

## OKLAHOMA.

Forrest L. Strong, Clinton.  
 Perry E. High, Maysville.  
 Elmer D. Rook, Sayre.

## OREGON.

Cyril G. Shaw, Kerry.  
 Henry H. Melreynolds, Pilot Rock.

## PENNSYLVANIA.

Edward A. P. Christley, Ellwood City.

## TENNESSEE.

Simon C. Dodson, Sparta.  
 Michel K. Freeman, Westmoreland.

## UTAH.

John A. Call, Bountiful.

## HOUSE OF REPRESENTATIVES.

TUESDAY, January 30, 1923.

The House met at 12 o'clock noon, and was called to order by the Speaker.

The Chaplain, Rev. James Shea Montgomery, D. D., offered the following prayer:

O Lord, we are not alone with Thee. He who considers the lily and notes the sparrow's fall has said to all men: "Come unto me." Bestow upon us this day the blessings of a free mind and an untroubled heart. Help us to forgive our enemies, to encourage the ignorant, to relieve the distressed, and to share with others the common fruits of toil. We thank Thee for the freedom of government and for the blessings that follow the paths of our citizenship. Bless all educational, charitable, and religious institutions; may they go on unimpeded to higher usefulness. May every day bring to us, to our homes, and to our whole land the fragrant flowers of love, joy, patience, and good will. Through Christ, our Savior. Amen.

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

## LEGISLATIVE APPROPRIATION BILL—CONFERENCE REPORT.

Mr. CANNON. Mr. Speaker, I present a conference report (H. Rept. 1477) and accompanying statement on the legislative appropriation bill for printing under the rule.

The SPEAKER. The gentleman from Illinois presents the conference report and accompanying statement on the legislative appropriation bill for printing under the rule. The Clerk will report it.

The Clerk read as follows:

Conference report on the bill (H. R. 13926) making appropriations for the legislative branch of the Government for the fiscal year ending June 30, 1924, and for other purposes.

The SPEAKER. Ordered printed under the rule.

## MESSAGE FROM THE SENATE.

A message from the Senate, by Mr. CROCKETT, one of its clerks, announced that the Senate had passed bills of the following titles, in which the concurrence of the House of Representatives was requested:

S. 4358. An act to authorize the American Niagara Railroad Corporation to build a bridge across the Niagara River between the State of New York and the Dominion of Canada;

S. 4387. An act to authorize the building of a bridge across the Tugaloo River between South Carolina and Georgia; and

S. 4398. An act in recognition of the valor of the officers and men of the Seventy-ninth Division who were killed in action or died of wounds received in action.

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. 13926) making appropriations for the legislative branch of the Government for the fiscal year ending June 30, 1924, and for other purposes.

The message also announced that the Senate had agreed to the amendments of the House of Representatives to the bill (S. 1690) to correct the military record of John Sullivan.

The message also announced that the Senate had agreed to the amendments of the House of Representatives to the amendments of the Senate numbered 11, 31, and 35 to the bill (H. R. 13481) making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1924, and for other purposes, had receded from its amendment numbered 34 to said bill. That the Senate had disagreed to the amendment of the

House of Representatives to the amendment of the Senate numbered 33 to said bill, had further insisted upon its said amendment, had requested a further conference with the House of Representatives on the disagreeing votes of the two Houses thereon, and had appointed Mr. McNARY, Mr. JONES of Washington, Mr. LENROD, Mr. OVERMAN, and Mr. SMITH as the conferees on the part of the Senate.

The message also announced that the Senate had passed the following resolutions:

## Senate Resolution 422.

Resolved, That the Senate has heard with profound sorrow of the death of Hon. PHILANDER C. KNOX, late a Senator from the State of Pennsylvania.

Resolved, That as a mark of respect to the memory of the deceased the business of the Senate be now suspended to enable his associates to pay tribute to his high character and distinguished public services.

Resolved, That the Secretary communicate these resolutions to the House of Representatives and transmit a copy thereof to the family of the deceased.

Resolved, That as a further mark of respect to the memory of the deceased the Senate do now adjourn.

## Senate Resolution 423.

Resolved, That the Senate has heard with profound sorrow of the death of Hon. BOIES PENEKOSZ, late a Senator from the State of Pennsylvania.

Resolved, That as a mark of respect to the memory of the deceased the business of the Senate be now suspended to enable his associates to pay tribute to his high character and distinguished public services.

Resolved, That the Secretary communicate these resolutions to the House of Representatives and transmit a copy thereof to the family of the deceased.

Resolved, That as a further mark of respect to the memory of the deceased the Senate do now adjourn.

## Senate Resolution 424.

Resolved, That the Senate has heard with profound sorrow of the death of Hon. WILLIAM E. CROW, late a Senator from the State of Pennsylvania.

Resolved, That as a mark of respect to the memory of the deceased the business of the Senate be now suspended to enable his associates to pay tribute to his high character and distinguished public services.

Resolved, That the Secretary communicate these resolutions to the House of Representatives and transmit a copy thereof to the family of the deceased.

Resolved, That as a further mark of respect to the memory of the deceased the Senate do now adjourn.

The message also announced that the Senate had passed the following resolution:

## Senate Resolution 425.

Resolved, That the Senate has heard with profound sorrow the announcement of the death of the Hon. SHERMAN E. BURROUGHS, late a Representative from the State of New Hampshire.

