probable, however, that in all the watershed of the Mississippi sites could be found that would insure a reduction of a flood discharge at Cairo like that of 1897 by one-fifth of its maximum. The case with which the writer was able to find storage amounting to 11,000,000,000 cubic feet in the State of Ohio at the very headwaters of streams along the divide between Lake Erie and the Ohio convinced him that the natural facilities for storage are rather greater than is commonly supposed.

As already stated, the difficulty is not so much a physical as a financial one. To store, say, 500,000,000,000 cubic feet of water, equivalent to 11,500,000 acre-feet, would cost, even at the rate of only $5 per acre-foot, $57,500,000. This one fact condemns the project as a system for the exclusive purpose of flood prevention. But whenever such reservoirs have other and more immediate purposes for their construction the increment which each will form in the grand total necessary to produce some influence in the Mississippi floods is an element in its favor worthy of consideration.

These early convictions of Gen. Chittenden have been more than confirmed by the comprehensive surveys and reports of the Pittsburgh Flood Commission and the Dayton-Miami River and Columbus-Scioto surveys and reports.

[Extract from H. Doc. No. 50, 61st Cong., 1st sess. Report by a special board of engineers on survey of Mississippi River from St. Louis, Mo., to its mouth, with a view to obtaining a channel 14 feet deep and of suitable width, including a consideration of the survey of a proposed waterway from Chicago, Ill., to St. Louis, Mo., heretofore reported upon. Submitted by the Chief of Engineers to the Secretary of War.]

(Appendix No. 8, p. 112.)

Report on the reservoir possibilities of the sources of the Mississippi, Minnesota, St. Croix, Chippewa, Wisconsin, and other tributaries of the upper Mississippi River, with reference to the improvement of navigation of those tributaries and of the Mississippi itself.

[Extract from report of Asst. Engineer C. W. Durham, United States Engineer Office, Rock Island, Ill.]

The writer was able to procure all of the reports of the various district engineer officers connected with reservoir exploration and operation and of their assistants from 1869 to date, as also many additional documents and maps, all of which are supplemented by his own knowledge of the improvement of the Mississippi River gained by 37 years' experience in the work and by other information found in the United States engineer office at Rock Island.

1. The greatest practicable extent to which the reservoir systems may be carried with a view to obtaining the greatest possible discharge during periods of summer and fall low water in the Mississippi River and ascertaining the probable quantity of such discharge.

2. The effect of the proposed reservoirs upon the improvement of navigation of the Mississippi River at and below St. Paul.

No attempt will be made to give the probable cost of building and operating these reservoirs, nor to reconcile the various conflicting interests which may arise from their construction. It is the writer's belief, however, that these reservoir systems, carried out to their fullest extent, can be made to subserve both the interests of navigation and of water power, besides acting as a potent restraint on floods. Under such circumstances it might be to the advantage of water-power interests to come in and relieve the Government of an equitable part of the cost. It is believed that a very great part of the flowage damages, which have been the most expensive feature of reservoir construction, could be avoided by drawing down the water in the lakes themselves, thereby taking more advantage of their natural capacity than has heretofore been done, which result can in most cases be at-

tained by locating the aprons of the dams at a much lower elevation and then dredging proper channels to the ages and sluices of the dam, both above and below. The reservoir capacity could also be further increased by dredging in the basins, which could be very cheaply done with a suction dredge, and possibly a berm or levee could be built at the same time around the lakes and adjacent lands could be raised with manifestly excellent results.

Prior to the surveys made by Maj. Allen, in 1879, 1880, and 1881, which have given us the greater part of our information in regard to reservoir sites, preliminary surveys and examinations had been made by Gen. Warren in 1869 and Col. Farquhar in 1874.

The main object of all these surveys was to ascertain the extent to which the impounded water could be applied to the improvement of the navigation of each stream and ultimately to that of the main river. But the reservoir system, so far as built by the Government, is intended primarily for the benefit of the navigation of the Mississippi River and incidentally to mitigate its floods.

The object of the reservoirs already constructed at the headwaters of the Mississippi River is to collect the surplus water, principally from the precipitation of winter, spring, and early summer, to be systematically released so as to benefit navigation upon the Mississippi River below the reservoir dams. In 1905 the district officer said:

"The expenditure has resulted in benefit during the low-water season to the navigable portions of the Mississippi River from Cass Lake to Lake Pepin and below and incidentally to the mitigation of the floods in the river at St. Paul."

The examinations and surveys that have been made and the additional claims presented in this report, perhaps on somewhat insufficient grounds, do not represent the total possibilities; in fact, it is manifest that far greater storage facilities could be shown to be available.

The district officer further says, in 1907:

"The original project (for the reservoirs at the headwaters of the Mississippi River) calls for the construction of 41 reservoirs. * * * The efficiency of the reservoir system could also be greatly increased at small expense by dredging the channels above the dams and those connecting the various lakes that constitute the reservoirs. The aprons of the dams are now several feet below the level to which the water can be drawn down through the existing contracted channels."

The results as to precipitation, run-off, discharge, and velocity of streams, etc., given in the following tables and pages of this report, were obtained by constant study and effort during the past 30 years, and are believed to be accurate. The results only are given, without any attempt to explain the methods adopted.

There follows a table showing the areas of the drainage basins or watersheds of the various tributaries of the Mississippi River above the mouth of the Missouri. The figures in this table were mostly taken from Gen. Warren's report on bridging the upper Mississippi River, but they were revised by the writer many years ago and some unimportant changes were made.

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[Extracts from "The Port of New Orleans," by Capt. C. O. Sherrill, Corps of Engineers, published in "Professional Memoirs," Corps of Engineers, United States Army and Engineer Department at Large, Vol. VI, No. 25, January–February, 1914, pp. 13, 15, 34, 35, and 36.]

(Pages 13, 15.)

Another notable feature of the South Pass improvement since the lateral openings were closed and the jetties built is that there has been a constant tendency for the channel depths throughout the pass to become much more uniform. Near the head of the pass and over the bar the scour has been extensive, while throughout the pass itself there is extensive shoaling in the parts formerly deepest, giving an average depth of about 30 to 40 feet. This is an important fact, leading to the belief that levees improve the average condition of a channel, filling in excessive depths and scouring abnormal shoals. This, of course, would only hold true where the levees follow closely the low-water channel of the river, as is the case below New Orleans, and where the stream bottom is of soft material.

At localities where there is no relation between the required channel capacity and the sectional area of high-water flow between levee lines, as is found above Bayou Sara, La., on the Mississippi, there does not appear to be the slightest effect produced on the channel by levees, for they have no influence in holding the current over the low-water thalweg.

An injurious effect of the extension of levee lines on the channel is that by restricting the flow to a small sectional area, higher flood heights are caused and more extensive caving of the banks occur. This has been observed recently at the Head of the Passes, where extensive caving is occurring with danger of permanent injury to the improvement works. Since the three high floods of 1912 and 1913 the bank caving is probably greater than ever before observed. Where local conditions as near New Orleans admit of it waste-weir outlets would reduce flood heights and be of resultant great advantage without damaging the channel, due to deposits of silt, as is claimed to be the result of natural outlets, since the waste weirs would automatically cease to operate at the desired elevation chosen for the weir crest slightly above bank-full stage.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I yield to the gentleman from South Carolina [Mr. SMALL] 10 minutes.

Mr. SMALL. Mr. Chairman, first, I wish to offer an amendment for the consideration of the chairman and the committee.

The CHAIRMAN. The gentleman from South Carolina offers an amendment, which the Clerk will report.

The Clerk read as follows:

Page 5, line 5, after the word "the," strike out the balance of line 5 and the words "may require or approve" in line 6, and insert in lieu thereof the following: "Secretary of War in accordance with the plans, specifications, and recommendations of the California Débris Commission as approved by the Chief of Engineers."

Mr. SMALL. Mr. Chairman, the purpose I had in offering that amendment was this: The amendment is based on the assumption that the money contributed by the State of California is $5,600,000, equal to that contributed by the United States, as referred to in subsection (a). And if that assumption is correct, then the same language ought to apply as to the expenditure of the money as proposed in subsection (a). I submit it to the committee, and if they think it unnecessary I have no disposition to insist on it.

Mr. MOORE of Pennsylvania. Mr. Chairman, does the gentleman mean to take away the power of expenditure from the California Débris Commission?

Mr. SMALL. The money is to be expended by the Secretary of War under the plans of the California Débris Commission.

Mr. MOORE of Pennsylvania. Then the money to be contributed by the State of California would not be expended under the direction of the California Débris Commission?

Mr. SMALL. My amendment proposes it shall be expended by the Secretary of War according to the plans of the commission. I do not think in this bill we contemplate any jurisdiction over the $22,000,000 assessed against the lands to be benefited.

Mr. MOORE of Pennsylvania. I want to get at the substance of the gentleman's amendment. The bill provides that the expenditures shall be made under the direction of the California Débris Commission.

Mr. SMALL. My amendment is to insert in lieu of that the words "under the direction of the Secretary of War, in accordance with the plans and specifications of the Débris Commission."

Mr. KAHN. Mr. Chairman, will the gentleman yield?

Mr. SMALL. Yes.

Mr. KAHN. Is the gentleman aware of the fact that the California Débris Commission is appointed by the War Department?

Mr. SMALL. Yes; and therefore I prefer that the same language should be used there as is used in section (a).

Now, Mr. Chairman, I wish to continue what I was attempting to say when I was last on my feet. I made the statement that I favored this section for the flood control of the Sacramento and San Joaquin Rivers, and I was proceeding to state the distribution of the expenditure under the estimate of the Débris Commission. On pages 105 and 106 of the report of the committee it is stated in detail, giving the items making up this $33,000,000, to which it is not necessary to advert. The report of the Chief of Engineers, dated June 17, 1913, and which is referred to in the report of the committee, modifies the original report. In the original report the United States was to pay all of the $11,000,000. In the supplemental report the United States is to pay only one-half of the $11,000,000, or $5,600,000. This $5,600,000 to be expended by the United States is one-half of the aggregate sum of $11,200,000, which latter sum will be expended for improving navigation of the river. Of this sum the State of California will contribute one-half. This leaves $22,000,000 necessary for flood protection of contiguous lands. That amount is to be levied by assessment upon the lands to be benefited, they paying the entire amount of the expenditure for the benefit of the land embraced in this valley subject to overflow.

So that I think, Mr. Chairman, this project from the standpoint of the United States and the State of California and of the owners of the land to be benefited represents an exceedingly fair division of burden for the United States, and if any project of flood control is to be assisted by the United States under any fair proportion, then certainly that element of fairness is reached in this case.

Mr. Chairman, I want to say in conclusion what is a pleasure to state: I had the opportunity of being with the Committee on Rivers and Harbors in California last summer. In all the three Pacific Coast States—California, Oregon, and Washington—there were evidences of a very large degree of public spirit, a disposition to cooperate in every public movement which made for the public welfare. If one may differentiate at all between those three States, it did seem that the State of California was perhaps a little more active than the other two States. Those States have set an example in civic spirit, in public enterprise, in individual generosity, that might well be emulated by the citizens of every State in the Union.

I had occasion, with some other members of the committee, at that time to inquire as to the work of this California Débris Commission. I doubt if there has been any commission engaged in public work in any State of this Union which has devoted to its work more intelligent and persistent consideration than has this commission, and any one who will take the trouble to read the several reports of this débris commission will inevitably reach the conclusion that they were actuated solely by the desire to ascertain the truth of the matter to which they devoted their attention.

Some reference has been made, I believe, by the gentleman from Wisconsin [Mr. FREAR] to some evidences of dissatisfaction on the part of residents along the Feather River, a tributary of the Sacramento. We had opportunity to investigate that dissatisfaction. They thought they had ground for

it, but, in so far as we were able to observe and in the opinion of the commission, they were not justified in their contention, and the conclusions reached by the California Débris Commission were correct and did not do them any unnecessary harm; and where any harm was done them, ample provision was made for their compensation. The chairman of that commission is Mr. McClatchy, one of the owners and editors of the Sacramento Bee. He has acted as the chairman and leader in this important work of reclamation, and the burden of the work has fallen upon him. He has discharged his duty in a manner that is creditable to him and to the State of California, and as a citizen of that State he is worthy of emulation by the citizens of every other State in this Union. [Applause.]

The CHAIRMAN. The time of the gentleman from North Carolina has expired.

Mr. CURRY. Mr. Chairman, I do not wish to take up the time but a moment. I hope the gentleman from North Carolina [Mr. SMALL] will not insist upon his amendment. It would seriously interfere with the present system of conducting the improvements on the Sacramento River. The War Department and the California Débris Commission have gotten this system in practical working order and cooperation, and by substituting the Secretary of War for the California Débris Commission we would entirely overturn the whole system.

Mr. SMALL. Mr. Chairman, will the gentleman permit a question right there?

Mr. CURRY. Yes.

Mr. SMALL. Why do you express the language that it shall be done under the direction of the Secretary of War in subsection (a) and not under subsection (b)?

Mr. CURRY. It was put in section (a) so that the California Débris Commission would have to send their specifications to the Secretary of War and have them O. K'd and then returned. And after they have been O. K'd and returned, the California Débris Commission uses the money. The money from the Government is turned over to the California Débris Commission, which uses it.

Mr. SMALL. It is the same aggregate sum of $11,000,000, one-half of which is contributed by the United States?

Mr. CURRY. Yes.

Mr. SMALL. If one-half is to be expended under the direction of the Secretary of War, why not expend the other half under his direction?

Mr. CURRY. They are both expended under the direction of the Secretary of War by the California Débris Commission.

Mr. SMALL. You leave out the Secretary of War in subsection B.

Mr. CURRY. It was done after discussion with the War Department. They know what this provision of the bill is and are satisfied with it.

Mr. SMALL. I have no disposition to impair the workability of the bill, and if the gentleman thinks it will do so I will withdraw the amendment?

Mr. MANN. Will the gentleman yield?

Mr. CURRY. I will yield to the gentleman.

Mr. MANN. Paragraph (a) says that all money appropriated under authority of this section shall be expended under the authority of the Secretary of War. Why do you want to repeat it?

Mr. SMALL. I think it is true, and it is inconsistent with the language in subsection (b).

Mr. MANN. Not at all. It says that all money appropriated under this section, not paragraph, shall be expended under direction of the Secretary of War. It is under the direction of both.

Mr. SMALL. If the gentleman's interpretation is right, there is no necessity for my amendment, and I withdraw the amendment.

The CHAIRMAN. The question is on the amendment offered by the gentleman from Pennsylvania [Mr. MOORE].

Mr. BENNET. May we have the amendment again reported?

The CHAIRMAN. Without objection, the Clerk will again report the amendment.

The Clerk read the amendment.

Mr. MOORE of Pennsylvania. Mr. Chairman, I ask unanimous consent to withdraw the amendment.

The CHAIRMAN. Without objection, the amendment will be withdrawn.

There was no objection.

The Clerk, proceeding with the reading of the bill, read as follows:

(c) Upon the completion of all works for flood control herein authorized the said works shall be turned over to the State of California for maintenance thereafter.

Mr. MANN. Mr. Chairman, I never have been perfectly satisfied as to whether it was a good thing or not a good thing for legislators to visit a particular locality or get into personal acquaintance with particular projects. I have usually thought that it very often resulted in bad legislation, although doubtless men legislate better when they have some knowledge of the subject matter. [Laughter.]

I made a trip up and down the Sacramento River about a year ago on one of the vessels navigating the river, spending a large share of one night watching them load freight on the vessel as it went down the river. The Sacramento is about 80 miles farther north than San Francisco. Of course that is not the whole of the Sacramento Valley. Los Angeles lies about four hundred and some odd miles south of San Francisco. I went from Los Angeles north to San Francisco and afterwards up the Sacramento River, and much to my surprise I learned that vegetation was further advanced up the Sacramento Valley 80 miles north than it was at Los Angeles 400 miles south of San Francisco.

I learned that they were at that time picking cherries in the Sacramento Valley and shipping them down to southern California where they might have the early cherries in the season before the cherries began to be ripe in southern California. I learned that in the Sacramento Valley the peaches, pears, plums, limes, lemons, and oranges ripened earlier north of San Francisco than they did down at San Diego, represented by my beloved friend [Mr. KETTNER], 500 or more miles to the south. I learned that they gathered strawberries and raspberries in the Sacramento Valley and shipped them to southern California. I learned that our earliest fruit from California came from the Sacramento Valley. I saw them pile on the vessel large quantities of asparagus, and all along the river I found canning factories for asparagus, and learned that 90 per cent of the canned asparagus in the United States was produced in the Sacramento Valley. I had some of it fresh, and discovered that it was exceedingly good. I have frequently tried it in cans, and believe it is better than that we used to get by importation from Europe.

This was about the livest place I have ever seen. It was as live as Broadway, New York, or State Street in Chicago. These people out there are not asking the Government of the United States to drain their lands. That is a mistake. Years and years ago the Sacramento Valley was a fairly tillable or pasture valley, not very much overflowed by the Sacramento River, although there may have been times in the spring when the snows were melting in the mountains, not very far away, when there was some overflow, but during the great excitement about gold mining in California and when it was at its height they were using the waters for hydraulic mining. The waters were shot down into the Sacramento River with a great body of mud and silt that came from the hydraulic mining until the bed of the river was so raised from the deposit of this silt that it overflowed its banks.

Mr. GARD. Will the gentleman yield?

Mr. MANN. Yes.

Mr. GARD. May I ask for further information on that point? Is it not true that the hydraulic mining was ordered to be stopped by injunction by the State courts of California?

Mr. MANN. If the gentleman says that is true, I will admit it. I was not there. I can say what they told me was the result; that is hearsay information.

Mr. CURRY. Hydraulic mining was stopped by an injunction of the United States district court on January 7, 1880. Oh, I remember we have had discussions here at various times about the California Débris Commission. I assume that one of the purposes of the creation of that commission was to endeavor to remedy the results caused by this hydraulic mining. The Government is asked here not to drain the land but to put this river in a position where it is best for navigation purposes. It is true that as a result of that to a large extent it will be easier to drain the lands.

The CHAIRMAN. The time of the gentleman from Illinois has expired.

Mr. MANN. Mr. Chairman, I ask unanimous consent to proceed for five minutes more.

The CHAIRMAN. Is there objection?

There was no objection.

Mr. MANN. Mr. Chairman, they had levees all along this river where we were, mostly along the river. The water outside of the river was a good deal lower than the water in the river, and the people who own the land are quite willing to pay for draining it and pumping it or so providing that the water runs off, without the aid of the Government. Undoubtedly the land will be of great value, and is of great value now, where it is drained. That is where they raise all of this produce I speak of. There is work to be done in connection with the navigation of the river, and really the one question which we are called upon to meet is whether it is more profitable and more

economical, while they are carrying on their plans for the drainage of the lands, to at the same time carry on our plan for the improvement of navigation.

We will undoubtedly some day so improve navigation that this stream will be a navigable stream in the best shape. It is a good navigable stream now, much of the time, though it needs to be shortened, perhaps. Some day we will do that. Some people believe, and this bill is upon that theory, that it is more economical to do these things both at the same time than it is to take care of the navigation at one time and then have the local people take care of the drainage at another time, or vice versa.

Mr. GORDON. Mr. Chairman, will the gentleman yield?

Mr. MANN. Certainly.

Mr. GORDON. Of course Congress, or any branch of the Federal Government, will have no legal authority to impose any assessment for any special benefit conferred upon adjacent lands by any improvements constructed there by the Government of the United States?

Mr. MANN. Oh, no. At least I do not think we would have.

Mr. GORDON. Would not that suggest, then, that the State authorities would be the ones to carry out this improvement?

Mr. MANN. Oh, no. The gentleman misunderstands. This bill proposes that the Government shall cooperate with the State authorities in doing this work. That is what the bill contemplates. The amount that we contribute is less than it would cost us to put the river in a proper navigable condition. It is less than we would expend on one of the other rivers of the country under equal condition without any contribution from the local people. By the terms of this bill, and because it will be of some benefit to them in draining their lands, we require them to pay half of the costs of this for the purpose of navigation, in connection, of course, with what we call flood control, and it is flood control. I would be very glad if we could adopt the same principle upon the Hudson River [applause] and provide that the Government should not expend a cent on the Hudson River unless the State of New York expended an equal amount.

Mr. PARKER of New York. Well, it would.

Mr. MANN. Oh, I have heard gentlemen say that they will do it, but has any such proposition ever been presented?

Mr. PARKER of New York. Yes.

Mr. HULBERT. Mr. Chairman, will the gentleman yield?

Mr. MANN. Yes.

Mr. HULBERT. Does the gentleman know that the city of New York, local interests in the city of New York, have expended $100,000,000 for the improvement of the water front at New York and the Federal Government within the same period of time has expended $1,000,000, or 1 per cent of that amount?

Mr. MANN. I know all that. I know that the city of Chicago has expended eighty or ninety million dollars for the improvement of the waterway leading out of the city of Chicago, and has neither improvement nor waterway; and if some time the Government will pay half we might be willing to pay half also, but we have not offered to yet, and New York has not offered to pay a cent.

Mr. PARKER of New York. Will the gentleman yield?

Mr. MANN. Certainly.

Mr. PARKER of New York. Does not the gentleman know that the State of New York offered to build a dam at Troy and that the Secretary of War absolutely forbade the State of New York to do it; that the case was taken into court, and the court decided that it was a Government charge? That happened two or three years ago.

Mr. MANN. I did not know it, but if the gentleman asserts it, I believe it to be true.

Mr. PARKER of New York. That is what the State of New York did.

Mr. MANN. I have no doubt there are a good many cases where the State would be willing to improve a place where they could get water power and where they would control it, and that is what we are asking in Illinois, but we have not been able to get it yet.

Mr. SANFORD. Mr. Chairman, will the gentleman yield?

Mr. MANN. Oh, I hope the gentleman will not think that I am attacking the State of New York. [Laughter.]

Mr. SANFORD. Mr. Chairman, does not the gentleman take note of the fact that New York has expended recently $150,000,000 for a waterway that no one can say is even for its use alone, but which is a great national waterway, going through the whole State, connecting the Great Lakes with the Hudson River?

Mr. MANN. Germany spent more than that, but that has nothing to do with the Hudson River. It is not the improvement of the Hudson River; it is the construction of a canal between the Great Lakes and the Hudson River.

Mr. SANFORD. Certainly; but there is no distinction.

Mr. MANN. It is not the same thing.

The CHAIRMAN. The time of the gentleman has expired.

Mr. BENNET. Mr. Chairman, I ask unanimous consent that the gentleman's time may be extended for five minutes more. [Laughter.]

The CHAIRMAN. Is there objection?

There was no objection.

Mr. MANN. I thought perhaps the gentleman wanted to keep me on the grill a little longer. I am fully able to take care of myself——

Mr. BENNET. My only purpose was—the gentleman always has something serious to say, and we have taken up so much of his time——

Mr. MANN. The gentleman is very kind. I believe if we should adopt the principle—I happened to mention the Hudson River—in many places it would be great economy for the Government. I think that is what we are doing here on the Sacramento River. We are making the State of California contribute money toward the improvement of navigation on the Sacramento River, and the State of California does that because in doing that she gets the benefit of helping to drain her own land, but the people who own the lands have to pay for the drainage of those lands. Neither the General Government nor the State pays for that.

Mr. SHERLEY. Will the gentleman yield?

Mr. MANN. I will.

Mr. SHERLEY. Is not there another reason why California should do it, and that is because she is primarily responsible for having destroyed the navigability of the river?

Mr. MANN. Oh, well, I should doubt that.

Mr. SHERLEY. I do not doubt it.

Mr. MANN. The hydraulic-mining days in California were when there was not very much law anywhere, and if there was anybody largely responsible for that it was the people of the rest of the Nation, and if there is any State that through its lawfulness or lawlessness has ever contributed to the general Government at any time when we needed it, it was California when she was pouring the products of her gold mines into the lap of the Nation. [Applause.]

Mr. CLARK of Missouri. Mr. Chairman, I would like to have 10 minutes.

The CHAIRMAN. The gentleman from Missouri asks unanimous consent that he may proceed for 10 minutes. Is there objection? [After a pause.] The Chair hears none. [Applause.]

Mr. CLARK of Missouri. Mr. Chairman, the two chief opponents of this bill are the gentleman from Wisconsin [Mr. FREAR] and the gentleman from Pennsylvania [Mr. MOORE]. Most of you did not know what the gentleman from Wisconsin [Mr. FREAR] was up to when he was quoting an editorial, about 18 months old, from the New Orleans Item. He was trying to take me in the flank because the publisher and chief owner of that paper happens to be my son-in-law, Col. James M. Thomson. When I gave Genevieve to Col. Thomson—and I did it with a great deal of regret, not because I had any objection to Col. Thomson—he is a fine man or I would not have given her to him at all—but because it wrung my heart to give her up—I did not agree that my opinion on any subject under heaven, except treating her well, should be the same as his. [Applause.]

That editorial, as read by the gentleman is misleading anyway. [Laughter.] It was written when the people of the Mississippi Valley were fighting among themselves about two systems of improvements, one of them the Newlands scheme that embraces everything under the skies, and the other one this scheme of confining our attention to one river at a time. That editorial no doubt was written by Marshall Ballard, the very brilliant and enthusiastic editor of that paper. So much for that except that the New Orleans Item now is supporting this bill. [Applause.]

I have wondered much first and last about this great and universal theme of "pork." I have raveled it out at last. Some man said years and years ago, "Orthodoxy is my doxy; heterodoxy is your doxy"; and that is the way about these appropriations. No sensible, patriotic, honest man wants to waste one dollar of the public funds [applause] on any project or in any manner whatsoever. It is not consistent with honesty or sound sense or patriotism to waste public money; because every man knows that every dollar spent by this Government represents toil and sweat and labor somewhere.

When Thomas Jefferson delivered his first inaugural, which every man, woman, and child in the Republic ought to be compelled to commit to memory as a classic, he gave the reasons

for economy in public service, that "labor may be lightly burdened." No man in this world has had sense enough to shift the tax burden from the back of labor. We tried it, and we tried our best in the enactment of the income-tax bill, and that was not a party measure. We ought to be fair. Our Republican brethren were nearly as much in favor of it as we were. Well, now, if an appropriation is going to certain parts of this country it is a great and patriotic performance. If it is going somewhere else it is "pork." I undertake to say, if Congress to-day were to appropriate every dollar there is in the Public Treasury for improvements in the city of Washington you would not hear a whimper out of these Washington papers about it. [Laughter and applause.] I am not criticizing them; they are very excellent and readable papers; but much depends on our several viewpoints—much depends on whose ox is gored.

It is just as honest, as wise, and as patriotic to appropriate a dollar to improve the Mississippi River or the Sacramento River as it is to improve the Delaware River or Hell Gate, or any other place in the East. The question touching any appropriation for public improvement should not be, "Where is the money to be expended?" but "Will this expenditure benefit the country?" All expenditures are not waste—frequently they are most profitable investments. The two bills that have been the most hammered on, first and last, about "pork" are the public-buildings bill and the rivers and harbors bill. I can not understand the attitude of mind of my friend from Pennsylvania [Mr. MOORE] about this bill. He seems to take it as a personal grievance that the overflow committee was cut out of the side of the Rivers and Harbors Committee.

All there was to it is the River and Harbor Committee had too much work to do. I introduced the resolution making this new committee, and I was in favor of it. The River and Harbor Committee have plenty to do now—in fact, more than they can do—because we have vast coast lines that ought to be improved, and many rivers. It is a hard-working committee—busy all the time.

The gentleman objects that this provides only for two rivers. The very reason that the River and Harbor Committee was hammered so much was because it embraced too many projects in one bill, thereby incurring the charge—often unjustly—of logrolling for votes, making meritorious projects carry those of doubtful utility. We tried to simplify it by reducing the number of projects treated from many to only two. Let every tub stand on its own bottom. Now he complains that it puts the Sacramento River in with the Mississippi River. The reason for that is that those two rivers have been so thoroughly investigated there is nothing else to learn about them from further investigation.

Mr. GARNER. Will the gentleman yield there?

Mr. CLARK of Missouri. Yes.

Mr. GARNER. The only difference between the proposed bill reported by the gentleman from Mississippi and the process under which the River and Harbor Committee take care of these projects is that this proposed bill puts it under a continuous project and saves the Government from $1,000,000 to $2,000,000 a year.

Mr. DUPRÉ. And compels local contributions.

Mr. CLARK of Missouri. And compels local contributions.

I am not in favor of taking public money to reclaim private lands, except as an incidental to the main object. I will state, and everybody who knows anything about it knows that there are three things about these rivers which are inseparable, namely, navigation, floods, and reclamation. You can not separate them to save your soul. If King Solomon were to return to earth and be reincarnated with that wondrous headpiece that he carried around with him, he could not do it. [Laughter.]

Commerce on the Western rivers—particularly the Mississippi and the Missouri—is growing, and we hope to see it completely rehabilitated. Kansas City has put a line of boats on the Missouri to St. Louis and business is picking up rapidly. St. Louis is putting on a new boat line running to New Orleans and is building river terminals, as are many other cities on both the great rivers.

We ought to settle once and for all whether we believe the levee system is good or bad, and we can settle it in this bill. It is the best plan the engineers have been able to devise in 6,000 years. They have been at it all that time.

I wish some gentlemen would follow the example of the distinguished gentleman from Illinois [Mr. MANN] sometimes. Frequently he rises to the status of a statesman [laughter], and that is more than a good many of us ever do. He rises above taking a purely local view of a thing in order to take a patriotic view in the interests of the whole country. That is what he has been doing about this bill. [Applause.] His constituents have no sort of direct interest in improving the Mississippi River—that is, about lands—because the water in his district, what little there is that falls in it—a small, compact city district—goes the other way. It does not go into the Mississippi River at all.

If the levee system is wrong, let us quit it; if it is right, let us go on with this thing and perfect it.

I want to make a suggestion to my friend from Wisconsin [Mr. FREAR]. He is always talking about these 16,000,000 acres of land which he asserts are going to be reclaimed, and while that is not the primary object of this bill, I wonder if he ever considered what that 16,000,000 acres of land in the valley of the Mississippi would do if the floods were kept off of them. The average corn crop in that amazingly rich region is at least 50 bushels to the acre. The average price of corn in the last five or six years has been 60 cents a bushel in the field. That would be $450,000,000 worth of corn raised every year. Has the United States Government no interest in raising that kind of a crop? Does it make nothing out of it? Does it get nothing out of it? Why, his argument against the bill is preposterous. I have always claimed that it would have been better for the Government—money in its pocket—originally to have given away every foot of land in small quantities to actual settlers, so that it would increase the number of farmers and increase agricultural products. In that way the Government would have gotten from taxes fivefold more out of it than it ever did by selling it at $1.25 an acre. Every time a piece of raw land is converted into a farm the entire country profits thereby.

Another thing about it is that there are 100,000,000 people in this country now. Our grandchildren and our great grandchildren will surely live to see the time when there will be two or three hundred millions, and not very many centuries hence there will be 500,000,000, and we must find homes for our children and our children's children. Just exactly as the number of landowners increase in this country the Republic is on a safe foundation [applause], I do not care whether it is in New England or in the Mississippi Valley. The land question is the greatest economic problem with which people ever bothered their heads. It did more than anything else to precipitate the French Revolution.

The CHAIRMAN. The time of the gentleman has expired.

Mr. CLARK of Missouri. Mr. Chairman, I would ask unanimous consent for five minutes more.

The CHAIRMAN. Is there objection?

There was no objection.

Mr. CLARK of Missouri. When the French Revolution began there were only 100,000 owners of land in all of France. Now there are 3,000,000, and before this war began it was one of the thriftiest and most prosperous countries under the sun. The root of the troubles in Mexico is the distribution and ownership of land.

I am going to be frank. The main object of this bill is not the reclamation of that land out there; but, even if it were, if that was the sole purpose, all this money would be well spent in behalf of the Government. [Applause.]

The gentleman wants to know why we did not take in all these rivers at once. We could not do it. We have been accused of "pork" and "logrolling," and we wanted to segregate the Mississippi and the Sacramento, and give the House a fair chance to pass on those propositions without lugging all the rivers in the country into it. Other rivers will have their turn. I am in favor of improving the Connecticut River or the Broad River, in North Carolina, or any other of our rivers. We begin with the Mississippi River because it is the biggest in the whole lot.

Somebody—I believe it was the gentleman from Wisconsin [Mr. FREAR], although I would not accuse him wrongfully—but either he or the gentleman from Pennsylvania [Mr. MOORE]—seemed to be against this bill because money will be spent down South. Well, now, he need not quarrel with us. The right one for him to quarrel with is Almighty God, because He made the rivers of the United States run toward the Equator—most of them. [Applause.]

It is not a waste of money to improve these rivers. We have tried it by taking them wholesale in the rivers and harbors bill, and some people abused us for that; now we come back and undertake to try them one at a time, and we get mauled for that. [Laughter.]

I was out in California last summer myself, and I am just as much in favor of spending money on the Colorado River as I am on the Mississippi River. [Applause.] I will tell you something that you may not know. If they do not spend some money on the Colorado River before very long that river is going to absolutely submerge and ruin and destroy the great Imperial Valley of California.

We ought to act with some sense, and we ought to take these rivers one at a time. Let every one stand on its own merits. I am rather inclined to wish, inasmuch as these objections have been raised, that we had begun with the Delaware River or some other river in which these gentlemen have a greater interest than they have in the Mississippi.

This is a good bill. This is a good committee, and it is made up of good men, and they have brought in a reasonable bill. It is a great deal better than the wholesale system. It provides for a continuous project, thereby saving money to the Government. If we are going to have it, let us have it, and have a program which we can stand by. If we are not going to indorse this levee system, let us abandon it. If any man can produce a better scheme or system, let him do it. I invite any gentleman who has a better system or scheme to bring it in and put it on exhibition and let us examine it. If we agree with his opinion, we will vote for his scheme instead of this one. [Applause.]

Mr. KENT rose.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I want to see if we can reach an agreement on this paragraph. It is paragraph (c). I notice that the gentleman from Wisconsin [Mr. LENROOT] has an amendment he wishes to offer.

Mr. LENROOT. I ask, Mr. Chairman, that I be recognized to offer this amendment and have it disposed of.

Mr. MOORE of Pennsylvania. I would like the gentleman from Mississippi to bear in mind that while I have an amendment on which I would like to have five minutes, in view of the address just made by the Speaker I would like to have a slight extension of time.

The CHAIRMAN. The Clerk will report the amendment offered by the gentleman from Wisconsin [Mr. LENROOT].

The Clerk read as follows:

Amendment offered by Mr. LENROOT: Page 6, line 18, after the word "thereafter," insert "but for all other purposes the United States shall retain such control over the same as it may have the right to exercise upon such completion."

The CHAIRMAN. The quesion is on agreeing to the amendment offered by the gentleman from Wisconsin.

Mr. CURRY. Mr. Chairman, I accept the amendment.

The amendment was agreed to.

Mr. MOORE of Pennsylvania. I offer the following amendment, and I will ask that it be read for information. I will talk about it later.

The CHAIRMAN. The gentleman from California [Mr. KENT] has the floor.

Mr. MOORE of Pennsylvania. I am not asking for recognition, Mr. Chairman, but merely asking that my amendment be read.

The CHAIRMAN. The Clerk will report the amendment offered by the gentleman from Pennsylvania.

The Clerk read as follows:

Amendment offered by Mr. MOORE of Pennsylvania: Page 6, line 17, after the word "authorized," insert a comma and the following words: "but within 10 years from the date of this act."

Mr. MADDEN. How will it read then?

Mr. MANN. That can be explained later.

Mr. MADDEN. How will it read if that is in the bill?

The CHAIRMAN. The Clerk will report it again, showing how it will read.

The Clerk read as follows:

Paragraph (c). Upon the completion of all works for flood control herein authorized, but within 10 years from the date of this act, the said works shall be turned over to the State of California for maintenance thereafter.

Mr. MOORE of Pennsylvania. It contemplates bringing the work to completion in 10 years.

Mr. HUMPHREYS of Mississippi. I want to get an agreement to close debate on this section and all amendments thereto.

Mr. MANN. We shall want on this side 30 minutes.

Mr. HUMPHREYS of Mississippi. We are coming to the general provisions in a few minutes. I have an idea that that is what most of the gentlemen want to talk about, the general provisions, and not about the Sacramento River.

Mr. MOORE of Pennsylvania. Pardon me a moment. The gentleman from Missouri [Mr. CLARK], our distinguished and beloved Speaker, had 15 minutes. We always yield to him. His address was general, and referred to at least two Members of the House.

Mr. HUMPHREYS of Mississippi. When we get to the general provisions there will be no reason why these two gentlemen can not reply to the distinguished Speaker.

Mr. MANN. I do not think there will be much debate on the third section.

Mr. HUMPHREYS of Mississippi. We want to get along with the bill as rapidly as possible.

Mr. MOORE of Pennsylvania. I call the gentleman's attention to the fact that the section appropriates $5,600,000. It ought not to be rushed.

Mr. HUMPHREYS of Mississippi. The gentleman is not going to discuss that. He is going to talk about something else, I am sure.

Mr. MOORE of Pennsylvania. The $45,000,000 for the Mississippi River is passed, and we ought to have at least some discussion on $5,600,000.

Mr. HUMPHREYS of Mississippi. We have no disposition to cut off debate. We have ample time to discuss all the various aspects of flood control under the general provisions. I hope we can conclude this section now, and then take up the other.

Mr. FREAR. I ask for five minutes now, Mr. Chairman.

Mr. KENT. I have been recognized.

Mr. MANN. We need 20 minutes on this side.

Mr. HUMPHREYS of Mississippi. I ask, then, that all debate on this section and amendments thereto close in 25 minutes.

Mr. HULBERT. Make it 30. I want to speak on this paragraph.

The CHAIRMAN. Is there to be any division of the time?

Mr. HUMPHREYS of Mississippi. I ask unanimous consent that all debate close in 30 minutes; 20 minutes to be controlled by the gentleman from Illinois and 10 by myself.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and amendments thereto close in 30 minutes; the time to be controlled, 20 minutes by the gentleman from Illinois and 10 by the gentleman from Mississippi. Is there objection?

There was no objection.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from California [Mr. KENT].

Mr. KENT. Mr. Chairman, in the Sixty-second Congress this bill was placed before me because the majority of the work was in my then district. I spent a great deal of time in investigating on the ground the then situation and the situation hoped for as a result under this plan of flood control, navigation, and reclamation. Our distinguished Speaker well said that you can not unravel these three things. In the first place, we endeavored to obtain from the Federal Government by recommendation of the engineers one-third of the total estimated cost of $33,000,000. I felt at that time that we were asking too large a proportion, and I suggested to my people, when we failed to obtain our request, that we should ask for less. We have done so. We have come before Congress with what I believe to be a very moderate request, based on the navigation features of the general plan. We have reduced the Government proportion to about half of what we originally asked for, one-sixth of the total cost, even though the previous proportion suggested was not based upon our desires or our judgment, but upon the recommendation of the Army engineers.

The gentleman from Wisconsin [Mr. FREAR] has brought in here some foreign matter concerning a small locality in my district which is affected by the plan now authorized. There is no question but what there can be a reasonable difference of opinion as to the location of certain levees in the Sutter Basin. The people who felt themselves aggrieved requested that I should go up there and listen to the evidence. At my own expense I took an engineer, eminently fair and unbiased, and we sat and had the hearings that the gentleman from Wisconsin has referred to. These hearings were frankly ex parte. Subsequent to that time the case was taken into the court, and the court so ruled that these people could avail themselves of the ample redress which they have under the laws of California. There has been an injunction against continuing the location of levees to which these people objected.

If they had not received this particular form of justice, as they saw it, before the California court, then in that event they could have gone into the California court and secured damages as proven. But there has never been a single responsible person in my district or in the district of my colleague [Mr. CURRY], who has so ably and devotedly supported this measure, who has ever been willing to stand up and say that he was opposed to the total reclamation scheme, the flood-control scheme, or the navigation scheme. The things are united and can not be severed, and we are sure that the State can work out this problem in justice to all men. The State of California is very fortunate in having this river entirely within its borders, so that we can assess the beneficiaries and get back a due amount of that which has been expended from benefits accruing to those who will profit by the work.

Mr. Chairman, I desire to insert in the RECORD some excerpts from the decision of the eminent judge, superior judge of Cali-

fornia, who rendered the verdict in the case referred to by the gentleman from Wisconsin.

The CHAIRMAN. The gentleman from California asks unanimous consent to extend his remarks in the RECORD. Is there objection?

There was no objection.

The matter referred to is as follows:

Wherefore, by virtue of the law and the findings aforesaid, it is by the court ordered, adjudged, and decreed that defendants, Reclamation District No. 1500, F. W. Kiesel, Edward H. Gerber, Charles F. Silva, P. J. Hiatt, A. T. Spencer, and every of them, their and every of their agents, servants, counselors, and employees, and all persons acting in aid or assistance of them, or any of them, be, and they hereby are, and every of them hereby is perpetually enjoined and restrained from erecting, constructing, completing, or maintaining, or in any way aiding or assisting in erecting, constructing, completing, or maintaining any embankment, levee, or other obstruction to the flow of water upon, along, or near the northerly boundary, or the northerly 12,900 feet of the easterly boundary of Reclamation District No. 1500 defendant, or along or near the line particularly described in paragraph 9 of plaintiffs' complaint herein as follows, to wit:

* * * * * * *

Also from erecting, constructing, maintaining, or aiding or assisting in erecting, constructing or maintaining any levee, embankment or other obstruction whatsoever whereby the waters of Butte Slough, Butte Creek, Wadsworth Creek, Little Blue Creek, Missouri Creek, Snake River, Live Oak Slough, Gelzhauser Slough (otherwise known as Yuba City Slough), also the waters flowing from the Sacramento River over Tisdale Weir described and referred to in the complaint in this action, or any of such waters, will be prevented or obstructed from flowing in the courses heretofore followed by such waters into the Sutter Tules or Sutter Basin, and thence through and over said basin in the course and courses they have heretofore followed southerly and southwesterly to the Sacramento River.

It is further ordered, adjudged, and decreed that the defendants, Reclamation District No. 1500, F. W. Kiesel, Edward H. Gerber, Charles F. Silva, P. J. Hiatt, and A. T. Spencer, and every of them, be, and they are hereby required, directed, and commanded within four months from the rendition and entry of this decree to remove or cause to be removed from along or near the whole of the north line of said Reclamation District No. 1500, and also from along or near the northerly 12,900 feet of the east line of said reclamation district, any and all embankments, levees, or other obstructions to the flow of said waters in the course and manner heretofore in this decree described and referred to, which said defendants, or any of them, may have erected and constructed, or caused to be erected or constructed, or in any way aided or assisted in erecting or constructing since the 18th day of September, 1915.

It is further adjudged and decreed that plaintiffs do have and recover of and from said defendants plaintiffs' costs and disbursements incurred in this action amounting to the sum of $———.

Done in open court this 7th day of April, 1916.

EMMET SEAWELL, *Judge.*

Mr. KENT. Mr. Chairman, it is not my habit to take up the time of this House in useless speaking.

We of California are so sure of the fairness of our requests, of the benefits to accrue to the whole people from this great work, that in full confidence of a favorable verdict by the House I refrain from further statement or argument.

Mr. STAFFORD. Mr. Chairman, in the absence of the gentleman from Illinois [Mr. MANN], I yield 10 minutes to the gentleman from Pennsylvania [Mr. MOORE].

Mr. MOORE of Pennsylvania. Mr. Chairman, somewhere in the Good Book it is written that "He who provideth not for his own house is worse than an infidel." The distinguished gentleman from Missouri, whom we all honor as Speaker of this House, is one who provides for his own house. That is exactly the situation with others of us who are discussing this bill. I remember reading with more than ordinary interest some time prior to the beginning of this session of Congress, when a report unfavorable to the Missouri River was presented by one of the Army engineers, that the distinguished Speaker, who then spoke for "his own house," intimated to the public that if claims were made for appropriations out West they were denominated "pork," but if they came somewhere from the East they were all right. That related to the $20,000,000 project on the Missouri.

I read his statement with intense interest, because I was glad to welcome our distinguished Speaker to that noble few who did not wholly believe in all the public denunciations of river and harbor bills as "pork barrel." I felt then that our Speaker, like a few of the rest of us, was beginning to pick up enough courage to think for himself on these great problems, and was not to be stampeded because an editor here or an editor there decided that this Congress did not know its own business, and must enact laws only in accordance with editorial opinion. But I have learned to-day that not only does the Speaker exercise his own judgment in matters of this kind, but he influences editorial opinion, and in one instance has actually induced an editor to change his views upon a public question, even if he had to make him a son-in-law to do it. [Laughter.]

The Speaker has "taken care of his own" just as I suspect everyone of us in this House is undertaking to take care of his own. I have no objection to the improvement of the Mississippi Valley or of the Missouri Valley, in which the Speaker is interested. I will go as far as any man to spend money legitimately on the Mississippi Valley, even for the purpose of keeping the people employed and keeping the money in circulation. That is what this bill will do; but I do not believe that the Mississippi Valley, or the Sacramento Valley, or any other valley in the United States should grab all the money in the Treasury intended for the improvement of rivers and harbors and postpone every other worthy project to the end of time.

We played fair with the Mississippi Valley in the river and harbor bill. We had difficulty in getting recognition for other worthy projects because of it and we had more difficulty in getting it through another body, but the Mississippi in the end was always taken care of—the lower Mississippi has had $87,000,000 up to date—and it was taken care of until that bright sunshiny morning when the idea penetrated the brilliant brain of my friend from Mississippi [Mr. HUMPHREYS] that he could get there quicker; that he could get more money and be assured against filibusters by withdrawing from the River and Harbor Committee and by putting the Mississippi River in a class by itself and strike out for a lump-sum appropriation under the plea of flood control.

Mr. SISSON. Mr. Chairman, will the gentleman yield?

Mr. MOORE of Pennsylvania. I can not yield.

Mr. SISSON. I am glad for the slight courtesy he has shown me.

Mr. MOORE of Pennsylvania. I can not yield to the distinguished gentleman from Mississippi, much as I admire him, because I have not the time. I was referring to that other brilliant gentleman from Mississippi [Mr. HUMPHREYS], who is the chairman of the Committee on Flood Control, who is now gradually and with honeyed words putting the River and Harbor Committee out of business, with the support, I fear, of the distinguished gentleman from Missouri [Mr. CLARK], the Speaker of the House, with the support of the former Speaker of the House, the gentleman from Illinois [Mr. CANNON], one of the leaders on my side, and with the approval of the Republican leader, whom I admire even more than I do any gentleman on the Democratic side of the House. It is the voice of the Mississippi Valley, and in order to get the votes from the Pacific coast you have added the Sacramento Valley. A great scheme, a winning proposition.

The Speaker talks of the land to be reclaimed—16,000,000 acres of it. That is all in the Mississippi Valley. There are $45,000,000 going into this bill for that purpose, but out yonder in the Sacramento Valley you are going to improve 10,000,000 more acres, almost as much as is to be reclaimed in the entire Mississippi Valley, for $5,600,000. They are more economical there, but the Sacramento is satisfied and both schemes are to go into the law forever, and you little fellows with your creeks and your harbor improvements in the East, with your projects that have been approved here for generations, are going to take a back seat until somebody replenishes the Treasury, while these gentlemen with their two projects take care of themselves.