Resolved, That a committee of six Senators be appointed by the Vice President to hold the committee appointed on the part of the House of Representatives to attend the funeral of the deceased.

Resolved, That the Secretary communicate these resolutions to the House of Representatives and transmit a copy thereof to the family of the deceased.

Resolved, That as a further mark of respect to the memory of the deceased the Senate take a recess until 12 o'clock to-morrow.

And that the Vice President, under the second resolution, had appointed Mr. MOSES, Mr. KEYES, Mr. HARRELD, Mr. MCKENLEY, Mr. BAYARD, and Mr. WALSH of Massachusetts members of the committee on the part of the Senate.

## COLORADO RIVER PACT.

Mr. HAYDEN. Mr. Speaker, I ask unanimous consent to extend my remarks in the Record by publishing in 8-point type some information that I have gathered relative to the Colorado River compact.

The SPEAKER. The gentleman from Arizona asks unanimous consent to extend his remarks in the Record by inserting the matter indicated. Is there objection?

Mr. STAFFORD. Are they the gentleman's own remarks?

Mr. HAYDEN. They are partly my own remarks, but otherwise they are questions and answers relative to the pact, addressed to Mr. Hoover, chairman of the commission, and Mr. Davis, Chief Engineer, and others. The data that I have gathered, I am sure, will be of interest to the House as well as to the people of the seven States of the Colorado River Basin.

The SPEAKER. Is there objection?

There was no objection.

The extension of remarks referred to is here printed in full as follows:

Mr. HAYDEN. Mr. Speaker, the Colorado River compact is of immediate and intense interest to the people of the seven States of the basin of that mighty river, and the Nation as a whole will soon realize its importance. This is the first time that so large a number of States have sought a unanimous agreement upon a question which vitally affects their common welfare. Very naturally there has been a desire to secure all the information that could possibly be obtained not only as to

the true meaning of the terms of the compact but also as to its effect when approved. In the hope that I might aid in this quest for knowledge, I have addressed a number of inquiries to those in the service of the Federal Government who are best qualified to speak on this subject. First among them is Hon. Herbert Hoover, who served as chairman of the Colorado River Commission, which drafted the compact. His reply is as follows:

DEPARTMENT OF COMMERCE,  
OFFICE OF THE SECRETARY,  
Washington, January 27, 1923.

Hon. CARL HAYDEN,  
House of Representatives, Washington, D. C.

MY DEAR MR. HAYDEN: Referring to your letter of January 9 addressed to the Secretary, inclosing questionnaire on the Colorado River compact, I am requested by Mr. Hoover to forward to you his answers to the questions which you propounded. Very truly yours,

CLARENCE C. STETSON;

Executive Secretary, Colorado River Commission.

**Question 1. What was the reason for dividing the drainage area of the Colorado River and its tributaries into two basins, as provided in Article II of the Colorado River compact?**

The reasons were:

(a) The commission, upon analysis, found that the causes of present friction and of major future disputes lay between the lower basin States and the upper basin States, and that very little likelihood of friction lay between the States within each basin; that the delays to development at the present time are wholly interbasinal disputes; and that major development is not likely to be impeded by disputes between the States within each basin. And in any event, the compact provides machinery for such settlements.

(b) The drainage area falls into two basins naturally, from a geographical, hydrographical, and an economic point of view. They are separated by over 500 miles of barren canyon which serves as the neck of the funnel, into which the drainage area comprised in the upper basin pours its waters, and these waters again spread over the lands of the lower basin.

(c) The climate of the two basins is different; that of the upper basin being, generally speaking, temperate, while that of the lower basin ranges from semitropical to tropical. The growing seasons, the crops, and the quantity of water consumed per acre are therefore different.

(d) The economic conditions in the two basins are entirely different. The upper basin will be slower of development than the lower basin. The upper basin will secure its waters more by diversion than by storage, whereas the development of the lower basin is practically altogether a storage problem.

(e) The major friction at the present moment is over the water rights which might be established by the erection of adequate storage in the lower basin, as prejudging the situation in the upper basin, and regardless of legal rights in either case. The States are now divided into two groups in opposition to each other legislatively, with little hope of the cohesion that is necessary before Federal aid can ever be secured.

The use of the group method of division was therefore adopted both from necessity, as being the only practical one, and from advisability, being dictated by the conditions existing in the entire basin.

**Question 2. Was the apportionment in Article III of the compact between the upper and lower basins arbitrary or was it based on the actual requirements of each basin?**

The apportionment was not arbitrary. It was based on a careful consideration of respective needs of the two basins. The data available was the estimates provided by the Reclamation Service, which follow, showing the total new and old acreage in the two basins, including not only all existing projects but all projects considered economically feasible and also those of doubtful feasibility and intended to cover every prospective development during the next 75 years. The commissioners and engineering staffs of the different States varied somewhat from the basic estimates of the Reclamation Service, and some compromise from these figures was agreed to by the commission to compensate in different directions. This was particularly the case with regard to the estimated consumption of water per acre. It will be noted that the total acreage in the lower basin, present and prospective, is given as 2,127,000, whereas that in the upper basin is given as 4,000,000. Therefore the amount of water depends partly on the consumption assumed per acre, and after general consideration an addition was made in each case to cover any

possible mischances of calculation, the general addition being about 30 per cent more than the probable use.