Oh, yes, Mr. Chairman, I want to see the Mississippi Valley improved, I want to see the river regulated, I want to see the floods controlled, but I do not want to wait forever for the crumbs from the table to open up the revenue-creating, burden-bearing waterways of the Atlantic coast.

What is responsible for the floods on the Mississippi? Much has been blamed on the Northern States. Why, gentlemen, I gather from a speech by Col. Townsend, the chief witness of our Mississippi Valley friends, that most of the flood trouble of the Mississippi comes from the Gulf. The warm southern winds come up from the Gulf and drop their waters in the lower Mississippi Valley; that is one of the contributing causes of the floods. You folks in the North are not wholly responsible. You have been depositing good northern soil on the lower Mississippi Valley and you have improved it. The people who moved in upon it did so at the risk of their property and lives. The Lord Almighty controls the flow and requires for it a certain amount of space——

Mr. SWITZER. Mr. Chairman, will the gentleman yield?

Mr. MOORE of Pennsylvania. I can not yield. Because I must say a word for the East. I do not care how much the Speaker or any good Democrat stirs up the East and calls it effete. In its ignorance of the effect of congressional action it deserves to be called effete. The East is asleep. The people in Boston, the people in New York, the people in Philadelphia, have no conception of the amount of taxes they will have to pay to keep up with the appropriations that are being made by this Democratic Congress. You are writing into the law burdens that they will have to pay and which can not be lifted from their shoulders for years.

I do not blame the Democratic Party altogether; it is in power; it is making appropriations to build up every section

of the country where it has influence. Go ahead, I glory in the reconstruction of the South, but there is no reason why the people of the Atlantic seaboard should be deceived about the $45,000,000 they are voting to you to reclaim that 16,000,000 acres of land in the lower Mississippi Valley. They have 78,000,000 acres of unimproved land over yonder along the Atlantic coast that still awaits the hand of the tiller, and you have not given them a dollar to improve or reclaim it. Even in these times when we want to prepare our coast for defenses, where we have 40 per cent of the population and 56 per cent of the manufactured wealth, you make us stand aside when we ask to open up the inside passages to let through the submarines of the Navy of the United States, which will be absolutely essential for our protection in time of war.

Over yonder on the Atlantic seaboard you say they are effete. I guess there is some truth in it, for if it were not for a few Representatives in Congress who tell them the truth once in a while, they would be blinded to the magazine cry of "pork," while the Middle West and the South get away with the money. Why, gentlemen, on the other side of the Capitol they are now conducting a filibuster that delights a considerable portion of the taxpayers of the East. They are trying to kill legitimate river and harbor projects, while you gentlemen on the Democratic side of the House, with the support of certain gentlemen on the other side of the House, are ramming your arms down into the Treasury to the tune of $45,000,000, to cinch the job on the lower Mississippi for the next four or five years. While you are taking it away from the East you are providing an expenditure that will keep everybody employed on the lower Mississippi, that will keep money in circulation down there at the expense of all of the people, and you are doing it by taking in the people of the Sacramento Valley, which will secure the votes of the Pacific coast for the modest appropriation of $5,600,000. Mr. Chairman, I am glad to have this opportunity to tell the slumbering, if not the satisfied East, exactly what you are doing to it. It may not be as broad and as patriotic as it ought to be, but it is not far from the truth. [Applause.]

Mr. FREAR. Mr. Chairman, I have only five minutes in which to speak, and I trust that I will not be interrupted. The distinguished Speaker of the House did me the courtesy of personal mention, because of opposition to both this bill and the river and harbor bill. I hold him in the highest esteem because of his eminent fairness in the House, and I believe I represent the general sentiment on both sides of the aisle when I make that statement. It is impossible to discuss this bill in five minutes or to express one's self fully when the leaders on both sides take positions in favor of the bill. But though I stood alone, as was nearly the case at first on the river and harbor pork-barrel fight, I am opposed to this bill as I was opposed to that bill, and the same reason applies to both. I say this in answer to that criticism. The Speaker says, "If this is your own district, it is not 'pork.'" In my judgment it is "pork" wherever located. If you voted the people of Wisconsin, my own State, $20,000,000 for reclaiming swamp lands, as proposed for the Missouri River—river and harbor project which reclaims 500,000 acres of land—it would be indefensible. It would be "pork" wherever located, and the country has no right to be taxed for such purpose, either for Missouri landowners or for landowners in Wisconsin. That is one reason why I opposed the rivers and harbors bill, because of proposals which I believed were absolutely indefensible. In the lower Mississippi Valley are 16,000,000 acres to be reclaimed by this bill. The committee says it is exceptionally valuable land. True; but no better than in the States of Wisconsin, Iowa, Illinois, or elsewhere, where we reclaim our own lands at our own expense; but I believe the money appropriated by this bill and which the Government is to expend will be wasted. Whether it is or not, the people who have that land, who get the benefit, are the ones who ought to pay for it. Yet under this bill the Government pays two-thirds of $45,000,000. Why tax the people of this country to reclaim 16,000,000 acres of land for private owners along the Mississippi River, and, after this bill is put through and in cold storage, we will next get to 780,000 waiting acres along the upper Mississippi below Rock Island? Why should the people of this country be obliged to pay taxes to reclaim lands along the Missouri River or on the Mississippi or on lands out in California along the Sacramento?

Now, let me say a word personally in reply to a suggestion from the Speaker. I never considered the fact of relationship when proposing the editorial read. Yesterday an article was introduced in the RECORD reflecting on me and taken from the New Orleans Picayune. I brought a different statement from another New Orleans paper this morning for the purpose of answering the Picayune and that explains the presence of the New Orleans Item editorial. I offered one editorial for the purpose of answering the other, both from New Orleans. Criticism has been made over the river and harbor fight. We had 143 votes this year against the river and harbor bill—that is the effect of two or three years' work showing up projects including rivers in Texas and the Missouri River and other rivers all over the country that are not carriers of commerce. That is what should defeat the river and harbor bill, and that is what makes it a pork-barrel bill because it has many items just like this proposition. This Mississippi River project has been masquerading for years as a navigation project, when we all knew it was not. It is a land-reclamation project inconsistent with any flood-control proposal. The Speaker well said when the flood committee bill was introduced, and I believe he then had the right perspective, that the people who have these lands reclaimed will be required to pay for land reclamation. That should be done. The taxpayers of this country ought not to be required to reclaim these lands, and whether they are in California or Mississippi is immaterial—whether North or South, the proposal is wrong in principle.

The CHAIRMAN. The time of the gentleman has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I yield five minutes to the gentleman from New York [Mr. HULBERT].

Mr. HULBERT. Mr. Chairman and gentlemen, I am not one of those whom the illustrious Speaker of the House has distinguished, as stated by the gentleman from Wisconsin, because, perhaps, up until now I have not deserved it; but, like the gentleman from Pennsylvania, I do feel that the remarks of the Speaker warrant me in calling the attention of the committee to one feature emphasized by him, not because, as the gentleman from Philadelphia [Mr. MOORE] says, that the people of Boston, of New York, of Philadelphia, are asleep, for of the people of the latter city I can not speak, and the gentleman from Philadelphia, who lives there, is qualified to set up his judgment against mine [laughter]; but the people of Boston, where I have many more acquaintances, and the people of New York, which is my own city, are not asleep. But our difficulty is we are so busy caring for about 75 per cent of the country's foreign commerce that our people are too indifferent to the needs of that community, and it does require an occasional thrust from a Member of Congress in order to awaken them to the necessities of the occasion.

The distinguished gentleman from Illinois, whom we all revere, says there are rivers and rivers; and the Speaker said that the Mississippi was one of them, and to that I agree; and that the Sacramento was another, and to that I agree; that the Delaware is another, and to that I agree; and the East River, including Hell Gate, was another, and to that I agree. The only difference between the importance of those four rivers, if it is measured by the amount of appropriations which are made by Congress for their improvement, is that the Mississippi has received more than $160,000,000 and $45,000,000 more is provided for it, and for the Sacramento River the provision in this bill is over $5,600,000. The last river and harbor bill, which passed the House and is now in the Senate, carried $2,500,000 for the Delaware River, and for the improvement of Hell Gate, East River, the bill did not carry a dollar—not a dollar—and the only appropriation which was in the bill for the East River was a measly $200,000 in order to provide access to the navy yard from the southern entrance to New York Harbor, and is no longer in since the bill got over into the Senate.

I believe, Mr. Chairman, that improvements of such national character as the Mississippi River ought to be a matter of special legislation. But I also believe that a matter as important to this country as New York Harbor ought to be made a matter of special legislation. Whether you are going to improve the anchorage grounds off the Statue of Liberty, where to-day and every day vessels are going aground because the water is not of sufficient depth, should not depend upon a trade with some Representative who seeks to improve a part of the country where there may be but 2 or 3 inches of water in some unnamed creek. This bill which we have under consideration is entitled "A bill to provide for the control of the floods of the Mississippi River, and for other purposes."

The CHAIRMAN. The time of the gentleman has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I yield five minutes to the gentleman from Mississippi [Mr. SISSON].

Mr. SISSON. Mr. Chairman, I have not taken occasion to say anything during the three Calendar Wednesdays on which this bill has been discussed. But I feel constrained to say a word at this time in reply to the gentleman from Pennsylvania [Mr. MOORE].

Some people believe in party regularity and some do not. My understanding is that the gentleman from Pennsylvania [Mr.

MOORE] has been one of the gentlemen who usually believes in party regularity. It seems, however, that on this occasion he deserts his party. I do not intend to answer the sectional insinuations that the gentleman sees fit and proper to use in reference to this bill, and I am most grateful to a good Providence that I have been permitted to live to see the day when sectionalism has about passed away. My hope is that it will completely pass away soon.

I listened with great delight to the speech which the gentleman from Illinois [Mr. CANNON] made the other day on Abraham Lincoln, and we all might take a great deal to ourselves from his remarks, because we do now have one great country; and unless a man is circumscribed by selfishness and bound up by his navy yard and his wharves and lives in a sleepy city like Philadelphia, he will realize that there is much outside of his very small and narrow scope and narrow vision. I call his attention to his own party platform, and then will let him answer to his constituents as to whether or not he is willing to be regular and is willing to help carry out his party pledges. I read from the last platform of the Republican Party:

The Mississippi River is the Nation's drainage ditch. Its flood waters, gathered from 31 States and the Dominion of Canada, constitute an overpowering force which breaks the levees and pours its torrents over many million acres of the richest land in the Union, stopping mails, impeding commerce, and causing great loss of life and property. These floods are national in scope, and the disasters they produce seriously affect the general welfare. The States, unaided, can not cope with this giant problem. Hence, we believe the Federal Government should assume a fair proportion of the burden of its control, so as to prevent the disasters from recurring floods.

And this is what the Republican platform said; and, although not in exactly the same language, the Democratic Party has committed itself to this great and national problem; and so did the Progressive Party. There were three great conventions that met and indorsed the control of the Mississippi River, and, therefore, it is only a question of the amount of money necessary to perform the pledge which the three parties have made to control the river. The engineers have made that estimate, and it is in this bill. Not only that, gentlemen say that this is "pork," when the unqualified testimony of all the engineers is that we save at least $5,000,000 by making this a continuing contract; and the Federal Government then withdraws aid and the States or levee districts take charge of it and the Federal Government is called upon to contribute no more. [Applause.]

The CHAIRMAN. The time of the gentleman has expired. All time has expired. The question is on the amendment offered by the gentleman from Pennsylvania [Mr. MOORE].

The question was taken, and the amendment was rejected.

Mr. HULBERT. Mr. Chairman, I offer an amendment as a new section.

The CHAIRMAN. The gentleman from New York offers an amendment, which the Clerk will report.

The Clerk read as follows:

Insert as a new section, after line 18, page 6:

"That the sum of $20,000,000 be, and the same is hereby, appropriated out of any money in the Treasury not otherwise appropriated, to be made immediately available and to be expended under the direction of the Secretary of the Treasury and the supervision of the Chief of Engineers of the United States Army for the improvement of the port of New York, the Hudson River, and Long Island Sound, in accordance with the surveys and reports made by the Chief of Engineers in the United States Army."

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I make a point of order against that.

Mr. HULBERT. I will ask the gentleman if he will not reserve it?

Mr. HUMPHREYS of Mississippi. I think we had better proceed with the bill. This is clearly subject to a point of order, Mr. Chairman. It carries an appropriation.

Mr. HULBERT. What is the point of order, Mr. Chairman?

Mr. HUMPHREYS of Mississippi. That it carries an appropriation.

The CHAIRMAN. Does the gentleman from Mississippi make the point of order?

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I reserve it for five minutes.

Mr. HULBERT. Mr. Chairman, continuing the remarks in which I was interrupted at the expiration of my time, it seems to me that this amendment——

Mr. MOORE of Pennsylvania. Will the gentleman permit an interruption at this point?

Mr. HULBERT. For just a question.

Mr. MOORE of Pennsylvania. The gentleman by his amendment asks for $20,000,000?

Mr. HULBERT. Yes.

Mr. MOORE of Pennsylvania. According to the reasons of the gentleman from Mississippi [Mr. SISSON], would the gentleman be able to save the Government $5,000,000 right now if we reduced it to $15,000,000?

Mr. HULBERT. I suppose in the matter of the expenditure of the money at this time that that might be debatable, but I claim that the Government, by not appropriating this $20,000,000 for the improvement of New York Harbor and not improving the port at which 75 per cent of all the customs revenue of the country is collected, is losing many times the sum of money that we have asked for.

Mr. MOORE of Pennsylvania. But if the gentleman had asked for $15,000,000 instead of $20,000,000 he would have saved the Government $5,000,000 right now.

Mr. HULBERT. Well, I will let the gentleman settle that with the gentleman from Mississippi.

This amendment, Mr. Chairman, is perfectly germane to the subject under consideration. One of the projects that I intend to cover in this amendment is the anchorage grounds directly opposite the Statue of Liberty in New York Harbor, which has in recent years so filled up that, with the increased draft of vessels, both trans-Atlantic and coastwise, that come into the harbor, there are not adequate facilities for anchoring at that point. That condition is brought about by the heavy floods in the Hudson River, which bring down and deposit at this point alluvial soil and mud, just as the Mississippi River deposits silt at its mouth.

The State of New York has, by an expenditure of $154,000,000, about completed and opened the State Barge Canal. That canal will carry a great quantity of additional water coming from the Great Lakes, and as to the effect of that, what it will be, flowing down the Hudson River, I am unable to say. But it does seem to me that the conditions that have obtained up to this time certainly are not sufficient to give a full right of way to this enormous amount of additional water, as well as of commerce, it will bear down to New York Harbor.

I want to call the attention of this House to the fact that in 1902, 14 years ago, when the State Legislature of New York voted the authorization for a $101,000,000 bond issue for the construction of this great national waterway, uniting the Great Lakes with the Hudson River, the Congress was called upon to make a survey for the improvement of the Harlem Kills, in my own congressional district, connecting up the Harlem River and the East River with Long Island Sound, and enabling vessels to gain access into the East River and Long Island Sound and avoid the perils of Hell Gate.

Mr. EMERSON. Mr. Chairman, will the gentleman yield?

The CHAIRMAN. Does the gentleman yield?

Mr. HULBERT. I can not yield now. A survey was made. That improvement would save 11 miles in distance for every vessel going from the Harlem River into Long Island Sound or from the Sound into the river. The survey was made, I say, and the Chief of Engineers favorably reported back to this House in 1902 that this improvement should be made at a cost of $2,000,000, and stated that the effect of that improvement would be to diminish the currents at Hell Gate and decrease the dangers of Hell Gate by 30 per cent. And yet that has lain here unacted upon for a period of 14 years.

Within that time the people of the State of New York, upon the good faith of the report of the Chief of Engineers and in the belief that the Congress would be as willing to appropriate $2,000,000 in order to complete the terminal for this great waterway as the people of New York would be to spend $150,000,000 for its construction, have gone ahead with that improvement. The improvement is about completed. It is about to be opened, but Congress has done nothing in the meantime, and it is only by a bill of this character that we can get any action, because at this session of Congress the committee voted not to take on any new projects, and they took the same action in the last Congress, and God only knows when they will take action on this project. Until they do the people of the great Northwest and the people of the East who are to be benefited by this great improvement must bide their time.

My amendment includes the following projects recommended by the Chief of Engineers, United States Army, and approved by the Secretary of War. Their imperative necessity can not be questioned:

East River, N. Y.: For improvement with a view to providing a channel 35 feet deep from deep water in New York Harbor to Long Island Sound, in accordance with report published in House Document 188, Sixty-third Congress, first session, $500,000.

Harlem or Bronx Kills, N. Y.: For the commencement of the improvement, with a view to securing a channel 300 feet wide and 18 feet deep, in accordance with report published in House Document 188, Fifty-eighth Congress, second session, and House Document 188, Sixty-third Congress, first session, $500,000.

New York Harbor, N. Y.: Upper bay, with a view to improving channel opposite anchorage grounds, in accordance with House Document 518, Sixty-third Congress, second session, $250,000.

New York Harbor, N. Y.: With a view to the removal of Craven Shoal in accordance with House Document 518, Sixty-third congress, second session, $30,000.

New York Harbor, N. Y.: With a view to securing additional width in Bay Ridge and Red Hook Channels in accordance with House Document 863, Sixty-third Congress, second session, $300,000.

New York Harbor, N. Y.: With a view to securing a suitable depth of channel to the navy yard through Buttermilk Channel in accordance with House Document 44, Sixty-third Congress, first session, $700,000.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I make a point of order on that.

The CHAIRMAN. The point of order is sustained.

Mr. BENNET. Mr. Chairman, I offer an amendment by way of a new section.

The CHAIRMAN. The Clerk will report it.

The Clerk read as follows:

Amendment offered by Mr. BENNET as a new section, to follow line 18, page 6:

"That for the purpose of controlling floods along the Atlantic coast the President of the United States is hereby authorized to acquire and build for and on behalf of the United States at a cost not exceeding the amount of the bonds authorized to be issued to aid in the construction of the Isthmian Canal remaining unissued December 1, 1915, such works as he may deem necessary, including an intracoastal waterway from such a point north of the city of New York, N. Y., to such a point south of the city of Savannah, Ga., as in his judgment he may deem advisable, the route, width, depth, and other engineering details of the said waterway shall be determined by the War Department, subject to such modifications as the President may direct; that the President is authorized, for the purposes aforesaid, to employ such persons as he may deem necessary and to fix their compensation; and the President is hereby authorized to cause to be entered into such contract or contracts, as may be deemed necessary, for the proper acquisition, construction, and completion of such works, including such waterway by the route finally determined upon by him under the provisions of this act.

"In addition to the powers conferred upon the President by this act, he shall have, in relation to the proposed works and waterway, all the powers, so far as applicable, conferred upon him by the various acts passed to provide for the construction of a canal connecting the waters of the Atlantic and Pacific Oceans, including the act of June 28, 1902, chapter 1302, Thirty-second Statutes at Large, page 481, and all acts amendatory and supplementary thereto."

Mr. FOSTER. Mr. Chairman, I make a point of order on that.

Mr. BENNET. It is not subject to it.

The CHAIRMAN. The gentleman from Illinois [Mr. FOSTER] makes the point of order on the amendment.

Mr. FOSTER. It provides for the building of a waterway on the Atlantic coast.

Mr. BENNET. Oh, no.

Mr. FOSTER. Yes; it says so. The gentleman evidently has not read it.

Mr. BENNET. Oh, yes, I have. I drew it. It provides for flood control.

Mr. FOSTER. It provides for building a waterway along the coast. The gentleman can not get around the rule by putting in an amendment of that kind, which he himself knows is not germane.

Mr. BENNET. I would like to be heard on the point of order.

Mr. FOSTER. I will withdraw the point of order, then, Mr. Chairman. [Laughter.]

Mr. CULLOP. Mr. Chairman, I renew the point of order.

Mr. FOSTER. Mr. Chairman, I ask unanimous consent that the debate be closed in five minutes.

The CHAIRMAN. The gentleman from Illinois asks unanimous consent that all debate on this amendment close in five minutes. Is there objection?

Mr. MOORE of Pennsylvania. Mr. Chairman, reserving the right to object, I would like to have some time.

The CHAIRMAN. Is there objection?

Mr. FOSTER. Does the gentleman from Pennsylvania object?

Mr. MOORE of Pennsylvania. I reserve the right to object.

Mr. FOSTER. Then I will move to close debate as soon as the gentleman from New York [Mr. BENNET] gets through.

The CHAIRMAN. The Chair will hear the gentleman from New York on his point of order.

Mr. BENNET. Mr. Chairman, I understood the point of order to be withdrawn?

Mr. FERRIS. The gentleman from Indiana [Mr. CULLOP] renewed the point of order.

Mr. MOORE of Pennsylvania. Is the gentleman going to make the point of order?

Mr. CULLOP. Mr. Chairman, I make the point of order.

The CHAIRMAN. The Chair will hear the gentleman from New York on the point of order.

Mr. BENNET. Mr. Chairman, I am surprised that such good parliamentarians should make a point of order on an amendment of this kind, which is so clearly in order. The title of this bill is "To provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes." Under the last three words a good deal of latitude is permissible, but I do not think that——

Mr. MEEKER. Mr. Chairman, will the gentleman yield for a question?

Mr. BENNET. Yes; for a question.

Mr. MEEKER. Does not the gentleman think that he took a good deal of latitude in his amendment?

Mr. BENNET. No; I think not. In the bill, if the Chair will look at the different sections, he will find these things provided for: First, the removal of débris in the Sacramento River provision; second, the authorization of surveys in the Mississippi provision; third, the continuance of channel construction in the Sacramento provision; fourth, the building of levees in the Mississippi provision; fifth, general river construction; so that we have to start with the title that permits it, and we have to follow that five different methods applied to two very widely separated river systems. In a bill which has become general, in a bill which must be general, because the Committee on Flood Control has no authority or power except to report a general bill, why is not this amendment, which simply provides the method for flood control along the Atlantic coast absolutely germane? The gentleman from Illinois [Mr. FOSTER], who has made the point of order, and then like a good parliamentarian withdrew it——

Mr. FOSTER. Oh, I withdrew it because I thought we could get through with this quicker the other way. [Laughter.]

Mr. BENNET. I am sorry that the gentleman is destroying his reputation. [Laughter.] The gentleman is perfectly aware of this fact, that while he may not think, while others may not think, while even the Chair may not think that the best way to control floods is by the construction of a waterway, it is not for the Chair to say, I respectfully submit, not for any Member of the committee to say; but that goes to the judgment of the Committee of the Whole in passing upon the question of whether the amendment reaches the purpose at which it is aimed. I submit in all seriousness that this being a general bill, providing for other purposes than the Sacramento and the Mississippi Rivers, being confined by its language to the question of flood control, and there being five different methods of flood control in the bill, these two other methods of flood control ought not to be ruled out of order simply because they pertain to the Atlantic coast rather than to the Pacific coast or to the Mississippi Valley.

Mr. MANN. Mr. Chairman, I think I can demonstrate in less than the five minutes that will be occupied upon the amendment that it is clearly subject to a point of order. The gentleman might have introduced an amendment stating that "for the purpose of flood control" there is hereby provided authority to the President of the United States to build the post-office building in the city of New York to cost $25,000,000, but that would not make it in order.

Mr. BENNET. Certainly not.