Table of Colorado River acreage.

	Average irrigated 1921.	New acreage.	Total acreage.
Lower basin:			
Arizona.....	507,000	640,000	1,147,000
California.....	470,000	400,000	870,000
Nevada.....	3,000	35,000	38,000
Total.....	980,000	1,075,000	2,055,000
Upper basin:			
Colorado.....	740,000	1,018,000	1,758,000
New Mexico.....	31,000	483,000	514,000
Utah.....	250,000	456,000	706,000
Wyoming.....	397,000	543,000	940,000
Total.....	1,718,000	2,500,000	4,218,000

**Question 3. Why was 40 years fixed as the time for a future apportionment of the surplus water of the Colorado River?**

There was a decided conflict between the States over the period to be fixed in this paragraph, based chiefly on their ideas as to rapidity of development and actual use of the water. Some desired a shorter and some a longer time. Suggestions were made varying from 20 to 40 years. The 40-year period was finally arrived at as a common point of agreement. Judging by experience under other projects—the Imperial Valley and Salt River Valley, for instance—the full development of contemplated construction, as shown in the table following question 2, will take a much longer time than the one fixed.

**Question 4. Why was the term "Colorado River system" used in paragraph (a) of Article III, wherein 7,500,000 acre-feet of water is apportioned to the upper and lower basins, respectively?**

This term is defined in Article II as covering the entire river and its tributaries in the United States. No other term could be used, as the duty of the commission was to divide all the water of the river. It serves to make it clear that this was what the commission intended to do and prevents any State from contending that, since a certain tributary rises and empties within its boundaries and is therefore not an interstate stream, it may use its waters without reference to the terms of the compact. The plan covers all the waters of the river and all its tributaries, and the term referred to leaves that situation beyond doubt.

**Question 5. Why is the basis of division changed from the "Colorado River system" to the "river at Lee Ferry" in paragraph (d) of Article III, the period of time extended to 10 years and the number of acre-feet multiplied by 10?**

(a) I do not think there is any change in the basis of division as the result of the difference in language in Articles III (a) and III (b). The two mean the same. By reference to Article II (f) it will be seen that Lee Ferry, referred to in III (d), is the determining point in the creation of the two basins specified in III (a). The use of this term makes it plain that the 75,000,000 acre-feet are to be delivered in the main channel of the river above the various tributaries which contribute water below.

(b) The agreement as to the flow of 75,000,000 acre-feet at Lee Ferry during each 10-year period fixes a definite quantity of water which must pass that point. Under III (a) each basin is entitled to the use of 7,500,000 acre-feet annually. Judging by past records, there will always be sufficient flow in the river to supply these quantities, but in the improbable event of a deficiency, the lower basin has the first call on the water up to a total use of 75,000,000 acre-feet each 10 years. While there was in the commission a firm belief that no such shortage will ever occur, still this provision was adopted as a matter of caution. The period of 10 years was fixed as a basis of measurement, as being long enough to allow equalization between years of high and low flow, and as representing a basis fair to both divisions.

**Question 6. Are the 1,000,000 additional acre-feet of water apportioned to the lower basin in paragraph (b) of Article III supposed to be obtained from the Colorado River or solely from the tributaries of that stream within the State of Arizona?**

The use of the words "such waters" in this paragraph clearly refers to waters from the Colorado River system, and the extra 1,000,000 acre-feet provided for can therefore be taken from the main river or from any of its tributaries.

**Question 7. If more than 1,000,000 acre-feet of water are beneficially used and consumed annually on the tributaries of the**

*Colorado River in Arizona, will the excess above that amount be charged against the 75,000,000 acre-feet of water to be delivered at Lee Ferry during any 10-year period, as provided in paragraph (d) of Article III? In other words, will the use of any amount of water from the tributaries of the Colorado below Lee Ferry in any way relieve the States of the upper division from their obligation not to cause the flow of the river to be depleted below 75,000,000 acre-feet in any period of 10 consecutive years?*

I can see no connection between the use of waters in Arizona from Colorado River tributaries and the obligation of the upper States to deliver the 75,000,000 acre-feet each 10 years at Lee Ferry. Their undertaking in this respect is separate and independent and without reference to place of use or quantity of water obtained from any other source. On the face of this paragraph this amount of water must be delivered even though not used at all. The obligation certainly can not be diminished by the fact that Arizona obtains other water from another source. The contract is to deliver a definite amount of water at a definite point above the inflow of various important tributaries, and I find nothing in the compact which modifies this obligation, except the general limitation as to use, which is hereafter referred to.

*Question 8. As a matter of fact more than 1,000,000 acre-feet of water from the tributaries of the Colorado below Lee Ferry are now being beneficially used and consumed within the State of Arizona. Will the excess above that amount be accounted for as a part of the 7,500,000 acre-feet first apportioned to the lower basin from the waters of the "Colorado River system" as provided in paragraph (a) of Article III?*

By the provisions of paragraphs (a) and (b), Article III, the lower basin is entitled to the use of a total of 8,500,000 acre-feet per annum from the entire Colorado River system, the main river and its tributaries. All use of water in that basin, including the waters of tributaries entering the river below Lee Ferry, must be included within this quantity. The relation is reciprocal. Water used from these tributaries falls within the 8,500,000 acre-feet quota. Water obtained from them does not come within the 75,000,000 acre-feet 10-year period flow delivered at Lee Ferry, but remains available for use over and above that amount.

*Question 9. Does paragraph (c) of Article III contemplate a treaty between the United States and the Republic of Mexico under which one-half of a deficiency of water for the irrigation of lands in Mexico shall be supplied from reservoirs in Arizona?*

No. Paragraph (c) of Article III does not contemplate any treaty. It recognizes the possibility that a treaty may, at some time, be made and that under it Mexico may become entitled to the use of some water, and divides the burden in such an event, but the quantity to which that country may become entitled and the manner, terms, and conditions upon which such use may depend, can not be foreseen. It is a certainty that no such treaty will be negotiated and ratified which is unfair to the United States or any State or detrimental to their interests. To discuss whether or not a treaty might be made under which Mexico might be permitted to receive water impounded in a reservoir which may be constructed, is to indulge in speculation, but it is safe to say that if such a situation should result it will be only under conditions fair and satisfactory to all parties concerned.

*Question 10. What is the estimated quantity of water which constitutes the undivided surplus of the annual flow of the Colorado River and may the compact be construed to mean that no part of this surplus can be beneficially used or consumed in either the upper or the lower basins until 1963, so that the entire quantity above the apportionment must flow into Mexico, where it may be used for irrigation and thus create a prior right to water which the United States would be bound to recognize at the end of the 40-year period?*

(a) The unapportioned surplus is estimated at from 4,000,000 to 6,000,000 acre-feet, but may be taken as approximately 5,000,000 acre-feet.

(b) The right to the use of unapportioned or surplus water is not covered by the compact. The question can not arise until all the waters apportioned are appropriated and used, and this will not be until after the lapse of a long period of time, perhaps 75 years. Assuming that each basin should reach the limit of its allotment and there should still be water unapportioned, in my opinion, such water could be taken and used in either basin under the ordinary rules governing appropriations, and such appropriations would doubtless receive formal recognition by the commission at the end of the 40-year period. There is certainly nothing in the compact which requires any water whatever to run unused to Mexico, or which recognizes any Mexican

rights, the only reference to that situation being the expression of the realization that some such rights may perhaps in the future be established by treaty. As I understand the matter, the United States is not "bound to recognize" any such rights of a foreign country unless based upon treaty stipulations.

*Question 11. Is there any possibility that water stored by dams in the tributaries of the Colorado River in Arizona, such as the Roosevelt Reservoir, on the Salt River, or the San Carlos Reservoir, on the Gila, might, under the terms of such a treaty, be released for use in Mexico to the injury of the water users of the projects for whose benefit such dams were constructed?*

I can not conceive of the making or the ratification of a treaty which would have such an effect. If it were possible to believe that the Federal Government would treat its own citizens with such absolute disregard of their property and rights, I presume that they would receive ample protection even as against the Government, under the provisions of the Federal Constitution.

It must be remembered that the United States now has a large financial interest in the projects already constructed. It is not to be presumed that action will be taken detrimental to these interests. Furthermore, each of the seven States directly concerned has two Members of the Senate, by which any treaty proposed must be ratified.

*Question 12. Is it true, as has been asserted, that, if the Colorado River compact be approved, the water which should reclaim 2,500,000 acres of land in Arizona will go to Mexico and there irrigate a vast area owned by American speculators who will cultivate the same with Asiatic coolie labor and raise cheap crops in competition with Arizona and California farmers?*

If such assertions have been made, there is absolutely nothing in the compact upon which they can be based. They are the result solely of unrestrained and unfounded imagination. As already stated, there is no reference in the compact to any rights of any persons in Mexico; none are created and none are recognized. That entire question, if it ever arises, must be dealt with by the Federal Government in the exercise of its treaty-making power. Such a subject was beyond the purview of the acts creating the commission, and it was intentionally omitted from the compact.

*Question 13. Objection has been made to paragraph (d) of Article III in that it authorizes the withholding of an indefinite amount of water by the States of the upper division during a drought which might extend over two or three years. If the drought should be broken by heavy rains the ensuing floods would provide the total of 75,000,000 acre-feet within the 10 years, but water would be denied to the lower basin when most needed and oversupplied when not needed. In your opinion, does this provision of the compact seriously menace the proper and maximum development of irrigation projects in the lower basin?*

In my opinion, the provision about which you ask does not menace the proper and maximum development of irrigation projects in the lower basin.

The future development of the Colorado River Basin is dependent wholly upon the creation of storage. The lower States have certainly reached the limit of development by the direct diversion of the flow of the river. Reservoirs are imperative. They must be of sufficient size not merely to equalize the annual flow, but to impound the excessive floods of one year to supply a deficiency resulting from a following lean year. Such construction will obviate, to a great extent, the likelihood of the situation you suggest. Furthermore, there can not be a drought or lack of water in the lower States without a similar condition in the upper. A shortage of water below can only be caused by lack of rainfall above. It is inconceivable that any upper State would attempt to store and withhold water it did not need. Such action would not be permitted under the ordinary rules of law and is prohibited by the compact itself. If the water is used in the upper States, the return flow, ultimately large in quantity, necessarily runs down the stream. The large reservoir sites capable of impounding the flow for more than one year are in the lower, not the upper, basin, and it would be a physical impossibility for the upper States to withhold all the flow of the river for any long period, even if they desired to do so. For these reasons, I answer this question in the negative.