Mr. MANN. It is likewise not in order in this case to say that "for the purpose of flood control" the President of the United States shall have authority to build an intracoastal canal. One is just as much in order as the other. If the mere words "for the purpose of flood control" would make an amendment in order, you might provide that we would build a road from here to the moon, and call that in order. The Chair will note that this is an amendment that belongs to the Committee on Railways and Canals; it is for the construction of a canal, not for the purpose of flood control, and the subterfuge of saying that a thing is for flood control does not take it away from the judgment of the Chair and give it to the House. If that were the case you could put anything in the world in order on any bill by indicating falsely that it was for a certain purpose when it was not for any such purpose. Besides that, the amendment says that the President of the United States shall have the same authority here that he had over the Canal Zone, which goes into the subject of sanitation, government, and everything else. That would not be in order on this bill to say that the President of the United States shall have control of government all along the line of an intercoastal canal.

The CHAIRMAN. The Chair is ready to rule. The bill under consideration deals with flood control, and the amendment offered by the gentleman from New York [Mr. BENNET] deals with the construction of a canal, introduced originally as H. R. 496 and referred to the Committee on Railways and Canals. The Chair is clearly of the opinion that it is not germane, and the point of order is sustained.

The Clerk read as follows:

GENERAL PROVISIONS.

SEC. 3. That all money appropriated for works and projects relating to flood control hereafter authorized shall be expended, and all examinations, surveys, and improvements of such works and projects shall be made, under the direction of the Secretary of War and the supervision of the Chief of Engineers; and all the provisions of existing law relating to examinations and surveys and to works of improvement of

rivers and harbors shall apply, so far as applicable, to examinations and surveys and to works of improvement relating to flood control. And all expenditures of funds hereafter appropriated for works and projects relating to flood control shall be made in accordance with and subject to the law governing the disbursement and expenditure of funds appropriated for the improvement of rivers and harbors.

Mr. MANN. Mr. Chairman, I offer the following amendment.

The Clerk read as follows:

Page 6, line 20, after the word "that," strike out all down to and including the word "and" in line 25.

Mr. MANN. Mr. Chairman, I think that is satisfactory to the committee, as it removes an ambiguity.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, there is no objection to that on the part of the committee.

Mr. HILL. Mr. Chairman and gentlemen, a few years ago I sat in the gallery of the Chamber of the House of Commons in England, and I heard a speaker make this remark: "If by walking across that aisle I could save the English Government a million pounds, I would not take one step." As I listened to him I said to myself, "I hope the time will never come when my vote on an appropriation in Congress will be governed by sectional considerations." [Applause.]

In 1865 I came up the Mississippi River. In 1909, I think it was, I went down the Mississippi River, and, with the exception of the magnificent growth in Memphis, I saw little change in the 50 years that had transpired. I saw a section of the country practically without growth and right in the heart of my country with wealth and prosperity on the east and with rapid growth on the west. I said to myself, "I am not an engineer, I am not a person who is capable of deciding how this thing should be done, but I believe that with American spirit and American genius and American enterprise it is possible to remove this great waste space between the prosperity and wealth on each side and make it equal to the others, with a uniform and steady growth for a common country right straight through. [Applause.]

Now, I may be wrong. It may be possible that levees will not do it; it may be possible that it needs impounding of the waters in the Northwest, but I am for trying an experiment which will remove this waste space in the heart of my country, which will improve this great waterway, and give the possibility of prosperity to these people. [Applause.]

I traveled down the Amur River, in Siberia, where the depth of the water varies at different seasons from nothing to 57 feet. I have seen the river for 2,000 miles policed every day, with the water on every bar measured, with signals on the bank always in sight, and when I saw that, gentlemen, and compared it with what I saw on the Mississippi River, I was proud of Russia and less proud of my own country because of the conditions I have seen here.

Now, it may be a mistake; I do not know; but we are a great, rich, wealthy country. My own idea in regard to the matter is, knowing as you do about my views on taxation, that I would not put this project into current expenditures in this country. I would provide an income tax for just this purpose. That is what I think an income tax should be reserved for, a great national enterprise like this, and I stand here to-day to advocate this proposition for the common welfare of the whole country. [Applause.]

The CHAIRMAN. The question is on the amendment offered by the gentleman from Illinois [Mr. MANN].

The question was taken, and the amendment was agreed to.

Mr. MOORE of Pennsylvania. Mr. Chairman, I offer the following amendment, which I send to the desk.

The Clerk read as follows:

On page 7, line 9, after the word "harbors," insert the following:

"*Provided*, That no appropriation authorized by this act or made in pursuance thereof, nor any part of an appropriation so authorized or made, shall be available for any of the purposes provided for in this act, if appropriations for such purpose have been made or shall hereafter be made in any other act."

Mr. MOORE of Pennsylvania. Mr. Chairman, while strong pleas are made for appropriations for people who live in the Mississippi Valley, because their lands are subject to overflow, nothing is said about the nine million and odd acres of vacant land in Virginia, nor is any consideration given to the arable and watered lands along the Atlantic seaboard where hundreds of thousands of people could find homes and raise crops without danger of flood, if they were fortunate enough.

But, Mr. Chairman, to obtain Government assistance it seems to me fair since the present Congress has already appropriated in the river and harbor bill $6,000,000 for the building of levees along the lower Mississippi from the head of the passes to the mouth of the Ohio River, and two million more for various other work on the Mississippi River, we ought not to duplicate appropriations through the Flood Control Committee. For that reason I offer this amendment.

If we pass a river and harbor bill taking care of the Mississippi River in the ordinary way, we ought not to do it again in a flood-control bill. Notwithstanding all the eloquence and pleadings of gentlemen who now talk sectionalism we have appropriated $166,000,000 altogether, $87,000,000 of which was spent for the lower Mississippi for this work through the Rivers and Harbors Committee. In view of this it seems to me there should be a provision in this bill that if the Government in a river and harbor bill for this year or any other year, appropriates $6,000,000, or any other sum, the Mississippi folks ought not to come back with a poor mouth, talking sectionalism, and ask for $45,000,000, or any other sum, through a flood-control bill.

My friend from Connecticut can take the same ground that other gentlemen have taken, that we ought to be liberal, that we ought to scuttle our own homes and give to those who have not, that we ought to depopulate our cities and send the people out from firm land into the flood areas, that we ought to give away all we have and expect nothing in return; but I am not ready to go quite that far. I do not think breadth and patriotism, which are now talked about so lightly and so loudly on this floor, require that we should give up all our appropriations and then do it twice. It seems to me that the amendment is fair. If the Committee on Flood Control proposes to stand on its own bottom, it ought not to rob the Committee on Rivers and Harbors. It ought to leave something for its faithful old friends except the flavor of "pork." The committee ought to accept the new provisions and be satisfied with what it can get with the tremendous influence behind it. It ought to let the Rivers and Harbors Committee alone. If there is no member of the Rivers and Harbors Committee here with fire enough in his breast to stand up for his prerogatives, permit me as a friend of that unfortunate galaxy of hitherto brilliant and successful statesmen to say a word in their behalf. [Applause.] The Flood Control Committee should not permit any project to take money twice for the same purpose. While you take $45,000,000 for the big Father of Waters, which is now in a sanctified class by itself, you should be generous enough to give the little creeks that are left to the Rivers and Harbors Committee a chance to keep clear of the pork barrel.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I want to see if we can not close debate. [Cries of "Vote!"]

Mr. CULLOP. Mr. Chairman——

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I move to close debate on this paragraph and all amendments thereto now.

The CHAIRMAN. The gentleman from Mississippi moves to close debate on this paragraph and all amendments thereto.

The question was taken, and the motion was agreed to.

The CHAIRMAN. The question is on the amendment offered by the gentleman from Pennsylvania.

The question was taken, and the amendment was rejected.

The Clerk read as follows:

All examinations and surveys of projects relating to flood control shall include a comprehensive study of the watershed or watersheds, and the report thereon in addition to any other matter upon which a report is required shall give such data as it may be practicable to secure in regard to (a) the extent and character of the area to be affected by the proposed improvement; (b) the probable effect upon any navigable water or waterway; (c) the possible economical development and utilization of water power; and (d) such other uses as may be properly related to or coordinated with the project. And the heads of the several departments of the Government may, in their discretion, upon the request of the Secretary of War, detail representatives from their respective departments to assist the engineers of the Army in the study and examination of such watersheds, to the end that duplication of work may be avoided and the various services of the Government economically coordinated therein: *Provided*, That all reports on preliminary examinations hereafter authorized, together with the report of the Board of Engineers for Rivers and Harbors thereon, shall be submitted to the Secretary of War by the Chief of Engineers, with his recommendations, and shall be transmitted by the Secretary of War to the House of Representatives, and are hereby ordered to be printed when so made.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, has the gentleman from Pennsylvania an amendment?

Mr. MOORE of Pennsylvania. I have an amendment.

Mr. MANN. We want 20 minutes on this side.

Mr. HUMPHREYS of Mississippi. I have a request for 15 minutes. I will ask unanimous consent that debate on this paragraph and all amendments thereto close in 40 minutes, 20 minutes to be controlled by the gentleman from Illinois [Mr. MANN] and 20 minutes by myself.

The CHAIRMAN. The gentleman from Mississippi asks unanimous consent that all debate on this paragraph and all amendments thereto close in 40 minutes—20 minutes to be controlled by himself and 20 minutes by the gentleman from Illinois. Is there objection? [After a pause.] The Chair hears none.

Mr. MANN. Mr. Chairman, I yield five minutes to the gentleman from Pennsylvania [Mr. MOORE].

Mr. MOORE of Pennsylvania. Mr. Chairman, I offer an amendment, which I send to the Clerk's desk.

The CHAIRMAN. The Clerk will report it.

The Clerk read as follows:

Page 8, line 8, after the word "made," insert the following new paragraph:

"The Secretary of War is hereby authorized and directed to report to Congress on or before December 1, 1916, a list of all rivers, harbors, and waterways of the United States that are subject to floods, including, but in addition to, the Mississippi River and the Sacramento River, as herein specially provided for, said report to include all available information as to loss of life and damage to property on such rivers, harbors, and waterways, together with such recommendations as the Secretary of War may deem appropriate to enable Congress to take steps to protect life and property endangered by floods whenever and wherever they may occur in the United States."

Mr. MOORE of Pennsylvania. Mr. Chairman, has unanimous consent been granted to extend remarks? If not, I ask unanimous consent that I may extend my remarks in the RECORD.

The CHAIRMAN. Is there objection to the request of the gentleman from Pennsylvania? [After a pause.] The Chair hears none.

Mr. MOORE of Pennsylvania. Mr. Chairman, this amendment proposes that the Secretary of War shall be directed to report to Congress every project worthy of improvement for flood control apart from the Mississippi and the Sacramento. There are many other such projects in the United States that have an equal right to consideration with those two rivers—rivers in the West, rivers in the Middle West, and rivers in the East. I have no doubt in the course of time, after they have expended at least a portion of this $45,000,000 on the lower Mississippi, that the Flood Control Committee will take up some of the tributaries of the Mississippi, and they will come in for early consideration in view of their powerful influence in this House. I would not be surprised if the rivers entering into the Mississippi would have first call. But in order that there may be a square deal to all sections of the country and we may eliminate even a suspicion of sectionalism, as suggested by the gentleman from Mississippi [Mr. SISSON] and one or two others, I think we should have the Secretary of War, without regard to section, without regard to preference, prejudice, or influence, report to Congress all the rivers, all the waterways, all the harbors of this country that are subject to overflow on which there may be a loss of life or of property.

Mr. GREEN of Iowa. Will the gentleman yield?

Mr. MOORE of Pennsylvania. For a question.

Mr. GREEN of Iowa. Is the gentleman's amendment confined to navigable streams?

Mr. MOORE of Pennsylvania. It applies to all waterways and all rivers and harbors.

Of course they should all be in it. If this Flood Committee was not organized for the sole and exclusive purpose at this particular time of taking $45,000,000 exclusively for the lower Mississippi and doubling up with that $5,600,000 for the Sacramento to get the western vote, it would have brought in some other rivers that are subject to overflow. But it has brought in only two rivers, on the assumption and statement of the chairman and others that these are the only two rivers in the United States upon which the engineers have reported, whereas as a matter of fact the chairman of the Committee on Rivers and Harbors, if he were here, would say that there are a number of projects upon which there is an ebb and flow, upon which there are flood waters that have been approved to the tune of three or four hundred millions of dollars. These projects have not yet had a hearing of this House or even in another body, which is accustomed to indulge in a filibuster.

The CHAIRMAN. The time of the gentleman has expired.

Mr. MANN. Mr. Chairman, I yield 15 minutes to my colleague from Illinois [Mr. MADDEN].

Mr. MADDEN. Mr. Chairman, when the House decided to appoint the Committee on Flood Control I was very happy, for I believed the House had decided to enter upon one of the most important functions that the Congress has ever undertaken. And when in its wisdom the House selected the gentleman from Mississippi [Mr. HUMPHREYS] as the chairman of this committee I was still more pleased, because I know of no man who has ever served in this House better qualified to undertake this great work than is the gentleman from Mississippi. I think the question of flood control is one in which every American is interested. My hope was that when this committee began the study of this great work it would take a comprehensive view of the question committed to its care, and that instead of beginning to regulate the flow of the waters at the outlet of the Mississippi River and the Sacramento River, that it would begin to regulate the flow of the waters at the heads of the tributaries of these two great rivers. The regulation of the waters at the heads of the rivers would admit the storing of flood waters and controlling their flow, so that a minimum and maximum channel might be fixed in all the tributaries, and in the Mississippi and Sacramento Rivers as well. That is not all.

The conservation of the natural resources of the United States is one of the most important questions before the American people, and there is no natural resource in America as impotant as the water which flows through the rivers of the country. And if we can regulate the floods of the rivers by impounding the waters at the head of the rivers and letting them flow through the rivers by mechanical means as we wanted the water to flow, that would not only stop the floods but we would be able to create water power in sufficient quantity to operate all of the machinery in all of the factories that exist in the United States to-day and in every day that is to come.

Now, a comprehensive survey of the question involved would have dictated a more serious consideration of the problems to be dealt with than this committee has given to the question thus far. It could not have been possible for any committee of this House, no matter how well advised, to reach a conclusion within 60 or 90 days, and that is the life of the committee that has charge of this legislation, and that would take into consideration the importance of this great question. It is national in its scope; it is a thing in which we are all interested; it has been proved beyond any doubt by men of scientific minds and who have made a thorough research, that every horsepower of hydroelectric energy created by water power is equivalent to providing for the opportunity of a living for three people where only one now lives. And it is estimated that the value of every person living in America is about $2,400 to $3,600 per annum, and it has been shown beyond any reasonable doubt that it would be possible——

Mr. BENNET. Will the gentleman yield for a question?

Mr. MADDEN (continuing). By a proper control of the waters at the heads of the various rivers to develop 200,000,000 horsepower by the conservation of the waters of the rivers of America. And it is shown that there are only 18,000,000 potential horsepower in use in America to-day. It is true that all this could not be accomplished in 90 days, but I believe that $45,000,000 expended at the headwaters of the tributaries of the Mississippi and other great rivers of America would do a thousand times more to conserve and regulate the floods of the Mississippi River than the expenditure of $45,000,000 in the construction of levees along the river.

Now, I yield to the gentleman from New York.

Mr. BENNET. Did I understand the gentleman to say that each person in the United States is worth to the country $2,400 a year?

Mr. MADDEN. Twenty-four hundred to thirty-six hundred dollars. That is the value of each person as an intrinsic asset.

Mr. BENNET. I think most of us would be inclined to differ with the gentleman when the earning power of the individual is somewhere around $400.

Mr. MADDEN. It is believed that by the increase of this water power we can increase the potential value of every individual in this country from what it is to-day up to $2,400.

Mr. BENNET. The gentleman's statement is not that it is so now, but that it could be?

Mr. MADDEN. That it could be. I agree it is important that we should reclaim all the lands everywhere it is possible to reclaim them, but I may say that while we are attempting to reclaim these lands we ought to develop the resources so that we may utilize every dollar that we expend in the development of added wealth and give added opportunity to those who live upon the soil.

I contend that this committee overlooked the most important part of its functions by endeavoring to regulate floods at the outlet of the river instead of at the sources. Is it possible to dam up the Mississippi River so as to regulate the floods? You might just as well undertake to say that if you were to take a nozzle and attach it to a hose, and close the nozzle, the hose would stand, no matter what the pressure may be on the hose.

The scientific way to do this thing would be to start at the top, at the inlet, not at the outlet; for the more you attempt to confine the waters of the Mississippi River to a given area the more you are going to increase the speed of the current and the pressure upon the banks of the river. It will not make any difference how high or wide or strong you build the dams if the pressure from the outside forcing the current upon the inside, within a given area, a narrow area, is sufficient to break the work that you construct. Your money is wasted.

How easy it would be, say, to start at the Fox River—a little bit of a river beginning at its source in the State of Wisconsin, where we have many lakes—to make these lakes into a great reservoir, to impound the waters there, and to regulate their outgo, to keep a steady depth of water in the stream, to let the

water flow into the main channel during that part of the season when there is no water coming from other sources, and to create a water power incidental to the regulation of these streams. You can do that with much less money than you are going to spend upon a proposal like this, which I believe will be a failure. And, besides that, you can make this proposal upon which you now spend $45,000,000 a greater success, and in addition to making it a present success, you would create navigation, you would maintain the current between the banks, you would reclaim the land that is now overflowed, and you would regulate floods by regulating the stream at the source, and you would decrease the cost of steam by using water power, which can be operated at a cost of $2.50 a horsepower, and instead of manufacturing steam by means of coal you would conserve the coal supply of America, and in consequence the railroads would be better qualified to move the freight, and you would not have to parallel with new lines the old lines of railroad in order to take care of the freight of the country, and you would have a potential value placed upon the expenditure of this money out of the Federal Treasury which would be beyond estimation.

Mr. FESS. Mr. Chairman, will the gentleman yield?

Mr. MADDEN. Yes; I yield to the gentleman.

Mr. FESS. The development of this conservation of water power is one of the most important things I have heard in this debate. Is it the judgment of the gentleman that the plan proposed is irreconcilable with the conservation plan? Does the gentleman maintain that we are sacrificing that by this plan?

Mr. MADDEN. If we began at the other end of this plan, what they now propose to do would not be irreconcilable; but beginning at the end of the Mississippi River, that is, at the Gulf of Mexico and coming up the stream instead of going down the stream, you can not create any water power because you do not conserve your water. What you are trying to do by this bill is to give a rapidity to the current which will drive it between the walls of the river that you are creating by these levees, and you are thereby endeavoring to do what I believe to be an impossible thing; whereas if you did the other thing and began at the other end, you would have accomplished everything for which this committee was established.

But that would take time. They would not be able to come into the House in 90 days with a bill; perhaps not in six months. But the question before us is more important than the question of getting a bill passed. It is a question well worthy of serious consideration, and a question which is worthy of consideration ought to be given time.

We have surveys made by the Board of Army Engineers of every important tributary of the Mississippi and the Sacramento and the Columbia and the Hudson, and every other great river in the country, and they would soon be able to tell where we could impound the waters in order to get the best results, and how we could let this water loose when the time came to let it loose, and how we could not only regulate commerce and promote conservation, but create water power that would yield revenue beyond the wildest dreams of man. [Applause.]

Mr. RUSSELL of Missouri. Mr. Chairman, I yield five minutes to the gentleman from Indiana [Mr. WOOD].

The CHAIRMAN. The gentleman from Indiana [Mr. WOOD] is recognized for five minutes.

Mr. WOOD of Indiana. Mr. Chairman, I wish to say a word in answer to the argument adduced by the gentleman from Illinois [Mr. MADDEN]. The plan suggested by the gentleman from Illinois, so far as it goes, is well and good, but it will not control the flood waters of the Mississippi.

I hope to see the time when this committee that has been created will have worked out a scheme such as the gentleman contemplates, where at the headwaters of all these great streams reservoirs may be established for conserving the water, so that it may become an asset instead of a liability, in order that it may be used for water power and for irrigation. But that will not control the floods of the lower Mississippi, and I will tell you why.

Take the flood of 1913. The water area that made that flood was nowhere near the headwater of the Mississippi or the headwater of the Ohio or the headwater of the Missouri River, so that the scheme suggested by the gentleman would not have had anything to do with controlling that flood.

It is equally true with reference to the flood of 1912. Perhaps if this scheme were just now being commenced for the first time, when none of the levees already built down in that country had been built, it would be well to commence at the top and work down, and then have a scientific scheme. But when there are millions of dollars already invested that are partially controlling the waters of the lower Mississippi; when it has been demonstrated by the engineers who have been giving this subject study for years and years, and after continuous work and expenditure of money, when the money already expended can be conserved and made of value, it would be a want of economy not to follow out the line suggested by the engineers.

I hope to see this scheme started by the pending measure supplemented with the work that has been suggested by the gentleman from Illinois [Mr. MADDEN], when at the headwaters there will be impounded waters of these streams that may be let into the rivers for the purpose of controlling navigation in time of low water for the purpose of irrigating arid lands, and for various other purposes in producing horsepower for manufacturing purposes, and so forth. But this is a condition that is confronting us now. We have the floods that are coming on the people and will continue to come on them as long as the levees now built and constructed as they are are not completed and not made more efficient. I do not believe there is a Member of Congress, had he gone down over that country and viewed the situation as it presented itself to the committee as the committee saw it during their visit, but what would have been convinced that the problem has been solved by the engineers, men absolutely unselfish in their effort to subserve the people and who are trying to do the best they can for the people of the United States and who have given their lives to the work. If we can not depend upon them, upon whom can we depend?

The scheme suggested by the gentleman from Illinois would materially interfere with that project; if we should stop now it would be a waste of all the money put in. Before a survey could be made, before plans could be adopted, the country—the lower Mississippi—would be ruined and the work that they have already done would be a complete waste. We must continue the thing as we find it and make the best of the situation and improve the work already commenced. Much of it that has been done has been done skillfully and scientifically, while some has perhaps not been so done. The scheme adopted by the Army engineers will be sufficient in extent to give a waterway wide enough and deep enough to control these floods as surely as they are completed. Then the other scheme of impounding waters suggested by gentlemen can be worked out when we can do it intelligently. [Applause.]

Mr. RUSSELL of Missouri. Mr. Chairman, I yield 10 minutes to the gentleman from Ohio [Mr. GARD].

Mr. GARD. Mr. Chairman, section 3 of this bill providing for flood control is of the very greatest importance. That which we have heretofore been considering is the authorization for the payment of money. Indeed, so much of the bill might more properly be called "A bill to regulate the flow of Federal money into the Mississippi Valley and the valley of the Sacramento." [Laughter.]

Now, we do come to the point where those in charge of the bill have said the general plan is contained. They say that if there is anything that anybody in Congress knows that would improve the bill let it be offered at this time.

I think every man on the committee and every man in the House wants to vote every dollar necessary for all proper protection of the Mississippi and Sacramento Valleys, but I am sure that the members of this committee and the Members of this House do not desire to abandon the time-honored rule of procedure, and that is what I desire to call the attention of Members to in my discussion of section 3.

Some things have been cured by the amendment offered by the gentleman from Illinois [Mr. MANN] by which a part of this section was stricken out, but a great deal which was in the purpose of his amendment should be added thereto.

Section 3 provides that the entire operation of flood control, if it may be so called—for some call it navigation and some call it reclamation and some call it flood control—is placed in one department.

Now, section 3, which as I say has been cured somewhat by amendment, had for its original purpose the placing of all this work under the engineers of the Army. In other words, its operation was intended to displace the work of the Geological Survey, of the drainage associations, and of the reclamation department, and to put all work under the control of the Chief of Engineers.