*Question 14. Can paragraph (d) of Article III be construed to mean that the States of the upper division may withhold all except 75,000,000 acre-feet of water within any period of 10 years and thus not only secure the amount to which they are entitled under the apportionment made in paragraph (a) but also the entire unapportioned surplus waters of the Colorado River?*

No. Paragraph (a) of Article III apportions to the upper basin 7,500,000 acre-feet per annum. Paragraph (e) of Article III provides that the States of the upper division shall not withhold water that can not be beneficially used. Paragraphs (f) and (g) of this article specifically leave to further apportionment water now unapportioned. There is, therefore, no possibility of construing paragraph (d) of this article as suggested.

**Question 15.** Does paragraph (d) of Article III in any way modify the obligation of the States of the upper division, as expressed in paragraph (c), to permit the surplus and unapportioned waters to flow down in satisfaction of any right to water which may hereafter be accorded by treaty to Mexico? Within any year of a 10-year period, could the States of the upper division shift to the States of the lower division the entire burden of supplying such water to Mexico?

(a) No. It is provided in the compact that the upper States shall add their share of any Mexican burden to the delivery to be made at Lee Ferry, whenever any Mexican rights shall be established by treaty. By paragraph (c) of Article III, such an amount of water is to be delivered in addition to the 75,000,000 acre-feet otherwise provided for.

(b) In the face of the specific provision of Article III (c) that the burden of any deficiency must be "equally borne," I can see no possibility of placing upon the lower division the entire burden. If the surplus is sufficient, there is no burden on anyone. If it is insufficient the plain language is that it must be equally shared, with the equally plain provision that the upper division must furnish its half.

**Question 16.** Why is it that provision is made in paragraph (f) of Article III for a further apportionment, after 40 years, of the waters of the Colorado River system unapportioned by paragraphs (a), (b) and (c), but that no provision is made for a revision of the terms relating to the flow of the Colorado River at Lee Ferry, as set forth in paragraph (d)?

No such special provision was necessary. All that the present commission has done has been by virtue of its power "to divide and apportion equitably" the waters of the river. By specifying in this compact the powers of the second commission in identical language the same powers are necessarily granted, and that commission may do whatever this one could, subject only to noninterference with individual rights which may have become vested under this agreement. It was therefore not considered necessary to specify powers in detail, since the grant of the general power includes the particular.

In this connection it must be remembered that the further compact at the end of 40 years can be entered into only by unanimous agreement of the States. Given such unanimity, anything desired may be done and any existing provisions modified or annulled.

**Question 17.** In your opinion, will the States of the upper division or the States of the lower division benefit most by the terms of paragraph (c) of Article III when the same are in actual operation?

This paragraph applies only to an unreasonable or arbitrary withholding or demand. I do not anticipate either arbitrary action or unreasonableness on the part of any of the States concerned. The upper States can gain nothing by withholding water not needed, nor can the lower States gain by demanding water for which they have no use. The paragraph is of value as an expression of the prohibition of such action, but I doubt if it is ever called into practical effect.

**Question 18.** Why is the use of the waters of the Colorado River for navigation made subservient to domestic, agricultural, and power uses, as provided in paragraph (a) of Article IV?

This article is an expression of the views of the commission as to the relative importance of the uses to which the waters of the river may be devoted. It is recognized that on many streams navigation is a paramount use, but on this particular river navigation is negligible in fact. As expressed in the language adopted, the river "has ceased to be navigable for commerce." This is a true statement of the existing situation. Below Yuma there is but little water in the river bed. The Laguna Dam, above Yuma, has made navigation between points above and below it physically impossible, and the construction of further dams in the development of the river will prevent navigation at other points, even if it were now physically possible. Power structures, irrigation dams and navigation can not conveniently exist together. It was therefore felt that the very great possible use of this water for power and irrigation far outweighed in economic importance the very slight and largely theoretical use which might be made for navigation, and this paragraph was drafted accordingly.

**Question 19.** Why is the impounding of water for power purposes made subservient to its use and consumption for agricultural and domestic purposes, as provided in paragraph (b) of Article IV?

(a) Because such subordination conforms to established law, either by constitution or statute, in most of the semi-arid States. This provision frees the farmer from the danger of damage suits by power companies in the event of conflict between them.

(b) Because the cultivation of land naturally outranks in importance the generation of power, since it is the most important of human activities, the foundation upon which all other industries finally rest.

(c) Because there was a general agreement by all parties appearing before the commission, including those representing power interests, that such preference was proper.

**Question 20.** Will this subordination of the development of hydroelectric power to domestic and agricultural uses, combined with the apportionment of 7,500,000 acre-feet of water to the upper basin, utterly destroy an asset of the State of Arizona consisting of 3,000,000 horsepower, which it is said could otherwise be developed within that State if the Colorado River continues to flow, undiminished in volume, across its northern boundary line and through the Grand Canyon?

(a) The subordination of power to agriculture will only diminish power in the case that it is necessary to stop the entire flow of the river at some lower dam at some particular season of the year in order to create reserves for the agricultural community. The normal engineering development of the river will proceed by various dams, of which the dam lowest down would be the only one where there would be the remotest probability of a complete stoppage of water flow. Indeed, this could not happen for at least a hundred years, as it would contemplate a development of acreage in the Lower Basin far beyond anything now dreamed of.