It seems to me that there is great merit in the contention of the gentleman from Illinois [Mr. MADDEN], that this matter should be treated scientifically and comprehensively, and that, therefore, do I call attention of members of this committee to the minority report, which some of you may not have read, the report by Mr. CROSSER, from the Committee on Flood Control, which gives, I think, a comprehensive review of what should be necessary in the handling of this great problem. There is no greater problem in all the United States than the protection

of the lands, the property, and the lives of its people from damage and destruction by flood waters.

It is a proposition upon which should be concerted the best thought of our time. It is a proposition to be studied. I read with approval from a letter of Secretary Lane, Secretary Houston, and Secretary Redfield to the President of the United States:

It is now time, we believe, to urge a comprehensive and constructive plan of river development upon Congress, a plan which recognizes the magnitude of the problem, the impossibility of dealing with it by temporary expedients, and that looks definitely to the time when the flood evils of to-day will be remedied and the waters put to their highest use.

There is an expression by three Secretaries, each of whom has to do with this question in some aspect.

The minority report which Mr. CROSSER has written contains a general plan which seeks to embody a comprehensive form of flood protection, adding to it assistance to navigation and possibly reclamation, but presented in a comprehensive form to be used as a base from which proper relief may be applied in any part of the United States. And what I have here said I have said in the hope that the members of this committee may take the time to read this report; to read first the letter of these Cabinet officers, to read then the report of Mr. CROSSER containing a substitute which is to be offered, because it seems to me that the language of this substitute is language which the members of this Committee on Flood Control may very well accept. The chairman of the committee very modestly has said that the bill is not as good as he had wished.

This committee was created on the 3d of February, 1916, and on the 18th of April, 1916, they presented this bill. They presented this bill authorizing appropriations and suggesting in section 3 that everything else be put up to the Secretary of War and the Chief of Engineers. Now, I know this last has been abandoned, that it is no longer the purpose of this committee to adhere to the plan which they brought out of placing everything in the control of the Army engineers, but the balance of it should be cleared up. The other paragraphs in section 3 should be amended to conform to the amendment accepted by the committee, in any event; but I urge the adoption of the substitute which will later be offered by Mr. CROSSER. [Applause.]

The CHAIRMAN. The time of the gentleman has expired.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, how much time have I remaining?

The CHAIRMAN. The gentleman has five minutes.

Mr. HUMPHREYS of Mississippi. I yield that to the gentleman from Indiana [Mr. CULLOP].

Mr. CULLOP. Mr. Chairman, a few years ago I had the pleasure of traveling on a steamboat from the city of St. Louis to the city of New Orleans. Passing along that stream I saw as rich, fertile lands as are to be found anywhere in the world, a valley as rich as the famous valley of the Nile and as beautiful as the valley of the Mesopotamia. It was at that season of the year when the crops ought to have been ripening, but they had in many places been washed away by the destructive floods. Now, it is said that it is the purpose of this bill to reclaim 16,000,000 acres of land in the Mississippi Valley. Mr. Chairman, if it is for nothing more than the reclamation of 16,000,000 of acres of that rich, fertile land in that great valley, and it will do that, then it is one of the best measures that has been passed by this House. Upon that 16,000,000 acres we could grow annually enough food products to supply all the people of this great country. If those lands are reclaimed by it, then every dollar appropriated by it will return a thousandfold to the people of this country and our work will redound to the benefit of the whole country. The products which can be grown upon this reclaimed territory at a very early date in this great country of ours will be needed to feed the multiplying population we will have here. Now, if it has no other purpose than the one the gentleman from Pennsylvania has been claiming—that it would be destroying appropriations for the improvement of rivers—it will then prove one of the greatest blessings to the people of this country this House could bestow upon them. I hope it will have that effect. We have been making appropriations out of the Public Treasury for the purpose of improving rivers in this country upon which no commerce will be carried, and it will be far better to devote this money to reclaim the fertile lands, upon which we can grow a great variety and an enormous quantity of the food products in this country. The people of the country protest against the annual waste of money expended on rivers which are not and never will be navigable. Now, as to the ability of this country to pay for this project. We are the richest country in the world. Our national wealth is more than $225,000,000,000, more than the aggregate wealth of England, Germany, and France combined; ten times as rich as Italy, eight times as rich as Austria, and four times as rich as France. We have the resources from which the revenues can be raised to make this improvement and save the people——

Mr. SMITH of Michigan. Will the gentleman yield?

Mr. CULLOP. I have not the time—and save the people who live in this great valley from the destructive floods which annually visit them and destroy their property and make them homeless. A few years ago it was claimed that the proposition of building the Panama Canal was a dream that could never be consummated, but then one George W. Goethals, the greatest civil engineer of all time, built that project and made it a success, accomplishing the greatest engineering feat of all time. [Applause.] If that can be done, we can improve the Mississippi River so as to prevent the floods, the most destructive agency in the world, preserving property, safeguarding lives and homes. By commencing now on the great work we are preparing for the future, which I hope will at an early date witness its successful consummation and assist those who have struggled against what has appeared for ages to be an unconquerable foe.

This is not a political question, because all the great political parties in their national platforms have pledged the people if intrusted with power they would adopt measures to this end. It is not a sectional question, because the matter is of such far-reaching importance that the whole country is interested in its early and successful completion. Then our duty is plain; we should adopt a measure which will insure the institution of the work and its early completion.

This is a most auspicious time to begin this great project and prosecute the work, because the people want it done and, further, because the people now are able to do it. Our country is now enjoying the most marvelous era of prosperity it has ever known, business is good, money is plentiful, industry is taxed to its fullest capacity, and thrift and enterprise are at their best. No other time in all our country's history could be more favorable for its initiation than at this good hour.

The laboring man is receiving the fruits of his toil and has an overflowing "dinner pail," is employed all the time at the best price he has ever known. The farm, factory, and mine have never enjoyed such a prosperous era as the present, with every indication that it is permanent, and all are ready to make preparation for the proper conservation of every resource with which nature has blessed this great country. Our ability to do things was never so good and great as now, and the people stand ready to approve every good progressive move which we may adopt, asking in return that it be feasible and when completed worth its cost. Assure them of this fact and they will place their seal of approval on it.

The American people stand for progress, for improvement, and the betterment of conditions, and they are ready to assist in every movement which will relieve the unfortunate conditions of their fellow man, whether he live in the East, the West, the North, or the South. [Applause.]

The CHAIRMAN. The question is on the amendment offered by the gentleman from Pennsylvania [Mr. MOORE].

The question was taken, and the amendment was rejected.

The Clerk read as follows:

In the consideration of all works and projects relating to flood control which may be submitted to the Board of Engineers for Rivers and Harbors for consideration and recommendation, said board shall, in addition to any other matters upon which it may be required to report, state its opinion as to (*a*) what Federal interest, if any, is involved in the proposed improvement; (*b*) what share of the expense, if any, should be borne by the United States; and (*c*) the advisability of adopting the project.

Mr. BENNET. Mr. Chairman, I offer the following amendment.

The CHAIRMAN. The Clerk will report the amendment.

The Clerk read as follows:

Page 8, line 17, after the word "project" insert "nothing in the state of mind of the committee shall prevent it considering rivers or projects east of the Allegheny Mountains."

Mr. FOSTER. Mr. Chairman, I make the point of order against that.

The CHAIRMAN. The point of order is sustained.

The Clerk read as follows:

All examinations and reports which may now be made by the Board of Engineers for Rivers and Harbors upon request of the Commitee on Rivers and Harbors relating to works or projects of navigation shall in like manner be made upon request of the Committee on Flood Control on all works and projects relating to flood control.

Mr. MANN. Mr. Chairman, I offer an amendment.

The CHAIRMAN. The Clerk will report the amendment.

The Clerk read as follows:

Page 8, after line 23, insert:

"SEC. 4. That the salary of the civilian members of the Mississippi River Commission shall hereafter be $5,000 per annum."

Mr. MANN. Mr. Chairman, the amendment I have offered is an amendment which I believe has been in one or two of the river and harbor bills which have not become the law. This commission is one of the most important in the United States. Years ago the salary was fixed at $3,000 for the civilian members. I think it was the opinion generally of Members of both Houses of Congress that the salary ought to be increased.

Mr. HUMPHREYS of Mississippi. I think so.

The CHAIRMAN. The question is on the amendment.

The question was taken, and the amendment was agreed to.

Mr. CROSSER. Mr. Chairman, I offer an amendment.

The CHAIRMAN. The gentleman from Ohio offers an amendment, which the Clerk will report.

The Clerk proceeded with the reading of the amendment.

During the reading,

Mr. GARRETT. Mr. Chairman, I think the reading of the proposed substitute has progressed far enough to demonstrate that it is not in order; and, unless the gentleman from Ohio is specially anxious that it should be read, I will make a point of order upon it. I will not insist upon it at this time, however.

Mr. CROSSER. I would like to have it read.

Mr. GARRETT. I will not insist, then, upon the point of order at this time.

Mr. HUMPHREY of Washington. Mr. Chairman, I renew the point of order. If you want to vote on it without discussion, all right.

Mr. CROSSER. I insist that this is in order.

The CHAIRMAN. The Chair will hear the gentleman from Ohio.

Mr. CROSSER. It seems to me that we ought to read the amendment, however, before we decide the question as to whether it is in order or not.

Mr. GARRETT. Mr. Chairman——

The CHAIRMAN. The Chair will have to determine that.

Mr. GARRETT. Mr. Chairman, I do not object to having it read. The gentleman from Washington made a point of order.

Mr. STEPHENS of Nebraska. Mr. Chairman, I submit that you can not make a point of order until the amendment is read.

The CHAIRMAN. Does the gentleman from Washington [Mr. HUMPHREY] insist on his point of order?

Mr. HUMPHREY of Washington. Yes; I do.

The CHAIRMAN. Does the gentleman from Ohio [Mr. CROSSER] wish to be heard on the point of order?

Mr. CROSSER. Mr. Chairman, this bill simply proposes to create a council for the purpose of considering the question of flood control in conjunction with the utilization of water in some other ways. The mere fact that we may do more than control the water so as to prevent damage, and go further and at the same time do some good to some one else, and utilize the water, does not in any sense of the word, it seems to me, make the thing not germane. I think that is the whole question.

The CHAIRMAN. The Chair is prepared to rule.

Mr. GARRETT. Does the Chair desire to hear any discussion?

The CHAIRMAN. The Chair thinks the point of order is well taken.

Mr. CROSSER. Mr. Chairman, I wish to make some remarks on this question. Has the Chair ruled?

Mr. MANN. How long a time does the gentleman want?

Mr. CROSSER. I want 20 minutes. I am on this committee, as the gentleman from Illinois says, and I have not taken one minute of the time. I may not use 20 minutes, but I feel, since other members of the committee have taken more than 20 minutes, that I would be entitled to that much if I desire it.

Mr. GARRETT. The gentleman from Ohio is a member of the committee, and I desire to ask unanimous consent that he have 20 minutes.

The CHAIRMAN. The gentleman from Tennessee asks unanimous consent that the gentleman from Ohio may be allowed to proceed for 20 minutes. Is there objection?

Mr. FOSTER. And then all debate shall close upon the section and all amendments thereto at that time.

Mr. CAMPBELL. Reserving the right to object, I suggest in connection with that request that a request be made that the substitute, the reading of which was interrupted before it was concluded, be considered as read.

Mr. MANN. Mr. Chairman, I ask unanimous consent, first, that the amendment offered by the gentleman from Ohio be printed in the RECORD in full.

The CHAIRMAN. The gentleman from Illinois [Mr. MANN] asks unanimous consent that the amendment offered by the gentleman from Ohio be printed in the RECORD in full. Is there objection? [After a pause.] The Chair hears none.

The following is the amendment in the nature of a substitute offered by the gentleman from Ohio [Mr. CROSSER]:

Amendment offered by Mr. CROSSER: Strike out all after the enacting clause and substitute the following:

"That the sum of $50,000,000 is authorized to be reserved, set aside, appropriated, and made available until expended, as a special fund in the Treasury, to be known as the 'river-regulation fund,' to be used to promote interstate commerce by the development and improvement of the rivers and waterways of the United States and their connections with the Great Lakes and with each other, and by the coordination of and cooperation between rail and water routes and transportation, and the establishment and maintenance of adequate terminal and transfer facilities and systems, and their maintenance, improvement, and protection, and by the making of examinations and surveys and by the construction of engineering and other works and projects for the regulation and control of the flow of rivers and their tributaries and source streams, and the standardization of such flow, and by the maintenance of navigable stages of water at all seasons of the year in the waterways of the United States, and by preventing silt and sedimentary material from being carried into and deposited in waterways, channels, and harbors, and by the conservation, development, and utilization of the water resources of the United States, and by flood prevention and protection, through the establishment, construction, and maintenance of natural and artificial reservoirs and detention basins for water storage and control, and levees, revetments, and other bank-protective works, spillways, wasteweirs, wasteways, by-passes, controlled outlets, and flood-control works of every nature and kind, and the protection of watersheds from denudation, erosion, and surface wash, and from forest fires, and the maintenance and extension of woodland and other protective cover thereon, and the reclamation of swamp and overflow lands and arid lands, and the building of drainage and irrigation works in order that the flow of rivers shall be regulated and controlled not only through the use of flood waters for irrigation on the upper tributaries but also through controlling them in fixed and established channels in the lower valleys and plains and by doing all things necessary to provide for any and all beneficial uses of water that will contribute to its conservation or storage in the ground or in surface reservoirs as an aid to the regulation or control of the flow of rivers, and by acquiring, by purchase, condemnation, or otherwise, holding, using, leasing, hiring, and transferring by appropriate deed lands and any other property that may be needed for the aforesaid purposes, or which it may be deemed advisable to dispose of, and by doing such other things as may be specified in this act or necessary to the accomplishment of the purposes thereof, and by securing the cooperation therein of States, municipalities, and other local agencies as hereinafter set forth, and for the payment of all expenditures provided for in this act.

"NATIONAL WATERWAYS COUNCIL.

"SEC. 2. That a national waterways council, hereinafter called the council, is hereby created, consisting of the President of the United States as chairman, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the chairman of the water control board, to be appointed as hereinafter provided.

"The council shall have authority to direct and control all proceedings and operations and all things done or to be done under this act, and to establish all rules and regulations which may, in their judgment, be necessary to carry into effect such direction and control consistent with the provisions of this act and with existing law and with any provisions which Congress may from time to time enact.

"All plans and estimates prepared by the water control board, as hereinafter provided, which contemplate or provide for expenditures from the river-regulation fund shall be submitted to the council for final approval before any of the expenditures therein provided for or contemplated are authorized or made or any construction work undertaken or contracts let under or in pursuance of such plans: *Provided*, That in case of an emergency the chairman of the water control board shall have full power to act, and shall report in detail his action in every case to the council at its next meeting after his action.

"WATER CONTROL BOARD.

"SEC. 3. That to assist in carrying out the purposes aforesaid the council may utilize the various agencies of the Government, and there is hereby created a water control board, hereinafter called the board, which shall consist of a chairman, to be appointed by the council, and four assistant secretaries, to be appointed as hereinafter provided, and such additional members as the council may from time to time appoint. The chairman of the board shall receive a salary of $12,000 per annum, each assistant secretary aforesaid shall receive a salary of $10,000 per annum, and said additional members of the board such salaries as the council may from time to time fix. Subject to the direction and control of the council as to general policy and procedure, it shall be the duty of the board to ascertain in detail the work in progress and obtain plans, recommendations, and estimates of the work contemplated in the general field of water conservation, control, and utilization by the various agencies of the Government, States, counties, municipalities, districts, communities, corporations, associations, and individuals, and on the basis of such information and the results obtained by its own surveys and investigations to prepare for the consideration of the council a general and comprehensive program of water and waterways conservation, regulation, development, and utilization, extending through a number of years, with comprehensive general plans for each watershed, treating the entire watershed of each river as a unit, and with specific projects, plans, estimates, and recommendations, involving independent work by the United States and the combining of resources and energies of the various public and private agencies aforesaid; to coordinate and bring into conference the various agencies of the Government; and to examine, compare, adjust, allot, assign, and supervise their work, to the end that duplication may be avoided and the highest efficiency obtained; by agreement to assign to the various cooperating agencies the work to be done by them within their respective spheres; to accept, on behalf of the United States, from such agencies contributions of money and property of any kind to be used for carrying out the purposes authorized by this act; to make field inspection of all work done or contemplated under this act by the Government and its cooperating agencies; and to employ such engineers, transportation ex-

perts, experts in water development, constructors, and other employees, and to construct such buildings and works as may be necessary for those purposes. The board is hereby authorized to expend from the sum herein provided such amounts as may be necessary for services of employees in the city of Washington, D. C., and elsewhere; to pay therefrom such sums as may be necessary for office accommodations in the city of Washington, D. C., and elsewhere, and to purchase such law books, books of reference, periodicals, engineering, statistical, and professional publications as may be needed. Contributions received under this section shall be used by the board, under the direction of the council, for carrying out the purposes of this act, and money so received shall be paid into the river-regulation fund herein created. Subject to the approval of the council, the board is authorized to enter into such contracts or carry on by hired labor or otherwise such work as may be necessary for carrying out the purposes of this act, within the limits of appropriations made or authorized by this act or appropriations or contributions which shall be hereafter made or authorized from time to time, or as may be necessary for executing projects under this act within the respective limits of cost thereof approved by the Congress, the funds for which shall have been provided by the Secretary of the Treasury in accordance with the authority conferred by this act. Subject to the approval of the council the board may also employ the various agencies of the Government in carrying out such purposes or executing such projects.

"COOPERATION WITH STATES AND OTHER AGENCIES.

"SEC. 4. That the board shall, in all cases where possible and practicable, encourage, promote, and endeavor to secure the cooperation of States, municipalities, public and quasi public corporations, towns, counties, districts, communities, persons, and associations in the carrying out of the purposes and objects of this act, and in making the investigations and doing all coordinative and constructive work provided for herein; and it shall in each case endeavor to secure the financial cooperation of States and of such local authorities, agencies, and organizations to such extent and in such amounts as the council shall determine to be a just and equitable apportionment of work, costs, and benefits under all the circumstances in each case; and it shall negotiate and perfect arrangements and plans for the apportionment of work, cost, and benefits, according to the jurisdiction, powers, rights, and benefits of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and promote the general welfare, and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States.

"APPOINTMENT OF WATER-CONTROL BOARD.

"SEC. 5. That each head of a department named in this act is authorized to appoint, with the approval of the council, for service as a member of the board, a highly qualified representative, who shall be an assistant secretary in the department in which he is appointed; shall devote his time primarily to the work authorized by this act; shall have, subject to the direction of the head of the department, such general supervision and control as may be necessary for the purposes of this act of the agencies within the department engaged upon such work; shall serve during good service and behavior; and shall be removable by the head of the department only for good cause.

"RIVER-REGULATION FUND.

"SEC. 6. That no sums shall be paid out of the river-regulation fund except on vouchers signed by the chairman of the board or by an official designated by him in writing, drawn on the Secretary of the Treasury. To provide for carrying out the projects formulated under this act which involve expenditures in excess of the $50,000,000 herein appropriated to the river-regulation fund, the appropriation hereafter to the credit of said fund of such sums as may be necessary is hereby authorized. At any time that the Secretary of the Treasury shall determine it to be necessary or advisable, in order to provide all or any part of the appropriation made or authorized by this act or which may be hereafter made or authorized or to provide revenues to execute a project under this act, which shall have been approved by the Congress, he may issue and sell, or use as a means of borrowing money, bonds in the necessary amount, in accordance with the provisions of the act of August 5, 1909 (36 Stat. L., pp. 11, 117), the act of February 4, 1910 (36 Stat. L., p. 192), and the act of March 2, 1911 (36 Stat. L., p. 1013). The sums appropriated or provided by the Secretary of the Treasury pursuant to this section shall be paid into the river-regulation fund and shall be available until expended and paid out as provided for in this act. All moneys received in connection with any operations under this act as well as from the sales of materials utilized and any condemned property, shall be covered into the 'river-regulation fund' and be available for expenditure therefrom. It is the intent and purpose of this act to authorize and empower the council and the board and their officers, agents, and employees to do all necessary acts and things in addition to those specially authorized in this act to accomplish the purposes and objects hereof."

The CHAIRMAN. The gentleman from Tennessee [Mr. GARRETT] asks unanimous consent that the gentleman from Ohio [Mr. CROSSER] may be permitted to proceed for 20 minutes. Is there objection?

Mr. HUMPHREYS of Mississippi. And that all remarks on the bill and amendments thereto be closed at that time.

The CHAIRMAN. Is there objection?

Mr. HUMPHREY of Washington. What is the gentleman from Ohio [Mr. CROSSER] going to talk about?

The CHAIRMAN. The Chair does not know. Is there objection?

Mr. HUMPHREY of Washington. I shall object, unless I find out something more about this matter.

Mr. CROSSER. You are too late in objecting.

Mr. MANN. Mr. Chairman, I ask unanimous consent that the gentleman from Washington [Mr. HUMPHREY] have five minutes at the conclusion of the remarks of the gentleman from Ohio [Mr. CROSSER].

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I modify my request, then, that all debate on the bill and amendments thereto conclude in 30 minutes, 20 minutes of that time to be occupied by the gentleman from Ohio [Mr. CROSSER], 5 by the gentleman from Washington [Mr. HUMPHREY], and 5 by the gentleman from Wisconsin [Mr. COOPER], and that at the end of that time the committee rise and report the bill to the House.

Mr. MANN. You can not make that motion.

The CHAIRMAN. The gentleman from Mississippi [Mr. HUMPHREYS] asks unanimous consent that all debate on the bill and amendments thereto conclude in 30 minutes, 20 minutes of the time to be occupied by the gentleman from Ohio [Mr. CROSSER], 5 minutes by the gentleman from Wisconsin [Mr. COOPER], and 5 minutes by the gentleman from Washington [Mr. HUMPHREY]. Is there objection?

Mr. HUMPHREY of Washington. Mr. Chairman, I wanted to ask the gentleman from Ohio a question. I did not intend to object, but I want to say if he is going to talk about the substitute——

Mr. CROSSER. I will probably talk about the substitute and the bill and everything else. I want to discuss the question.

Mr. HUMPHREY of Washington. I want to ask the gentleman whether he is going to talk on the substitute to this bill?

Mr. CROSSER. I will assure the gentleman that I am going to talk about the substitute, among other things. I can not say as to that. I have not any speech written out, I can assure the gentleman.

Mr. HUMPHREY of Washington. The gentleman is not going to make a political speech, is he?

Mr. CROSSER. Oh, no. I do not make political speeches here.

The CHAIRMAN. Is there objection?

There was no objection.

The CHAIRMAN. The gentleman from Ohio [Mr. CROSSER] is recognized for 20 minutes.

Mr. CROSSER. Mr. Chairman and gentlemen of the House, let me assure you that I am just as much concerned about the control of the floods in this country as any member of the committee. It so happens that I have no flood problem in my own district, nor near my own district, but I have not yet become so narrow visioned as to be unable to consider a question simply because it does not happen to concern directly the people of my own district. The fact, however, that we agree that a certain evil exists does not mean that we must agree as to the remedy.

Gentlemen have been telling us not to be so reluctant about dishing out the public funds in the way they tell us, and they intimate that if we do not do so we are not concerned about the welfare of the people of the Mississippi Valley. Of course, the members of the Flood Committee have not made the blunt statement to that effect, but that is the substance of some of the arguments we have heard in the House to-day.

My contention is that we can not control the flood waters of any of our great streams by starting at the mouth and going upstream with banks or levees. Usually we find that the best way to remedy any evil is to ascertain the cause of the trouble, and then try to remove the cause. Pursuing this method in connection with streams we find that the reason we have great floods, increasing in their destructive power year after year, is because of the fact that on the upper part of the river some lands have been cleared of forests, swamps have been drained, and farm land tilled, so that year after year the water goes into the channel more rapidly than it went theretofore. It is not because more water falls from the sky than fell in the earlier history of the country, but rather because it goes down into the channel of the river much more rapidly. Therefore we must adopt a much more comprehensive plan than we have pursued during the last 50 or 75 years.

Do not forget, gentlemen, that the Mississippi River Commission has been in existence since 1869 or 1870. They have been going through this same process of asking appropriations for levees year after year, and yet have not overcome the difficulty. In fact, the floods are becoming worse rather than better. More than that, the pretext—because it was only a pretext—upon which we undertook to improve the Mississippi River at all was that it was for the purpose of improving the navigability of the stream. If it does not do that, it seems to me we really violate the Constitution when we appropriate money for any other purpose in connection with those rivers.

I am not, however, objecting to the appropriation of money that the Federal Government spends for the improvement of the navigability of the streams, for we should do that by all means; but my opinion, after talking with a great many students of the subject, particularly with Mr. Cooley, one of the greatest hydraulic engineers of the country, is that the building of levees only, instead of improving the navigability of the stream, destroys its navigability.

Why? For the simple reason that if you confine the river within a narrow channel, instead of permitting it to spread over a greater expanse of territory, it increases the damage you are trying to prevent by increasing the dynamic energy of the stream and causing it to destroy the banks.

The Mississippi River Commission years ago claimed that the building of levees would cause the river to scour out the bottom of the stream. It has done no such thing. The fact is that frequently they must continue to dredge the river. The fact is that instead of deepening the channel of the Mississippi River the bed of the river has been raised. The whole bed has not been raised, it is true, because there are deep holes in some places, but the bed has been raised generally and great sand bars have been created by the detritus which has come down the river.

Mr. HUMPHREYS of Mississippi. Mr. Cooley held, however, that if we revetted the banks, as we propose to do in this bill, we would improve the navigation of the river.

Mr. CROSSER. I want to say that I agree with him as to the matter of revetment, and if this bill did no more than to provide for the revetment of the banks of the Mississippi River, that would do much toward improving the navigability of the river. I agree heartily with him as to that.

Mr. HUMPHREYS of Mississippi. We provided for that purpose all that the engineers can spend, did we not?

Mr. CROSSER. I think not.

Mr. HUMPHREYS of Mississippi. That was the testimony.

Mr. CROSSER. That they could not spend more for revetment?

Mr. HUMPHREYS of Mississippi. The statement was that not more than from two to twelve millions could be judiciously expended in a year.

Mr. CROSSER. Why?

Mr. HUMPHREYS of Mississippi. Because it could not all be expended at one time; and another reason is that there is a necessary limitation on the amount of work that can be done.

Mr. CROSSER. Regardless of what the Mississippi River Commission thinks, does the gentleman think that we ought to wait until the banks cave in before we start with the work of revetment?

Mr. HUMPHREYS of Mississippi. No; but you could not undertake the revetment of the entire river. You should confine your attention only to those places where revetments are needed.

Mr. SMITH of Michigan. Mr. Chairman, will the gentleman yield?

Mr. CROSSER. Yes.

Mr. SMITH of Michigan. I understand the gentleman is a member of the committee?

Mr. CROSSER. Yes.

Mr. SMITH of Michigan. And was up and down the river on that trip with the committee?

Mr. CROSSER. No; I was not with that party.

Mr. SMITH of Michigan. I saw a map that was brought in here with a picture on it, showing the volume of water from St. Louis to New Orleans, I think five or six hundred miles in length, as wide in some places as Lake Michigan. I understand that that flood was from 1 foot to 20 feet deep over an area of land 600 miles long and from 1 to 20 miles wide. I would like to know how high a bank would be necessary to contain that body of water.

Mr. CROSSER. I do not think you could build it high enough. The Mississippi River Commission has not been able to tell us how high we should build the levees in order to prevent their overflow.

Mr. SMITH of Michigan. How much of a reservoir would it take to hold that volume of water?

Mr. CROSSER. The gentleman from Michigan, I assume, wants me to say what should be done. I think it is perfectly clear to a man who will think for himself a little and disregard the Army engineer, who is quite as fallible as others, that you can not send all the waters of the United States down through a narrow channel without overflowing that channel. Therefore we must do something else. This great river is formed by the junction of other rivers, of tributaries. We should go to the headwaters of these tributaries and build a sufficient number of reservoirs. One will not do. It will take a great many reservoirs at the headwaters of this great system to store the waters. They have one in the district of the gentleman from Pennsylvania [Mr. BAILEY], which now controls a stream that ran riot and prior to the building of the reservoir did a great amount of damage; it is absolutely controlled by one reservoir. I do not claim that you could do that with any one of the tributaries of the Mississippi or the Ohio River. You must take each one of the rivers at its source and control it there, and if you control the tributaries you control the main river.

Now the only answer I have heard from these gentlemen who do not think as we do is that it would cost a great deal to construct these reservoirs. That is true, but how much better it would be to spend the additional money and accomplish something worth while than it would be to constantly fritter away millions without satisfactory results.

Mr. MEEKER. Will the gentleman yield?

Mr. CROSSER. Yes.

Mr. MEEKER. Is there any place in the world where a river of any size has been so controlled?

Mr. CROSSER. If the gentleman will read the report of the minority he will find where rivers in Austria, Russia, Germany, and Spain have been so controlled. They formerly built dykes or walls, but now they have adopted the reservoir plan.

Mr. GREEN of Iowa. Does not the gentleman think there ought to be some use made of the by-path system?

Mr. CROSSER. I think that is essential in some cases.

Mr. GARD. Will the gentleman yield?

Mr. CROSSER. Yes.

Mr. GARD. The gentleman is a member of the Flood Control Committee and I would like to have him advise me, since the bill has been mutilated by cutting out a part of section 3, what is left of the comprehensive flood control?

Mr. CROSSER. All that is provided for by the bill is the building of great walls or so-called levees on each side of the river so as to hold waters on top of the banks of the river and thus disintegrate the soil of the banks and cause it to fall into the stream and raise the bed of the river instead of deepening it and improving it. Let us spend the money in revetments, if we insist on confining our efforts to the lower part of the stream.

Mr. EMERSON. Will the gentleman explain his plan of the reservoir system?

Mr. CROSSER. I have only a little time, but will do so, briefly. The reservoir plan provides for impounding the waters in behind dams or diverting it into natural basins and thus holding back the excess waters of floods. The water which is thus stored may be fed out into the stream during the dry season to raise the level of the river, and may also be used for irrigation purposes and to produce water power. We could also do much to prevent floods by reforestation. This would retard the flow of water from the land into the streams.

Now they say that the Mississippi River Commission is unanimously for the levees-only plan. Of course, the Mississippi River Commission was in favor of the levee scheme. Anyone who knows the Army man knows how hard it is for him to change his mind. Army men are not usually men of initiative. That is not due to the fact that they are any less intelligent than others, nor is it because they are less industrious, but rather because the Army man has been in the habit of obeying orders and naturally worships men rather than ideas or things. If he knows what his superior's views may be, then he is not bothered about theories of his own. If his superior directs him to build levees, he does not concern himself as to the wisdom of such a plan for controlling floods. He proceeds to build levees.

But, gentlemen, is it necessary for us to have technical skill to observe the ordinary processes of nature? Do we not know that if all the water of a watershed is sent down into the river channel with ever-increasing velocity the result at some places is going to be disastrous?

If you will look at the minority report you will find that the same volume of water which passed Memphis in 1882 and reached a height of 35 feet, in 1912 made a height of 45.2 feet. Naturally, then, the increase of the water pressure, the tremendously increased dynamic energy of the stream would tend to destroy the banks of the river.

Mr. FESS. Will the gentleman yield?

Mr. CROSSER. Yes.

Mr. FESS. The gentleman's fear is that the plan proposed will not be effective but a waste of money?

Mr. CROSSER. That is it; I am not objecting to spending money if we get results.

Mr. FESS. It is the gentleman's judgment that the other plan, the reservoir system, would be effective but would cost more money?

Mr. CROSSER. It would cost a great deal more money.

Mr. FESS. Is there anything to be developed through the reservoir system?

Mr. CROSSER. Yes; we would develop four times the amount of water power that we now have.

Mr. FESS. And that would take care of the extra cost?

Mr. CROSSER. That would more than take care of the extra expense.

Mr. FESS. If you adopt the plan you propose the benefit would be distributed over the entire country?

Mr. CROSSER. That is the idea. If we should adopt the plan I suggest it would enable the people of the whole country to enjoy the benefits of water control. It would not only give relief to the people of the lower Mississippi Valley but would also benefit the people at the headwaters of these great rivers.

Oh, but the gentlemen who are urging the levee plan say that the plan suggested in this amendment will not prevent floods. Mr. Lyman E. Cooley, one of the ablest engineers in the United States, a man who has been connected with almost every important project in the country during the last 40 years, told me that if we could control the Ohio River system in the manner I have proposed, that that alone would prevent the majority of floods on the Mississippi River. If you can do that by controlling the Ohio River system alone, what could you do, gentlemen, if you should control the other tributaries of the Mississippi in like manner? We would then have a real flood control and at the same time provide revenue for the Government.

Mr. RICKETTS. Will the gentleman yield?

Mr. CROSSER. I will.

Mr. RICKETTS. Does the gentleman know the Government has already spent $29,000,000 on controlling the floods of the Mississippi since 1890?

Mr. CROSSER. The Government has spent $29,000,000 and more on the Mississippi River, and we are still very far from successfully controlling floods, and if the gentlemen will read the report of Humphreys-Abbott, of 1860, he will find that they said that about $17,000,000 would complete the project. We have spent twice $17,000,000; we propose here to spend $45,000,000 more, and if you read the minority report you will learn that Capt. West and other engineers of the commission say that it will require about $228,000,000 to complete the work.

Mr. RICKETTS. Will the gentleman yield for another question?

Mr. CROSSER. Yes.

Mr. RICKETTS. Does the gentleman know this Government has spent $190,000,000 in the improvement of that river already for which we have received——

Mr. CROSSER. I did not know that.

Mr. CLARK of Missouri. Mr. Chairman, I would like to ask the gentleman a question.

Mr. CROSSER. I will yield.

Mr. CLARK of Missouri. Has anybody ever figured on the cost of controlling even the waters of the Ohio River; that is, by the reservoir system?

Mr. CROSSER. The Pittsburgh Flood Commission did figure the cost of controlling the two tributaries of the Ohio River, the Allegheny, and the Monongahela.

Mr. CLARK of Missouri. How much did they figure it would cost?

Mr. CROSSER. If the gentleman will give me the time I can ascertain the fact from the report of the Pittsburgh Flood Commission, which I have here. I think it is about $10,000,000.

Mr. HUMPHREYS of Mississippi. Their etimate was $21,000,000.

Mr. CLARK of Missouri. Why not try both of these projects at once?

Mr. CROSSER. This amendment does propose to try both at once.

Mr. CLARK of Missouri. Why did not somebody propose a bill that did propose it?

Mr. CROSSER. This bill I have offered does propose to do that.

Mr. CLARK of Missouri. What became of it?

Mr. CROSSER. It was ruled out of order just a moment ago. I think my amendment in the nature of a substitute is in order. My bill proposed a national waterways council composed of the Secretary of the Interior, the Secretary of Agriculture, the Secretary of War, and the Secretary of Commerce, who should work together, correlate their plans, coordinate their efforts in such a way as not only to prevent damage to the lower Mississippi Valley but also benefit the people at the headwaters. [Applause.]

The CHAIRMAN. The time of the gentleman has expired.

Mr. SABATH. Mr. Chairman, I ask unanimous consent that the gentleman may proceed for five minutes.

The CHAIRMAN. The gentleman from Illinois asks unanimous consent that the gentleman from Ohio may proceed for five minutes.

Mr. FOSTER. Mr. Chairman, I object.

Mr. SABATH. Mr. Chairman, it seems to me the gentleman ought to have a little more time, he is thoroughly familiar with the subject and he ought to have five minutes more.

Mr. CROSSER. I have yielded up a lot of my time to questions that I did not anticipate.

Mr. HUMPHREYS of Mississippi. The time was fixed at 5.30 by unanimous consent and the other time has been allotted, and I will have to object.

The CHAIRMAN. Objection is heard.

Mr. HUMPHREY of Washington. Mr. Chairman, I ask unanimous consent to yield to a more distinguished member of the family than myself to use my time, the gentleman from Mississippi [Mr. HUMPHREYS], the chairman of the committee.

Mr. HUMPHREYS of Mississippi. I am very much obliged to the gentleman for yielding. In answering the question of the gentleman from Missouri as to why we did not do both things I will answer him by saying that we have done it. The engineers are at work now on the upper Ohio on a plan authorized in the rivers and harbors bill a year ago. The matter is being worked out in a thoroughly comprehensive way on the upper Ohio. Surveys have been ordered and the engineers are going to report—they say they will be ready to report this next summer on the questions of the upper Ohio.

Just after the flood of 1912, or maybe it was 1913, the President appointed a board of engineers known as the Ohio River Flood Board to investigate the flood problems on the Ohio River. Their report is contained in House Document No. 914, Sixty-third Congress, second session, and it treats very fully of the subject of control of the floods on the Ohio River. The following extract from that report will show how inaccurate it is to say that we are doing nothing to control the floods on the upper Ohio. After discussing the question at length the board sets out its conclusions and recommendations, and the following extract will show that they are treating the flood situation on the upper reaches of the Ohio in a thoroughly comprehensive way:

It therefore clearly appears that a great deal of work remains to be done. The work should be done progressively and systematically and a beginning should be made with the tributaries. The problem of the Ohio itself can not be adequately treated until some method of flood control has been adopted for the tributary streams. No further progress can be made without actual prosecution of work in the field, and the board recommends that this be undertaken as soon as possible. The following tentative program of operations is recommended.

The present work of collecting information and coordinating results should be continued in the Pittsburgh office. In addition to this at least one party in each of the districts (Pittsburgh, Wheeling, Cleveland, first Cincinnati, second Cincinnati, and Louisville) should be kept continuously employed in making investigations and drawing up a definite plan for each of the larger streams. For example, in the Pittsburgh district a beginning would be made with the Cheat River, for which almost complete information is believed to be available, and a definite plan worked out for the total prevention of floods, or, if this prove to be too expensive, for their control within reasonable limits. This being finished, the Tygarts Valley River would be taken up, measurements made in the field to supply such information as might be lacking, and a plan for this river also devised. In this way the larger tributaries of the Monongahela would be treated in succession. It would then probably be found that the problem of the Monongahela itself had been largely solved, and a complete system for this stream could be worked out. When work of a similar nature had been done for the Allegheny in turn, the problem of floods on the upper Ohio could be intelligently attacked. From our present knowledge we believe that two or three important streams could be treated in each district, or a total of 15 to 18 in all the districts, in each year, and the expense of procedure recommended would not be great.

Estimate: The preliminary estimate of cost for this work is as follows:

Cost of headquarters	$20,000
Cost of one party for each district, $10,000, six districts	60,000
	80,000

Following this recommendation the river and harbor bill last year carried authorizations for all these surveys and they are now being made.

Mr. GARD. Will the gentleman yield for a question?

Mr. HUMPHREYS of Mississippi. I can not.

Mr. GARD. I would like for the gentleman to enlighten the committee——

Mr. HUMPHREYS of Mississippi. I would like to very much but I have but five minutes.

Mr. GARD. I thank the gentleman very much for his courtesy.

Mr. HUMPHREYS of Mississippi. Well, I yield to the gentleman.

Mr. GARD. With the bill as now changed and twisted about in section 3, can the gentleman point to any single proposition which makes for a comprehensive plan for flood control in this bill?

Mr. HUMPHREYS of Mississippi. I could answer if necessary. It is only necessary for anybody to read section 3——

Mr. GARD. That is very illuminating.

Mr. HUMPHREYS of Mississippi. The report is very illuminating. The report sets it forth in full. Now, as to this reservoir proposition. That theory is one which appeals to a man who first starts out in the kindergarten class on this subject. He first starts out with the reservoir system, but before he reaches the grammar school he abandons it.

Mr. CROSSER. Will the gentleman yield?

Mr. HUMPHREYS of Mississippi. I can not yield. Anybody who studies it reaches the conclusion that there is nothing to it. The reservoirs above Pittsburgh, which are estimated to cost $21,000,000—but the Army engineers say they will cost a good deal more—contain 59,000,000,000 cubic feet of water. That is a good deal of water. Fifty-nine thousand million cubic feet. Now, that is at the headwaters. That will not be accumulated in a minute; that will not be scooped up out of the Ohio River at one fell swoop; it will accumulate during the weeks after the storms. Fifty-nine billion feet of water pass down the Mississippi River in seven hours in time of flood.

In other words, take what would flow down that river in 24 hours, assuming at the same rate, of course, it would cost $73,000,000 to build a reservoir to hold the flood waters that would go down the Mississippi River in 24 hours. A flood would last 48 days. Multiply that $73,000,000 by 48, and you will find how much it would cost to control this flood by reservoirs. The statement of Col. Townsend is that there is but one place to put a reservoir, if you are going to have one, and that is near Cairo, because the rainstorms are sometimes up the Ohio, sometimes up the Mississippi, and sometimes up the Missouri. You would have to excavate a reservoir as big as the State of New Jersey; you would have to excavate out of it enough dirt to build levees 150 feet high and 7,000 miles long. Now, that is the disadvantage of studying this reservoir question. [Laughter.] You find out so many disagreeable facts. Of course, I realize that when the facts do not agree with your theory it is all the worse for the facts. [Laughter.]

Mr. SMITH of Michigan. The banks will have to be that high under your bill.

Mr. HUMPHREYS of Mississippi. The banks are 100 feet above the bottom of the river now. The gentleman talks about the raise of 15 feet. The waters have to rise 40 feet before they get out of the banks. Now, there are but two ways to increase the capacity of the river.

The CHAIRMAN. The time of the gentleman from Mississippi has expired.

Mr. COOPER of Wisconsin. Mr. Chairman, I yield my time to the gentleman from Mississippi. [Applause.]

Mr. HUMPHREYS of Mississippi. I do not like to take the time of the gentleman from Wisconsin.

There are two ways to increase the capacity of the river to carry the water, and one is to dig it out deeper.

Mr. COOPER of Wisconsin. Will the gentleman permit? I would like if the gentleman would leave me a minute and a half.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, will the Chair kindly inform me when I have occupied three minutes and a half?

It is about 1,000 miles long. It cost about $300,000,000 to dig a canal down at Panama which is something like 40 miles long. It is estimated by Army engineers that a side canal, that this same kindergarten class frequently advocate to take the water, would cost two and a half billion dollars.

Now, there is another way to increase the carrying capacity of the river, and that is to set the levees back half a mile on each side from the banks, so that when the water rises the river will be a mile wider than it is and be 15 feet deeper than it is. With a mile wider and 15 feet deeper and 1,000 miles long, you would have the greatest reservoir that could be constructed, on a site that you already own, without any condemnation proceedings.

Gentlemen, we have studied this question from the beginning of the Government. Every time we get a report from the engineers some distinguished gentleman rises and says, "Let us appoint another commission and make another investigation. Do not take your Army engineers." Well, Congress created the Mississippi River Commission and put civilians on it, and then the civilians agreed with the Army engineers after all their years of study.

The proposition now is to turn that commission off and create another commission. There never was a reformer in the world who did not want to start out first by appointing a commission, and he is always followed by another reformer who wants to put that commission in jail. [Laughter.] We have appointed on the Mississippi River Commission engineers from the Army and from civil life and civilians who were not engineers. Benjamin Harrison, one of the former Presidents of the United States, served as a member, and Judge Taylor, of Indiana, than whom there is no greater man in this broad land of ours [applause]—a scholar and a statesman, and one of the ablest men who ever lived in this country—served 32 years on the commission. All of them agreed. No man can point to a single, solitary statement from any of those gentlemen that there is any other practical way to control the floods of the Mississippi River than to build levees on the banks and then revet those banks so that the levees will not cave into it.

This committee was charged with a great responsibility. We went to work. I had been at it for 13 years myself, had thought of nothing else, because I live only four blocks from the levees. When I was at Greenville a few weeks ago, the water stood on the levee outside 15 feet higher than my home. Do you think I would advocate a system that threatened ruin and destruction to my home and my children and my property? Does any man believe that I would get up here and advocate this unless I had what, in my opinion, was confirmation more strong than proofs of Holy Writ that this was the way to do it? [Applause.]

The minority report sets out a letter signed by the Secretaries of Interior, Agriculture, and Commerce, in which they give to the President their views as to the needed legislation for flood control. They conclude that letter as follows:

To summarize, we recommend—

1. That Congress declare its purpose to deal with our river problems in a comprehensive way, involving a large ultimate expenditure of funds and the immediate expenditure of considerable amounts, and the creation of machinery intimately related to the executive branch of the Government.

2. That the boards and the other parts of the machinery provided for shall be directed to continue the work on the lower Mississippi substantially under existing plans, and to proceed with the investigations and the elaboration of plans on other parts of the Mississippi River and other rivers of the Nation.

3. That all the available agencies of the Government shall be coordinated in this endeavor to improve and protect our rivers, to control floods, to utilize waters, and to reclaim valuable lands and make the necessary reports to Congress as bases for additional appropriations.

4. That the expenditures for this work should, in the main, be met by the sale of national bonds, and that the lands benefited should be made to bear a proportion of such expenses, agreements in this regard to be submitted to the Congress as part of the plan for development.

These Secretaries, together with the Secretary of War, had been requested by the President two years ago to consider the question of flood control and river regulation generally, and try to evolve some plan that would take care of the whole subject. Before the letter just referred to was written Secretary Garrison had left the Cabinet and did not join in these recommendations. On April 15, 1914, however, he did set forth his views in a report to this House, printed in Document No. 914, which contains the report of the Board of Engineers on Ohio River floods. The following extract gives his views, and in these views the Committee on Flood Control generally concurred:

The subject of flood protection and flood prevention is one of great national import, and it is imperative that steps be taken to ameliorate conditions in the most afflicted districts in the various parts of the United States without unnecessary delay.

The interests of navigation and of interstate commerce demand that the Federal Government seek a remedy and join with the local interests in applying it. Economical and efficient cooperation on the part of local interests is extremely difficult to attain unless the Federal Government lends its unifying and guiding power. By extension of the authority conveyed by sections 9 and 10, act of 1899, recommended above, the War Department would be empowered to pass upon plans evolved by various of the communities, with a view to insuring that they do not conflict with a general plan of flood protection for the entire district to the detriment of navigation and other interests; but it is my belief that the Federal Government should go further, and that to accomplish the best results it should undertake to prepare general plans of flood prevention and protection, to pass upon and coordinate plans prepared by the various communities, to arrange for a fair and proper distribution of the cost of execution of such plans, and the portion of the work to be accomplished by each of the interested parties. The portion of the expense of the undertaking which should be borne by the Federal Government should be the value of the protection rendered to navigation, to interstate commerce, and other Federal interests.

If this work be placed under the War Department on the same basis as the river and harbor work, with which it is intimately connected, it can be accomplished with no large initial expense. No new and expensive organization need be created. Each case requiring appropriation will be presented in an intelligent, concise, and concrete manner for the consideration by Congress, and with Congress will rest the decision as to which rivers shall be considered and the rate at which they shall be appropriated for.

While section 3 of the bill follows his suggestions very closely, it will be seen upon close examination that it differs very little from the recommendations as summarized in the letter of the three Secretaries.

No. 1 of their recommendations is:

1. That Congress declare its purpose to deal with our river problems in a comprehensive way, involving a large ultimate expenditure of funds and the immediate expenditure of considerable amounts, and

the creation of machinery intimately related to the executive branch of the Government.