(b) The adequate development of power can only be obtained through the erection of storage and through the irrigation of the Upper Basin. Storage dams can be erected both in the lower and upper canyon in such a fashion as to secure an average flow of the water throughout the entire year, and thus the maximum power developed. The irrigation of the Upper Basin, as explained above, acts itself as a reservoir regulating the flow of the river, increasing the minimum flow, and thus increasing the average power.

(c) Obviously, the use of the water for irrigation in the upper basin must in some degree diminish the volume of power in the lower basin, even though the lower river were entirely regulated to secure an even flow of the water. But it can not be pretended that the upper basin is to be denied the right to the use of the water for agricultural purposes because of power demands in the lower basin. Such a pretension would not be supported in any of the courts, and if set up in the lower basin would mean that the basin will not be developed so long as the upper States can exert any legislative influence whatever. As a matter of fact, the power possibilities of the river are in no way diminished by the compact, unless it is to be assumed that there is not to be an equitable division of water.

(d) The compact provides that no water is to be withheld above that can not be used for purposes of agriculture. The lower basin will therefore receive the entire flow of the river, less only the amount consumptively used in the upper States for agricultural purposes.

(e) The contention that the Colorado River is to continue to flow undiminished in volume across the northern boundary line of Arizona is a contention that the upper States shall have no rights to irrigation. It is a direct negation of both equity and human rights.

**Question 21.** Paragraph (c) of Article IV states that that article shall not interfere with the control by any State over the appropriation, use, and distribution of water within its own boundaries. Does this imply that the remainder of the compact may interfere with such intrastate control?

This article seems the only one of the compact which might affect the relations of citizens of one State with each other, and it was therefore considered advisable to add the clause to which your question refers. I do not believe, however, that its insertion in this article would, by implication or otherwise, preclude the complete control by each State of its own internal affairs.

**Question 22.** Does the Colorado River compact apportion any water to the State of Arizona?  
No, nor to any other State individually. The apportionment is to the groups.

**Question 23.** In case of disagreements between the States of Arizona, California or Nevada as to a division among them

of the waters of the Colorado River system apportioned by the compact to the lower basin, what procedure will be followed and what rules will govern the settlement of such differences?

This situation would be covered by Article VI. If its provisions are not sufficient or not satisfactory, then the dispute would be settled in the same way as other interstate conflicts now are, either by negotiation or agreement or by litigation.

**Question 24.** What was the necessity for Article VII relating to the obligations of the United States to Indian tribes?

This article was perhaps unnecessary. It is merely a declaration that the States, in entering into the agreement, disclaim any intention of affecting the performance of any obligations owing by the United States to Indians. It is presumed that the States have no power to disturb these relations, and it was thought wise to declare that no such result was intended.

**Question 25.** Article VIII is somewhat confusing to me and I could like to have your interpretation of its meaning. Why is the term "storage capacity" used? Does the capacity of a reservoir to hold water necessarily mean that it will be filled? If this "storage capacity" is destroyed by the reservoir filling with silt, are all rights to the use of water in the lower basin likewise destroyed? Why was so small a figure as 5,000,000 acre-feet agreed upon as the measure of this "capacity"?

(a) The first sentence of this paragraph is a recognition of the validity of present perfected rights to the use of waters and is inserted to obviate any fears on the part of present users that their rights might be impaired by the compact.

(b) The second sentence covers the situation now existing on the lower river. It is claimed that the entire low-water flow of the river has now been appropriated by users in California and Arizona, that rights to its continued and unimpaired flow have vested, and that any interference with these rights by attempted appropriation in the upper States could be prevented by appropriate legal proceedings. If such rights do exist, under the provisions of this paragraph they continue unimpaired until the use of water by direct diversion is substituted by its use through storage, at which time the enforcement of any rights to low-water flow for direct diversion obviously becomes unnecessary. When adequate storage has been provided, disputes over low-water flow necessarily cease. Five million acre-feet of storage is ample to provide water for all existing appropriations in the lower basin, and since it was intended only to meet the situation there it was agreed to. It is in no sense a limitation upon the size of the works to be built nor even an expression of opinion of the capacity to be adopted.

There can be no reasonable doubt in the mind of anyone as to the supply of water for a reservoir of this capacity. Given the capacity, the filling of the reservoir will result as a matter of course and physical necessity.

The rights to the use of the water in the lower basin are in no way dependent upon the construction of this or any other storage. The clause in question affects only rights to the direct diversion of low-water flow. The apportionment of water between the basins and the guaranty of quantity by the upper States have no relation to this situation, and whether storage is or is not provided, whether or not reservoirs fill with silt, the apportionment and mutual obligations as to division of water remain unaffected and unimpaired.

**Question 26.** All of these questions have been asked primarily with a view to obtaining first-hand information for the benefit of the Legislature of the State of Arizona, which now has the Colorado River compact under consideration. Any further observations that you may care to make will, therefore, be appreciated.

It seems to me a primary fact that the legislative action necessary for appropriations from Congress can not be secured nor construction work established at any point unless an equitable division of the waters of the Colorado River is first accomplished. There are only two methods of doing this; one is by compact and the other is by litigation. If this compact is not ratified it is necessary to start the process all over again, and I can see little hope of any more constructive basis of handling the problem than this compact already embraces.

The minor objections to the compact are generally based on exploitation of theoretical figures, without a full appreciation of the physical facts that govern the flow of the Colorado River. I have found that careful consideration of these physical surroundings of the river dissipate fear whenever they are carefully inquired into.

It is to be remembered also that until the dams are constructed the present flood menace will continue to threaten the Yuma project, the Imperial Valley, and other Arizona and California territory adjacent to the river on its lower reaches.

ANSWERS BY MR. ARTHUR P. DAVIS.

No engineer in America has made so great a study of the Colorado River as Arthur P. Davis, Director of the United States Reclamation Service. Under his supervision over a quarter of a million dollars has been expended in searching for the facts which are the basis of his conclusions as to what should be done in order to completely control and utilize the waters of that stream. For nearly 20 years he has had supervision over all the constructive work of the Reclamation Service, which includes the building of more great storage reservoirs than has been done by any other government in the world. This wide experience, therefore, qualifies Mr. Davis better than anyone else to answer the engineering questions which I have propounded.

DEPARTMENT OF THE INTERIOR,  
UNITED STATES RECLAMATION SERVICE,  
Washington, January 30, 1923.

Hon. CARL HAYDEN,  
House of Representatives.

MY DEAR MR. HAYDEN: Reference is made to your letter of January 8, inclosing a list of questions relating to the Colorado River compact as it affects the State of Arizona.

Inclosed please find original and two carbon copies of our replies to the above questions.

Yours very truly,

A. P. DAVIS, Director.

(Inclosures.)

**Question 1.** Referring to paragraphs (a), (f), and (g) of Article II of the Colorado River compact as to waters diverted from drainage area of the Colorado River and its tributaries in the States of Colorado, New Mexico, Utah, and Wyoming.

**Question 1-A.** How many acre-feet of water are now so diverted annually and where is such water being used?

Answer 1-A. The following table gives the present transmountain diversion from the Colorado River watershed, showing the average annual diversion in acre-feet:

	Acre-feet.
Utah:	
Strawberry River to Provo River	4,500
Strawberry River to Spanish Fork River	78,000
Piute River to Spanish Fork River	1,500
Virgin River to Pinto Creek	23,000
Total, Utah	107,000
Colorado:	
Colorado (Grand) to Cache la Poudre	15,000
Fraser to Clear Creek	500
Blue to Tarryall	800
Engle to Arkansas	1,200
Cochetopa to Rio Grande	2,500
Total, Colorado	20,000

Total acre-feet existing diversions, upper basin 127,000

**Question 1-B.** Where are the proposed projects which contemplate additional diversions from the upper basin and the estimated cost of the same?

Answer 1-B. In Senate Document 142, the following proposed diversions are listed, all in Colorado. No cost data are available:

Proposed diversion (acre-feet annually):	Acre-feet.
Colorado (Grand) to Cache la Poudre (irrigation)	10,000
Fraser to Clear Creek or South Boulder (municipal and irrigation, Denver)	110,000
Williams Fork to Clear Creek (municipal and irrigation, Denver)	50,000
Blue and tributaries to South Platte (municipal and irrigation, Denver)	100,000
Engle and tributaries to Arkansas	40,000
Extensions to existing diversions, irrigation	7,000
Total, Colorado	317,000

**Question 1-C.** What is the probable amount of water that will be diverted annually from the upper basin in the future?

Answer 1-C. It does not appear probable that any large increase will take place in diversions from the upper basin in the near future. The only one that can be reasonably included as at all "probable" at the present time would be the proposed Fraser River diversion of 110,000 acre-feet for the Denver City water supply. For purposes of computation, however, we have included the entire amount as listed above.

	Acre-feet.
Present diversions	127,000
Proposed diversions	317,000
Total	444,000

**Question 2.** As to waters diverted from the drainage area of the Colorado River and its tributaries in the States of Arizona, California, and Nevada.

**Question 2-A.** Is any other such diversion proposed except into the Imperial and Coachella Valleys?

Answer 2-A. No data are at hand in regard to any proposed diversion from the drainage area of the Colorado River in the States of Arizona, California, or Nevada unless the Imperial Valley diversion be so considered.

Question 2-B. How many acre-feet of water are now being used annually in the Imperial Valley?

Answer 2-B. The present annual diversion of the Imperial Valley Canal is given as follows:

Imperial Irrigation district system:	Acre-feet.
United States land	1,507,000
Mexican lands	540,000
Main canal waste	580,000
Losses in Alamo Channel	173,000

Total diversion..... 2,800,000

Question 2-C. How many acre-feet of water will be required to irrigate all of the lands that it is feasible to bring under cultivation in the Imperial and Coachella Valleys?

Answer 2-C. Net ultimate acreage in Imperial Irrigation district in the United States and Coachella Valley is given in Senate Document 142, page 48, as 785,000 acres, and, using the duty of water stated in that report, the total requirement would be 3,400,000 acre-feet.

Question 2-D. What is the estimated cost of the All-American Canal and other works for the irrigation of these lands?

Answer 2-D. Senate Document 142, page 86, gives estimated total cost of the All-American Canal and other works as \$19,191,000.