In section 3 we create the machinery in the War Department, but we do not ask Congress to declare its purpose, because we are legislating now and not merely resolving.

No. 2 of their recommendations is:

2. That the boards and the other parts of the machinery provided for shall be directed to continue the work on the lower Mississippi substantially under existing plans, and to proceed with the investigations and the elaboration of plans on other parts of the Mississippi River and other rivers of the Nation.

This is complied with literally, except that we do not direct the Mississippi River Commission to investigate the other rivers of the Nation. We prefer that this be done in another way, and the machinery created, as suggested in their recommendation No. 1, will take care of that.

Their recommendation No. 3 is as follows:

3. That all the available agencies of the Government shall be coordinated in this endeavor to improve and protect our rivers, to control floods, to utilize waters, and to reclaim valuable lands, and make the necessary reports to Congress as bases for additional appropriations.

This is complied with literally.

Their recommendtaion No. 4 is as follows:

4. That the expenditures for this work should in the main be met by the sale of national bonds, and that the lands benefited should be made to bear a proportion of such expenses, agreements in this regard to be submitted to the Congress as part of the plan for development.

And, except for the sale of bonds, this recommendation is complied with fully.

For the reasons given by Mr. Garrison, as set forth in his letter, the committee felt that the work should be placed under one executive department, and that department should be the War Department.

In view of these facts, it can not be successfully maintained that the committee has failed to provide a thoroughly workable plan for a comprehensive study of the various watersheds of the country with a view to the proper control of their floods.

Mr. COOPER of Wisconsin. Mr. Chairman, in the brief time remaining I can say little more than that I intend to vote for this bill. In my judgment there is no "pork" whatever about it. On the contrary, I think it a meritorious measure which the facts show ought to be enacted into law. No man should permit mere indiscriminate use of epithets like the word "pork" to frighten him away from voting his honest convictions.

Objection has been urged here because this bill to construct levees and revetments to help control the great Mississippi River floods will also reclaim certain overflowed lands.

But if the appropriation were devoted exclusively in aid of navigation, it would also, at the same time, reclaim certain overflowed lands; and therefore gentlemen who oppose the bill because this appropriation for flood control will reclaim certain lands would be bound for the same reason to oppose the bill even though the appropriation were for purposes of navigation. Levees and revetments can not be constructed on the lower Mississippi River for purposes of flood control or of navigation, or for any other purpose, without also, at the same time, reclaiming certain lands.

A complete answer to an objection against a bill because some particular locality or enterprise or individual might be especially benefited, is found in a speech delivered in the House of Representatives on the 20th of June, 1848, by Abraham Lincoln. Mr. Lincoln criticized President Polk's veto of a river and harbor bill, and discussed at length this very question. I quote from page 17 of the majority report on the pending bill. Mr. Lincoln said:

"Now for the second portion of the message, namely, that the burden of improvements would be general, while their benefits would be local and partial, involving an obnoxious inequality. That there is some degree of truth in this position I shall not deny. No commercial object of Government patronage can be so exclusively general as to not be of some peculiar local advantage. * * * The Navy, then, is the most general in its benefits of all this class of objects; and yet even the Navy is of some peculiar advantage to Charleston, Baltimore, Philadelphia, New York, and Boston beyond what it is to the interior towns of Illinois. The next most general object I can think of would be improvements on the Mississippi River and its tributaries. They touch 13 of our States. * * *."

"Now, I suppose it will not be denied that these 13 States are a little more interested in improvements on that great river than are the remaining 17. These instances of the Navy and the Mississippi River show clearly that there is something of local advantage in the most general objects. But the converse is also true. Nothing is so local as to not be of some general benefit. * * * The just conclusion from all this is that if the Nation refuse to make improvements of the more general kind because their benefits may be somewhat local, a State may for the same reason refuse to make an improvement of a local kind because its benefits may be somewhat general. A State may well say to the Nation, 'If you will do nothing for me, I will do nothing for you.' Thus it is seen that if this argument of inequality is sufficient anywhere, it is sufficient everywhere and puts an end to improvements altogether. I hope and believe that if both the Nation and the States would in good faith, in their respective spheres, do what they could in the way of improvements, what of inequality might be produced in one place might be compensated in another, and the sum of the whole might not be very unequal. But suppose, after all, there should be some degree of inequality. Inequality is certainly never to be embraced for its own sake; but is every good thing to be discarded which may be inseparably connected with some degree of it? If so, we must discard all government."

This is not at all a party question. The Republican Party, the Democratic Party, and the Progressive Party each in its national platform promised in strong, unequivocal language that when there should be opportunity it would extend national aid to control the floods of the Mississippi River. Men of all parties should help to redeem that promise.

I desire to say a word concerning a matter perhaps a bit irrelevant, and yet after all interesting and, I think, germane. Gentlemen will remember that in the debate on the river and harbor bill we heard much about Prof. Moulton and his opinion, in effect that the inland waterways of France were really of no great importance to that country. Now, only a few days ago I read, as doubtless did also many Members, a dispatch from Paris, which appeared in a number of papers, telling of the completion and the opening, on the 8th of the present month, of a new canal in France. The French people, oppressed by an enormous burden of taxation, fighting in the greatest war of all history, have completed during the war a canal 48 miles long, connecting the river Rhone with the sea at the city of Marseille and costing $18,000,000. The canal accommodates 600-ton barges drawing 8 feet, and opens up the connection by way of the Rhone and the Saone, 330 miles inland, with the main-line waterways.

The French people did not think, as was attempted to be pointed out during that debate on the river and harbor bill, that they had made or were making any mistake in the development of their waterways and the canalization of rivers. They had not only expended more than $500,000,000 for such improvements before the war, but only recently, since the war began, as I have said, they have spent millions in completing another canal.

Mr. HUMPHREYS of Mississippi. Mr. Chairman, I move that the committee rise and report the bill favorably to the House with the amendments, with the recommendation that the amendments be agreed to and that the bill as amended do pass.

The motion was agreed to.

Accordingly the committee rose; and the Speaker having resumed the chair, Mr. CARAWAY, Chairman of the Committee of the Whole House on the state of the Union, reported that that committee, having had under consideration the bill (H. R. 14777) to provide for the control of the floods of the Mississippi River and of the Sacramento River, Cal., and for other purposes, had directed him to report the same back to the House with sundry amendments, with the recommendation that the amendments be agreed to, and that the bill as amended do pass.

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I move the previous question on the bill and all amendments to final passage.

The SPEAKER. The gentleman from Mississippi moves the previous question.

Mr. CROSSER. Mr. Speaker, a parliamentary inquiry.

The SPEAKER. The gentleman will state it.

Mr. CROSSER. Is it the proper time now to offer a motion to recommit?

The SPEAKER. No. The time to do that is after the third reading.

The previous question was ordered.

The SPEAKER. Is a separate vote demanded on any amendment? If not, the Chair will put the amendments in gross. The question is on agreeing to the amendments.

The amendments were agreed to.

The SPEAKER. The question is on the engrossment and third reading of the bill.

The bill was ordered to be engrossed and read a third time, and was read the third time.

Mr. CROSSER. Mr. Speaker, I offer a motion to recommit.

The SPEAKER. The gentleman from Ohio [Mr. CROSSER] offers a motion to recommit with instructions, which the Clerk will report.

The Clerk read as follows:

Mr. CROSSER moves to recommit the bill to the Committee on Flood Control with the instruction to amend the same by striking out all after the enacting clause and insert in lieu of the same the following, and the bill as amended be reported back to the House with the recommendation that it do pass: "That the sum of $50,000,000 is authorized to be set aside, appropriated, and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury, to be known as the 'river-regulation fund,' to be used to promote interstate commerce by the development and improvement of the rivers and waterways of the United States and their connections with the Great Lakes——

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I think it is clear that enough of the substitute has been read to show that it is subject to a point of order. The same substitute was offered in the committee.

The SPEAKER. The Chair is of opinion that sufficient has not yet been read. The Clerk will repeat what has been read.

The Clerk read as follows:

"That the sum of $50,000,000 is authorized to be set aside, appropriated, and made available until expended, out of any moneys not otherwise appropriated, as a special fund in the Treasury, to be known as the 'river-regulation fund,' to be used to promote interstate commerce by the development and improvement of the rivers and waterways of the United States and their connections with the Great Lakes and with each other, and by the coordination of and cooperation between rail and water routes and transportation, and their maintenance, improvement, and protection, and by the making of examinations and surveys and by the construction of engineering and other works and projects for the regulation and control of the flow of rivers and their tributaries and source streams, and the standardization of such flow, and by the maintenance of navigable stages of water at all seasons of the year in the waterways of the United States, and by preventing silt and sedimentary material from being carried into and deposited in waterways, channels, and harbors, and by the conservation, development, and utilization of the water resources of the United States, and by flood prevention and protection, through the establishment, construction, and maintenance of natural and artificial reservoirs and detention basins for water storage and control, and levees, revetments and other bank-protective works, spillways, wasteweirs, wasteways, by-passes, controlled outlets, and flood-control works of every nature and kind, and the protection of watersheds from denudation, erosion, and surface wash, and from forest fires, and the maintenance and extension of woodland and other protective cover thereon, and the reclamation of swamp and overflow lands and arid lands, and the building of drainage and irrigation works in order that the flow of rivers shall be regulated and controlled not only through the use of flood waters for irrigation on the upper tributaries but also through controlling them in fixed and established channels in the lower valleys and plains and by doing all things necessary to provide for any and all beneficial uses of water that will contribute to its conservation or storage in the ground or in surface reservoirs as an aid to the regulation or control of the flow of rivers, and by acquiring, by purchase, condemnation, or otherwise, holding, using, leasing, hiring, and transferring by appropriate deed lands and any other property that may be needed for the aforesaid purposes, or which it may be deemed advisable to dispose of, and by doing such other things as may be specified in this act or necessary to the accomplishment of the purposes thereof, and by securing the cooperation therein of States, municipalities, and other local agencies, as hereinafter set forth, and for the payment of all expenditures provided for in this act"——

Mr. GARRETT. Mr. Speaker, I renew the point of order made by the gentleman from Mississippi [Mr. HUMPHREYS]. I suggest that enough certainly has been read now to show that the matter is not germane. It involves irrigation projects and reclamation projects. It involves protection from forest fires. All of these things certainly are not germane to this bill. I have no objection to the matter being printed. I am making the point of order at this time in order to save time; that is all. I think it is clearly subject to a point of order.

Mr. CROSSER. Mr. Speaker, the mere fact that incidentally, perhaps, the control of water to prevent floods provides for the irrigation of arid lands as well as the reclamation of swamp lands does not, it seems to me, make this amendment subject to a point of order. It might easily be that we could control streams so as to prevent floods in such a way as to make it a blessing, while at the same time preventing floods.

Mr. STAFFORD. Mr. Speaker, just a word. The objection raised by the gentleman from Tennessee [Mr. GARRETT] that the provisions of this substitute refer to reclamation projects and the building of drainage and irrigation work is not well taken, as by the very phraseology of the bill those things are related to the control of flood waters. You can not read this language unless it is taken in connection with the control of flood waters of streams. The Speaker should take notice of the language—"the reclamation of swamps and overflow lands and arid lands, and the building of drainage and irrigation works in order that the flow of the rivers shall be regulated and controlled." So the stated purpose of the various systems in the amendment is that of flood control. The establishment of the different works is incidental to the main purpose of flood control. If the main purpose of the amendment is flood control, the establishment of the other projects are incidental and part of the main feature, and you can not say that it is not germane to the main principle of the bill, which has for its primary purpose flood control. So far as the Clerk has read, I respectfully contend that it gives every indication of a bill for the purpose of flood control by the establishment of incidental systems which have but one purpose, and that is the control of flood waters.

Mr. GARRETT. Mr. Speaker, the gentleman from Illinois [Mr. MANN], in discussing the point of order made against the amendment proposed by the gentleman from New York [Mr. BENNET], very happily pointed out that you might put the words "for the purpose of flood control" in offering an amendment proposing to erect a public building, but you could not thereby make that amendment in order. The Chair would be charged with knowledge of the fact that the erection of a public building would not control floods. The Chair held in accordance with the suggestion made by the gentleman from Illinois. I think that this matter is on all fours with that proposition, and I call the attention of the Chair to the fact that on page 2 of the substitute which is being read, line 22, it says: "and the protection of watersheds and denudation, erosion and surface wash and from forest fires, and the maintenance and extension of woodland and other protective cover thereon, and the reclamation of swamp and overflow land and arid lands and the building of drainage and irrigation works." All of these propositions are in here in an effort to bring them under the expression "flood control." The Chair is not expected to close his eyes to all reason and common sense in this matter. These suggestions contained in the amendment proposed by the gentleman from Ohio involve propositions that are in no way related to the question covered by this bill. This bill containing the substitute offered by the gentleman was referred to the Committee on Rivers and Harbors.

Mr. CROSSER. Mr. Speaker, the fact that these expenditures of money authorized in this amendment will also reclaim land which is now subject to overflow and perhaps provide water for irrigation purposes does not affect the germaneness of the amendment. If we are to store up water, must we either keep it there or let it go downstream again? If so, it might not be possible at all to adopt the reservoir system to control flood waters. If we can distribute it over arid lands we decrease the flow in the stream accordingly.

The illustration of the gentleman from Tennessee is not on all fours in point. The building of a post office out on the plains or in the middle of the Mississippi River would have nothing to do with flood control. But there is not a proposition contained in the amendment which does not pertain to the control of floods. Retarding water to make water power, using it on arid lands which will absorb the excess water, all tend to prevent floods, although at the same time serving a useful purpose. Yet all this is incident to flood control. We can not keep within the narrow lines of the pending bill in offering an amendment, for if we did, all that would be in order would be to move to amend by raising the banks 2 or 3 feet higher or lower. It seems to me the idea of flood control is broader than that, that we may control water by using it on arid lands, providing spillways, making fish ponds and lakes, and adopting other means for using up the waters and tending to prevent floods.

The SPEAKER. The Chair takes notice, judicial or otherwise, of the various theories that have been propounded in this country for flood control. It seems to the Chair that the remark made by the gentleman from Tennessee [Mr. GARRETT], as to the point made by the gentleman from Illinois [Mr. MANN], is not a parallel case at all.

A good many people claim that the whole flood trouble has been caused by cutting off the forests. Some claim that the reservoir system is the remedy. Some claim one thing and some another. The motion to recommit, offered by the gentleman from Ohio [Mr. CROSSER], as a substitute for the bill of the Committee on Flood Control, is devoted entirely, as far as it has been read, to what the author of it seems to think is flood control, and the Chair thinks so, too. The gentleman from Ohio [Mr. CROSSER] cut out of his instructions the portion which the chairman of the Committtee of the Whole [Mr. CARAWAY] held not to be germane, thereby making it germane. Consequently the point of order is overruled and the Clerk will complete the reading of the motion to recommit.

The Clerk completed the reading of the motion to recommit, as follows:

NATIONAL WATERWAYS COUNCIL.

SEC. 2. That a National Waterways Council, hereinafter called the council, is hereby created, consisting of the President of the United States as chairman, the Secretary of War, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the chairman of the Water Control Board, to be appointed as hereinafter provided.

The council shall have authority to direct and control all proceedings and operations and all things done or to be done under this act, and to establish all rules and regulations which may, in their judgment, be necessary to carry into effect such direction and control consistent with the provisions of this act and with existing law and with any provisions which Congress may from time to time enact.

All plans and estimates prepared by the Water Control Board, as hereinafter provided, which contemplate or provide for expenditures from the river regulation fund shall be submitted to the council for final approval before any of the expenditures therein provided for or contemplated are authorized or made or any construction work undertaken or contracts let under or in pursuance of such plans: *Provided*, That in case of an emergency the chairman of the Water Control Board shall have full power to act, and shall report in detail his action in every case to the council at its next meeting after his action.

WATER CONTROL BOARD.

SEC. 3. That to assist in carrying out the purposes aforesaid the council may utilize the various agencies of the Government, and there is hereby created a Water Control Board, hereinafter called the board, which shall consist of a chairman, to be appointed by the council, and four assistant secretaries, to be appointed as hereinafter provided, and such additional members as the council may from time to time appoint. The chairman of the board shall receive a salary of $12,000 per annum, each assistant secretary aforesaid shall receive a salary of $10,000 per annum, and said additional members of the board such salaries as the council may from time to time fix. Subject to the direction and control of the council as to general policy and procedure, it shall be the duty of the board to ascertain in detail the work in progress and obtain plans, recommendations, and estimates of the work contemplated in the general field of water conservation, control, and utilization by the various agencies of the Government, States, counties, municipalities, districts, communities, corporations, associations, and individuals, and on the basis of such information and the results obtained by its own surveys and investigations to prepare for the consideration of the council a general and comprehensive program of water and waterways conservation, regulation, development, and utilization, extending through a number of years, with comprehensive general plans for each watershed, treating the entire watershed of each river as a unit, and with specific projects, plans, estimates, and recommendations, involving independent work by the United States and the combining of resources and energies of the various public and private agencies aforesaid; to coordinate and bring into conference the various agencies of the Government; and to examine, compare, adjust, allot, assign, and supervise their work, to the end that duplication may be avoided and the highest efficiency obtained; by agreement to assign to the various cooperating agencies the work to be done by them within their respective spheres; to accept, on behalf of the United States, from such agencies contributions of money and property of any kind to be used for carrying out the purposes authorized by this act; to make field inspection of all work done or contemplated under this act by the Government and its cooperating agencies; and to employ such engineers, transportation experts, experts in water development, constructors, and other employees, and to construct such buildings and works as may be necessary for those purposes. The board is hereby authorized to expend from the sums herein provided such amounts as may be necessary for services of employees in the city of Washington, D. C., and elsewhere; to pay therefrom such sums as may be necessary for office accommodations in the city of Washington, D. C., and elsewhere, and to purchase such law books, books of reference, periodicals, engineering, statistical, and professional publications as may be needed. Contributions received under this section shall be used by the board, under the direction of the council, for carrying out the purposes of this act, and money so received shall be paid into the river-regulation fund herein created. Subject to the approval of the council, the board is authorized to enter into such contracts or carry on by hired labor or otherwise such work as may be necessary for carrying out the purposes of this act, within the limits of appropriations made or authorized by this act or appropriations or contributions which shall be hereafter made or authorized from time to time, or as may be necessary for executing projects under this act within the respective limits of cost thereof approved by the Congress, the funds for which shall have been provided by the Secretary of the Treasury in accordance with the authority conferred by this act. Subject to the approval of the council, the board may also employ the various agencies of the Government in carrying out such purposes or executing such projects.

COOPERATION WITH STATES AND OTHER AGENCIES.

SEC. 4. That the board shall, in all cases where possible and practicable, encourage, promote, and endeavor to secure the cooperation of States, municipalities, public and quasi public corporations, towns, counties, districts, communities, persons, and associations in the carrying out of the purposes and objects of this act, and in making the investigations and doing all coordinative and constructive work provided for herein; and it shall in each case endeavor to secure the financial cooperation of States and of such local authorities, agencies, and organizations to such extent and in such amounts as the council shall determine to be a just and equitable apportionment of work, costs, and benefits under all the circumstances in each case; and it shall negotiate and perfect arrangements and plans for the apportionment of work, cost, and benefits, according to the jurisdiction, powers, rights, and benefits of each, respectively, and with a view to assigning to the United States such portion of such development, promotion, regulation, and control as can be properly undertaken by the United States by virtue of its power to regulate interstate and foreign commerce and promote the general welfare, and by reason of its proprietary interest in the public domain, and to the States, municipalities, communities, corporations, and individuals such portion as properly belongs to their jurisdiction, rights, and interests, and with a view to properly apportioning costs and benefits, and with a view to so uniting the plans and works of the United States within its jurisdiction, and of the States and municipalities, respectively, within their jurisdictions, and of corporations, communities, and individuals within their respective powers and rights, as to secure the highest development and utilization of the waterways and water resources of the United States.

APPOINTMENT OF WATER-CONTROL BOARD.

SEC. 5. That each head of a department named in this act is authorized to appoint, with the approval of the council, for service as a member of the board, a highly qualified representative, who shall be an assistant secretary in the department in which he is appointed; shall devote his time primarily to the work authorized by this act; shall have, subject to the direction of the head of the department, such general supervision and control as may be necessary for the purposes of this act of the agencies within the department engaged upon such work; shall serve during good service and behavior; and shall be removable by the head of the department only for good cause.

RIVER-REGULATION FUND.

SEC. 6. That no sums shall be paid out of the river-regulation fund except on vouchers signed by the chairman of the board or by an official designated by him in writing, drawn on the Secretary of the Treasury. To provide for carrying out the projects formulated under this act, which involve expenditures in excess of the $50,000,000 herein appropriated to the river-regulation fund, the appropriation hereafter to the credit of said fund of such sums as may be necessary is hereby authorized. At any time that the Secretary of the Treasury shall determine it to be necessary or advisable, in order to provide all or any part of the appropriation made or authorized by this act or which may be hereafter made or authorized or to provide revenues to execute a project under this act, which shall have been approved by the Congress, he may issue and sell, or use as a means of borrowing money, bonds in the necessary amount, in accordance with the provisions of the act of August 5, 1909 (36 Stats. L., pp. 11 and 117), the act of February 4, 1910 (36 Stats. L., p. 192), and the act of March 2, 1911 (36 Stats. L., p. 1013). The sums appropriated or provided by the Secretary of the Treasury pursuant to this section shall be paid into the river-regulation fund and shall be available until expended and paid out as provided for in this act. All moneys received in connection with any operation under this act, as well as from the sales of materials utilized and any condemned property, shall be covered into the "river-regulation fund" and be available for expenditure therefrom. It is the intent and purpose of this act to authorize and empower the council and the board and their officers, agents, and employees to do all necessary acts and things in addition to those specially authorized in this act to accomplish the purposes and objects hereof.

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I move the previous question on the motion to recommit.

The previous question was ordered.

The SPEAKER. The question now is on the motion to recommit with instructions.

The question was being taken, when Mr. CROSSER demanded the yeas and nays.

The question of ordering the yeas and nays was taken.

The SPEAKER. Twenty-nine Members have arisen, not a sufficient number, and the yeas and nays are refused. The motion to recommit is lost. The question now is on the passage of the bill.

The question was taken; and on a division (demanded by Mr. MADDEN) there were 180 ayes and 53 noes.

Mr. MADDEN. I demand the yeas and nays, Mr. Speaker.

The question of ordering the yeas and nays was taken.

The SPEAKER. Thirty-two gentlemen have arisen, not a sufficient number.

Mr. MADDEN. I demand the other side.

The SPEAKER. All of those opposed to taking the yeas and nays will rise. [After counting.] Two hundred and thirty-nine gentlemen have arisen, so that 32 is not enough, and the yeas and nays are refused.

So the bill was passed.

On motion of Mr. HUMPHREYS of Mississippi, a motion to reconsider the vote by which the bill was passed was laid on the table.

EXTENSION OF REMARKS.

Mr. HUMPHREYS of Mississippi. Mr. Speaker, I ask unanimous consent that all gentlemen have leave to print within five legislative days.

The SPEAKER. The gentleman from Mississippi asks unanimous consent that all gentlemen have leave to print within five legislative days. Is there objection? [After a pause.] The Chair hears none.

Mr. COOPER of Wisconsin. Mr. Speaker, I ask unanimous consent to revise and extend my remarks.

The SPEAKER. The gentleman already has that permission.

Mr. McCRACKEN. Mr. Speaker, I have a resolution here on woman suffrage which I desire to have read from the Clerk's desk.

The SPEAKER. The gentleman from Idaho asks unanimous consent to have a petition read from the Clerk's desk. Is there objection?

Mr. MANN. I object at this time of night.

Mr. WM. ELZA WILLIAMS. Mr. Speaker, I ask leave to extend my remarks in the RECORD on the bill H. R. 8351, being the bill accepting title to the farm on which Abraham Lincoln was born.

The SPEAKER. Is there objection to the request of the gentleman from Illinois? [After a pause.] The Chair hears none.

Mr. BENNET. Mr. Speaker, I ask unanimous consent to extend my remarks in the RECORD in connection with the death of a distinguished Hebrew writer of New York City, who died last week.

The SPEAKER. The gentleman from New York asks unanimous consent to extend his remarks on the life and character of an eminent Hebrew citizen of New York, who died last week. Is there objection? [After a pause.] The Chair hears none.

RURAL CREDITS.

Mr. GLASS. Mr. Speaker, I ask unanimous consent that the House agree to the conference asked for by the Senate on the rural credits bill (S. 2986).

The SPEAKER. The gentleman from Virginia asks unanimous consent that the House agree to the conference asked for by the Senate on the rural credits bill. Is there objection? [After a pause.] The Chair hears none. The Clerk will announce the conferees.

The Clerk announced the conferees, as follows:

Mr. GLASS, Mr. PHELAN, Mr. MOSS of Indiana, Mr. HAYES, and Mr. PLATT.

MESSAGE FROM THE SENATE.

A message from the Senate, by Mr. Waldorf, one of its clerks, announced that the Senate had disagreed to the amendments of the House of Representatives to the bill (S. 2986) to provide capital for agricultural development, to create a standard form of investment based upon farm mortgage, to equalize rates of interest upon farm loans, to furnish a market for United States bonds, to provide for the investment of postal savings deposits, to create Government depositaries and financial agents for the United States, and for other purposes, asked a conference with the House on the disagreeing votes of the two Houses thereon, and had appointed Mr. OWEN, Mr. HOLLIS, and Mr. NELSON as the conferees on the part of the Senate.

The message also announced that the Senate had agreed to the report of the committee of conference on the disagreeing votes of the two Houses on the amendments of the Senate to the bill (H. R. 12766) entitled "An act to increase the efficiency of the Military Establishment of the United States."

ADJOURNMENT.

Mr. KITCHIN. Mr. Speaker, I move that the House do now adjourn.

The motion was agreed to; accordingly (at 6 o'clock and 12 minutes p. m.) the House adjourned to meet to-morrow, Thursday, May 18, 1916, at 11 o'clock a. m.

EXECUTIVE COMMUNICATIONS, ETC.

Under clause 2 of Rule XXIV, executive communications were taken from the Speaker's table and referred as follows.

1. A letter from the Secretary of Labor, transmitting a list of papers in the Department of Labor which have no permanent value or historical interest (H. Doc. No. 1135); to the Committee on the Disposition of Useless Executive Papers and ordered to be printed.

2. A letter from the Secretary of War, transmitting, with a letter from the Chief of Engineers, report on reexamination of inland waterway from Norfolk, Va., to Beaufort Inlet, N. C. (H. Doc. No. 1136); to the Committee on Rivers and Harbors and ordered to be printed.

REPORTS OF COMMITTEES ON PUBLIC BILLS AND RESOLUTIONS.

Under clause 2 of Rule XIII, bills were severally reported from committees, delivered to the Clerk, and referred to the several calendars therein named, as follows:

Mr. HUGHES, from the Committee on Education, to which was referred the bill (H. R. 15462) to create a commission to be known as the Federal motion-picture commission, and defining its powers and duties, reported the same without amendment, accompanied by a report (No. 697), which said bill and report were referred to the Committee of the Whole House on the state of the Union.

Mr. KEATING, from the Committee on Labor, to which was referred the bill (H. R. 8665) to regulate the method of directing the work of Government employees, reported the same with amendments, accompanied by a report (No. 698), which said bill and report were referred to the Committee of the Whole House on the state of the Union.

Mr. CULLOP, from the Committee on Interstate and Foreign Commerce, to which was referred the bill (H. R. 9216) to amend sections 2, 3, 4, and 5 of an act entitled "An act to promote the safety of employees and travelers upon railroads by limiting the hours of service of employees thereon," approved March 4, 1907, reported the same with amendment, accompanied by a report (No. 699), which said bill and report were referred to the House Calendar.

Mr. RAKER, from the Committee on the Public Lands, to which was referred the bill (H. R. 15522) to establish a national park service, and for other purposes, reported the same without amendment, accompanied by a report (No. 700), which said bill and report were referred to the Committee of the Whole House on the state of the Union.

REPORTS OF COMMITTEES ON PRIVATE BILLS AND RESOLUTIONS.

Under clause 2 of Rule XIII, private bills were severally reported from committees, delivered to the Clerk, and referred to the Committee of the Whole House, as follows:

Mr. CAPSTICK, from the Committee on Claims, to which was referred the bill (S. 4398) for the refund of excess duties on steel blooms, reported the same without amendment, accompanied by a report (No. 701), which said bill and report were referred to the Private Calendar.

Mr. EDMONDS, from the Committee on Claims, to which was referred the bill (H. R. 11749) for the relief of the heirs of John M. Waples, reported the same with amendment, accompanied by a report (No. 702), which said bill and report were referred to the Private Calendar.

Mr. MILLER of Delaware, from the Committee on Claims, to which was referred the bill (H. R. 3294) for the relief of Lena Schmieder, reported the same with amendment, accompanied by a report (No. 703), which said bill and report were referred to the Private Calendar.

Mr. STEPHENS of Texas, from the Committee on Indian Affairs, to which was referred the bill (H. R. 7427) for the relief of Martha Hazelwood, reported the same with amendment, accompanied by a report (No. 704), which said bill and report were referred to the Private Calendar.

Mr. CAPSTICK, from the Committee on Claims, to which was referred the bill (H. R. 4559) for the relief of C. Horatio Scott, reported the same with amendment, accompanied by a report (No. 705), which said bill and report were referred to the Private Calendar.

Mr. POU, from the Committee on Claims, to which was referred the bill (H. R. 14952) for the relief of Mrs. John A. Fox, reported the same with amendment, accompanied by a report (No. 706), which said bill and report were referred to the Private Calendar.

Mr. STEPHENS of Mississippi, from the Committee on Claims, to which was referred the bill (S. 3388) for the relief of the estate of John Stewart, deceased, reported the same without amendment, accompanied by a report (No. 707), which said bill and report were referred to the Private Calendar.

He also, from the same committee, to which was referred the bill (H. R. 2208) for the relief of James L. Yokum, reported the same without amendment, accompanied by a report (No. 708), which said bill and report were referred to the Private Calendar.

Mr. MILLER of Delaware, from the Committee on Claims, to which was referred the bill (H. R. 13496) for the relief of the Moeur-Pafford Co., reported the same without amendment, accompanied by a report (No. 709), which said bill and report were referred to the Private Calendar.

Mr. STEPHENS of Mississippi, from the Committee on Claims, to which was referred the bill (H. R. 14814) for the relief of Edward J. Lynch, collector of internal revenue for the district of Minnesota, reported the same without amendment, accompanied by a report (No. 710), which said bill and report were referred to the Private Calendar.

He also, from the same committee, to which was referred the bill (S. 3405) for the relief of the Maine Central Railroad, reported the same without amendment, accompanied by a report (No. 711), which said bill and report were referred to the Private Calendar.

CHANGE OF REFERENCE.

Under clause 2 of Rule XXII, the Committee on Military Affairs was discharged from the consideration of the bill (H. R. 10857) for the relief of James Folmsbee, and the same was referred to the Committee on Claims.

PUBLIC BILLS, RESOLUTIONS, AND MEMORIALS.

Under clause 3 of Rule XXII, bills and resolutions were introduced and severally referred as follows:

By Mr. NEELY: A bill (H. R. 15730) giving the consent of the United States for the bringing of certain suits in the Supreme Court of the United States, and for other purposes; to the Committee on the Judiciary.

By Mr. RIORDAN: A bill (H. R. 15731) to adequately compensate commissioned officers of the United States Navy for length of service, and to grant to warrant officers allowances and privileges allowed other officers of the United States Navy; to the Committee on Naval Affairs.

By Mr. ALLEN: A bill (H. R. 15732) to provide for the exportation of gin in bond in other than original packages; to the Committee on Ways and Means.

By Mr. HAYDEN: A bill (H. R. 15733) to authorize the advancement of funds to survey, construct, and maintain roads, trails, and bridges within Indian reservations; to the Committee on Indian Affairs.

By Mr. GLASS: A bill (H. R. 15734) to authorize national banking associations to establish branches; to the Committee on Banking and Currency.

By Mr. HILL: A bill (H. R. 15735) providing for investment of deposits of savings-bank departments of national banks; to the Committee on Banking and Currency.

By Mr. MONTAGUE: A bill (H. R. 15736) to provide for aviation in the Coast Guard; to the Committee on Interstate and Foreign Commerce.

By Mr. HADLEY: A bill (H. R. 15737) providing for the disposal of certain lands in block 69, in the city of Port Angeles, State of Washington; to the Committee on the Public Lands.

By Mr. RIORDAN: A bill (H. R. 15738) to amend section 1916 of the Compiled Statutes of the United States; to the Committee on Military Affairs.

By Mr. COX: Joint resolution (H. J. Res. 224) authorizing the Postmaster General to prepare and provide for a distinct postage stamp for the one hunderdth anniversary celebration of the State of Indiana; to the Committee on the Post Office and Post Roads.

By Mr. HULBERT: Resolution (H. Res. 238) and rule for the consideration of H. R. 14777; to the Committee on Rules.

By Mr. DYER: Resolution (H. Res. 239) for the consideration of resolutions relative to the treatment of Irish revolutionists by the British Government; to the Committee on Rules.

PRIVATE BILLS AND RESOLUTIONS.

Under clause 1 of Rule XXII, private bills were introduced and severally referred as follows:

By Mr. BARNHART: A bill (H. R. 15739) granting an increase of pension to J. P. Oakes; to the Committee on Invalid Pensions.

By Mr. CANNON: A bill (H. R. 15740) for the relief of Joseph P. Weis; to the Committee on Military Affairs.

By Mr. CHIPERFIELD: A bill (H. R. 15741) to reimburse C. E. Sperry for one-half the loss sustained by the said C. E. Sperry upon stock improperly quarantined by the United States Government and the State of Illinois; to the Committee on Claims.

Also, a bill (H. R. 15742) to reimburse R. M. Logan for one-half the loss sustained by the said R. M. Logan upon stock improperly quarantined by the United States Government and the State of Illinois; to the Committee on Claims.

Also, a bill (H. R. 15743) to reimburse Frank Kirkpaterich for one-half the loss sustained by the said Frank Kirkpaterich upon stock improperly quarantined by the United States Government and the State of Illinois; to the Committee on Claims.

Also, a bill (H. R. 15744) to reimburse H. G. Sperry for one-half the loss sustained by the said H. G. Sperry upon stock improperly quarantined by the United States Government and the State of Illinois; to the Committee on Claims.

By Mr. DIXON: A bill (H. R. 15745) granting an increase of pension to August H. Knippenberg; to the Committee on Pensions.

Also, a bill (H. R. 15746) granting an increase of pension to Alexander Gudgel; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15747) granting an increase of pension to Jesse E. Wells; to the Committee on Pensions.

By Mr. DYER: A bill (H. R. 15748) granting an increase of pension to Xaver Zachringer, alias John Ruh; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15749) granting a pension to Adeline Wagner; to the Committee on Invalid Pensions.

By Mr. FERRIS: A bill (H. R. 15750) for the relief of Ona B. Deaton; to the Committee on the Public Lands.

By Mr. JAMES: A bill (H. R. 15751) granting a pension to Thomas Hosking; to the Committee on Pensions.

By Mr. LAFEAN: A bill (H. R. 15752) granting an increase of pension to David Freed; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15753) granting an increase of pension to Sarah Irwin; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15754) granting an increase of pension to Margaretta Ream; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15755) granting an increase of pension to Annie Albright; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15756) granting an increase of pension to Emma Wilhelm; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15757) granting an increase of pension to Edward Warren; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15758) granting an increase of pension to Catharine E. Marquart; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15759) granting an increase of pension to Rebecca Odewalt; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15760) granting an increase of pension to Eliza Wagner; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15761) granting an increase of pension to Mary M. Taylor; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15762) granting an increase of pension to Annie Albright; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15763) granting an increase of pension to Emma J. Poleman; to the Committee on Invalid Pensions.

Also, a bill (H. R. 15764) granting an increase of pension to Francis R. Culp; to the Committee on Invalid Pensions.

By Mr. LEE: A bill (H. R. 15765) granting an increase of pension to Narcissus New; to the Committee on Pensions.

By Mr. LOBECK: A bill (H. R. 15766) granting a pension to Alfred G. J. Petersen; to the Committee on Pensions.

By Mr. LONGWORTH: A bill (H. R. 15767) granting an increase of pension to Mary E. Murphy; to the Committee on Invalid Pensions.

By Mr. PARK: A bill (H. R. 15768) granting an increase of pension to Thomas N. Hopkins; to the Committee on Pensions.

By Mr. REILLY: A bill (H. R. 15769) for the relief of Christy Price; to the Committee on Naval Affairs.

By Mr. SLEMP: A bill (H. R. 15770) granting a pension to David Noe, Rural Retreat, Va.; to the Committee on Pensions.

By Mr. SMITH of New York: A bill (H. R. 15771) granting an increase of pension to Charles V. Petteys; to the Committee on Invalid Pensions.

By Mr. WALKER: A bill (H. R. 15772) granting an increase of pension to Horace Carter; to the Committee on Pensions.

Also, a bill (H. R. 15773) granting a pension to William M. Davis; to the Committee on Pensions.

PETITIONS, ETC.

Under clause 1 of Rule XXII, petitions and papers were laid on the Clerk's desk and referred as follows:

By the SPEAKER (by request): Petitions of women of Utah and citizens of Wymore, Nebr., relative to suffrage amendment; to the Committee on the Judiciary.

Also (by request), memorial of Anaconda (Mont.) Typographical Union, No. 255, favoring House bill 12287; to the Committee on the Post Office and Post Roads.

Also (by request), memorial of the Daughters of the Utah Indian War Veterans, favoring the passage of the Susan B. Anthony amendment for woman suffrage; to the Committee on the Judiciary.

Also (by request), petition of citizens and voters of the State of California, favoring a report of the Susan B. Anthony amendment by the Committee on the Judiciary; to the Committee on the Judiciary.

Also (by request), petition of women voters of Yuma County, Ariz., favoring national enfranchisement of women; to the Committee on the Judiciary.

Also (by request), memorial of National Automobile Chamber of Commerce, against passage of the Tavenner bill relative to time studies in Government shops; to the Committee on Labor.

By Mr. ASHBROOK: Evidence to accompany House bill 15622, for the relief of Nathan Smith; to the Committee on Invalid Pensions.

By Mr. BAILEY: Memorial of Local Union No. 1468, United Mine Workers of America, favoring resolution for inspection of dairies; to the Committee on Agriculture.

Also, memorial of Automobile Dealers' Association of Pittsburgh, Pa., favoring tax on exportations of gasoline; to the Committee on Ways and Means.

By Mr. BUCHANAN of Texas: Petition of John C. Townes and 62 others, of Austin, Tex., favoring national prohibition; to the Committee on the Judiciary.

Also, petitions of H. F. Neumann, Elijah Taylor, and others, of Austin, Tex., against bill to close barber shops in District of Columbia on Sunday; to the Committee on the District of Columbia.

By Mr. CAREW: Petition of New York Academy of Medicine, in re medical service in United States Army; to the Committee on Military Affairs.

By Mr. DALE of New York: Petition of women of Utah, Montana, and Nebraska, relative to suffrage amendment; to the Committee on the Judiciary.

Also, memorial of National Automobile Chamber of Commerce against passage of bill to prevent time studies in Government shops; to the Committee on Labor.

By Mr. DAVIS of Texas: Petition of Cattle Raisers' Association of Texas condemning the growing control of the cattle market by the big packers; to the Committee on Interstate and Foreign Commerce.

By Mr. DOOLING: Petition of Merchants' Association of New York in opposition to a Government hydroelectric plant for the production of nitrates and fertilizers; to the Committee on Military Affairs.

By Mr. ESCH: Papers to accompany House bill 15659, granting an increase of pension to James Livingstone; to the Committee on Invalid Pensions.

By Mr. FULLER: Petition of the National Automobile Chamber of Commerce of New York City, protesting against House bill 8665 relative to the Taylor system of shop management; to the Committee on Labor.

Also, petition of members of Chicago (Ill.) Customs Club, favoring House bill 9054 for extended leave of absence of Government employees; to the Committee on Reform in the Civil Service.

By Mr. GALLIVAN: Memorial of the National Association of Cotton Manufacturers, favoring national defense; to the Committee on Military Affairs.

By Mr. GRAY of Indiana: Petition of Inez Funk and other members of the edelweiss class, Dubin, Ind., favoring the enactment of House bill 456, providing for the censorship of moving-picture films; to the Committee on Interstate and Foreign Commerce.

Also, petition of Della Faust, Noblesville, Ind., and 25 other citizens of said State, protesting against the enactment of Senate bill 645; to the Committee on the District of Columbia.

Also, petition of Mrs. R. P. Lindsay and other members of the Helen Hunt Club, Cambridge City, Ind., favoring the enactment of House bill 456, providing for the censorship of moving-picture films; to the Committee on Interstate and Foreign Commerce.

Also, petition of C. F. Bradburn, Richmond, Ind., and 23 other laboring men of said city, favoring the enactment of House bill 8665 to prohibit the stop-watch system of employment; to the Committee on Labor.

By Mr. KENNEDY of Rhode Island: Petition of Arthur V. Weidelich and others, against exclusion of Red Cross supplies; to the Committee on Foreign Affairs.

By Mr. LAFEAN: Memorial of Merchants' Association of New York, opposing a Government hydroelectric plant for production of nitrates and fertilizers; to the Committee on Military Affairs.

Also, memorial of Second Convention of Mental Hygiene Societies of the United States, favoring bill to establish a division of mental hygiene in the United States Public Health Service; to the Committee on Interstate and Foreign Commerce.

Also, memorial of National Automobile Chamber of Commerce, objecting to the Tavenner bill, against the Taylor system; to the Committee on Labor.

Also, memorial of United Iron Workers of America, favoring House bill 137, relative to inspection of creameries and dairies; to the Committee on Agriculture.

Also, memorial of Southern Hardware Jobbers' Association, favoring bill for prevention of floods of the Mississippi River; to the Committee on Rivers and Harbors.

By Mr. LOUD: Petition of Leon C. Wheeler and Methodist Episcopal Sunday School of Barryton and G. M. Bierly and Union Sunday School of Lake George, Mich., favoring national prohibition; to the Committee on the Judiciary.

By Mr. ROWE: Petition of International Association of Machinists, favoring House bill 8665; to the Committee on Labor.

Also, petition of Board of Aldermen of New York City, favoring national military preparedness; to the Committee on Military Affairs.

Also, petition of Chamber of Commerce of the State of New York, opposing any method of agricultural banking requiring use of Government funds; to the Committee on Banking and Currency.

Also, petition of Brooklyn Quartette Club, favoring peaceful relations with foreign countries; to the Committee on Foreign Affairs.

Also, petition of Local Union No. 498, United Association of Plumbers and Steam Fitters, opposing reduction of wages of employees in Canal Zone; to the Committee on Interstate and Foreign Commerce.

By Mr. SANFORD: Papers to accompany House bill 15377, granting a pension to Christopher Dahlen; to the Committee on Invalid Pensions.

By Mr. SMITH of Idaho: Papers to accompany House bill 15723, granting a pension to Sarah E. Simonton; to the Committee on Invalid Pensions.

By Mr. SMITH of Michigan: Petition of Okke Kluins and 130 citizens of Kalamazoo, Mich., protesting against the passage of House bills 6468 and 491, to amend the postal laws; to the Committee on the Post Office and Post Roads.

By Mr. STINESS: Petition of A. M. L. Herenins, Centerville, R. I., favoring embargo resolution; to the Committee on Foreign Affairs.

By Mr. TILSON: Petition of Elmer E. Okeson and 40 others and Francis T. Bedworth and 28 others, all of New Haven, Conn., against bills to amend the postal laws; to the Committee on the Post Office and Post Roads.

By Mr. TOWNER: Petition of Robert Sutton and other citizens of Lucas County, Iowa, protesting against the enactment of House bill 652 or any similar compulsory Sunday-observance measure; to the Committee on the District of Columbia.

Also, petition of Robert Sutton and other citizens of Lucas County, Iowa, protesting against the enactment of House bill 6468 or any similar amendment to the postal laws; to the Committee on the Post Office and Post Roads.

SENATE.

THURSDAY, *May 18, 1916.*

The Chaplain, Rev. Forrest J. Prettyman, D. D., offered the following prayer:

Almighty God, Thou hast so impressed Thyself upon all the laws of nature and upon all the processes of human thinking that no government has ever been founded that was not based upon its ultimate relation to Thee. Thou hast not separated Thyself from men. In the onward path of progress we need more and more Thy inspiration and guidance and blessing. We shall never be enabled to govern ourselves unless we are willing freely to submit ourselves to the divine government. We pray that to-day we may look up through the toil and care of the day's work in humble submission to the divine will and realize in personal experience that in the midst of the conflict of interest of this world there is a hand governing all, and that our safety and glory lie in submission to the guidance of the hand of God. For Christ's sake. Amen.

The Journal of the proceedings of the legislative day of Tuesday, May 16, 1916, was read and approved.

Mr. KENYON. Mr. President, I suggest the absence of a quorum.

The VICE PRESIDENT. The Secretary will call the roll.

The Secretary called the roll, and the following Senators answered to their names:

Bankhead	Gronna	Martine, N. J.	Smith, Ga.
Beckham	Hardwick	Myers	Smith, Mich.
Brady	Hitchcock	Newlands	Smith, S. C.
Brandegee	Johnson, Me.	Norris	Smoot
Catron	Johnson, S. Dak.	O'Gorman	Sterling
Chamberlain	Jones	Overman	Stone
Chilton	Kenyon	Page	Swanson
Clapp	Kern	Pittman	Thomas
Clarke, Ark.	Lane	Poindexter	Tillman
Culberson	Lea, Tenn.	Ransdell	Vardaman
Curtis	Lee, Md.	Reed	Wadsworth
Dillingham	Lippitt	Shafroth	Walsh
Fletcher	Lodge	Sheppard	Warren
Gallinger	McLean	Sherman	Williams
Gore	Martin, Va.	Simmons	

Mr. KERN. I desire to announce the unavoidable absence of my colleague [Mr. TAGGART]. This announcement may stand for the day.

Mr. SMITH of Michigan. I wish to announce the unavoidable absence of my colleague [Mr. TOWNSEND] on account of sickness in his family. I desire this announcement to stand for the day. On all record votes my colleague is paired with the Senator from Florida [Mr. BRYAN].

The VICE PRESIDENT. Fifty-nine Senators have answered to the roll call. There is a quorum present.

DISPOSITION OF USELESS PAPERS.

The VICE PRESIDENT. The Chair lays before the Senate a communication from the Secretary of Labor, transmitting, pursuant to law, a schedule of useless papers and papers without historical value in the Department of Labor and requesting action looking to their disposition. The communication and accompanying paper will be referred to the Joint Select Committee on the Disposition of Useless Papers in the Executive Departments, and the Chair appoints the Senator from New Jersey [Mr. MARTINE] and the Senator from Washington [Mr. JONES] the committee on the part of the Senate. The Secretary will notify the House of Representatives of the appointment thereof.

LIST OF CASES (S. DOC. NO. 445).

The VICE PRESIDENT laid before the Senate a communication from the chief clerk of the Court of Claims, transmitting