Question 3. What are the present, the probable, and the maximum possible number of acre-feet of water that may be used for irrigation from the Colorado River system in each of the four States of the upper division?

Answer 3. The following table answers the question, the quantities being in acre-feet:

Use of Colorado River, upper basin.

Upper basin.	Acreage irrigated, 1920.	Consumption of water.	New acreage.	Consumption of water.	Total acreage.	Total consumption of water.
Colorado.....	740,000	1,184,000	1,018,000	1,527,000	1,758,000	2,711,000
New Mexico.....	34,000	54,400	483,000	724,500	517,000	778,900
Utah.....	350,000	574,400	450,000	684,000	815,000	1,259,400
Wyoming.....	367,000	547,200	543,000	814,500	810,000	1,401,700
Total.....	1,500,000	2,400,000	2,500,000	3,750,000	4,000,000	6,150,000

Of the above "new acreage" total of 2,500,000 acres, it is estimated in Senate Document 142, page 33, that a total of 1,008,000 acres will be irrigated in the upper basin in the near future.

Question 4. If the maximum quantity of water is diverted for irrigation in the upper basin, how much of it will return to the river by seepage and drainage and be available for use at Lee Ferry?

Answer 4. Above figures are based upon an average figure for "consumptive use"; that is, diversion minus return flow, and are believed to be large enough to include evaporation from local reservoirs which will be used for irrigation. They therefore represent the net reduction in the flow of the river to be anticipated under the assumed conditions.

Question 5. After deducting the maximum quantity of water that may be consumed by irrigation and domestic uses, what is your estimate of the average annual run-off from the upper basin in acre-feet at Lee Ferry?

Mean discharge at Lee Ferry, 1903-1920 (assumed same as Laguna)	Acre-feet.
16,400,000	
Part depletion, upper basin, 1,004,000 acres (average) at 1.54 acre-feet per acre	1,700,000

Reconstructed river at Lee Ferry	18,100,000
Upper basin:	
Maximum consumption	6,150,000
Diversion out of basin	444,000
	6,500,000

Remaining flow at Lee Ferry..... 11,510,000

Question 6. If the same maximum deductions are made from the quantity of water in the Colorado River when that stream had the least recorded annual flow, how many acre-feet would remain for use in the lower basin?

Answer 6. The above maximum deductions could not be made when the Colorado had its least recorded annual flow because sufficient water would not be available in the tributaries for maximum diversion. Assuming that the consumptive use would be reduced 25 per cent during this shortest year, and taking the

flow at Lee Ferry, the same as that at Laguna, as given on page 5 of Senate Document 142, we have—

Discharge at Lee Ferry, 1902	Acre-feet.
9,110,000	
Depletion, 1902 (805,000 acres at 1.54), by 75 per cent	770,000
Reconstructed river at Lee Ferry, 1902	9,880,000
Maximum consumption, upper basin, 1902 (75 per cent of 6,590,000)	4,940,000
Available at Lee Ferry, 1902	4,940,000

This indicates that under the compact the flow of the lowest year would be available in approximately equal portions for the use of each basin.

Question 7. If a reservoir of 30,000,000 acre-feet capacity had been in existence at that time, how much water would have been carried over from previous years to aid in meeting any deficiency?

Answer 7. Plate XII-A, Senate Document 142, page 30, shows that starting in 1899 with a 26,400,000 acre-foot reservoir half full, the reservoir would have filled in 1900 and again in 1901, and the full demands for irrigating 1,500,000 acres below could have been met not only through 1902 but through the succeeding low years of 1903 and 1904. In addition, sufficient water would have been available for discharge through the months of low irrigation demand to maintain a year around output of 700,000 horsepower.

Question 8. How many acres are now being irrigated; what additional areas can be irrigated from the main Colorado River, and what is the estimated cost of the reclamation of the lands in Arizona within the projects that have been investigated by the Reclamation Service up to the present time?

Answer 8. Senate Document No. 142, gives the following figures for lands irrigated in Arizona, 1920, from the main stream of the Colorado:

Irrigated 1920, Arizona.	
Main stream:	Acre.
Parker project	4,000
Yuma project	46,000
Total, 1920	50,000

Additional irrigable, Arizona.	
Main stream:	Acre.
Cottonwood Island	2,000
Parker project	106,000
Mojave Valley	20,000
Yuma project	76,000
Yuba Valley	16,000
Isolated tracts	4,000
Total additional	220,000

Cost data for most of the above projects are not available in sufficient detail to be of value. An engineer of the Indian Service estimated in 1920 a cost of \$78 per acre for the Parker project, exclusive of storage, flood control, and power (S. Doc. No. 142, p. 55). Gravity lands on the Yuma project are subject to a construction charge of \$75 per acre.

Question 9. I would like to have the same information as to the projects in California on the Colorado River above the Laguna Dam.

Answer 9. Senate Document No. 142 gives the following figures:

	Irrigated, 1920.	New acreage.	Total.
	Acre.	Acre.	Acre.
Mojave Valley.....		1,000	1,000
Chemehuevi Valley.....		2,300	2,300
Palo Verde Valley.....	35,000	43,000	78,000
Palo Verde Mesa and Chuckawalla Valley.....		62,000	62,000
Total.....	35,000	108,300	143,300

Question 10. Is it true that, if the Colorado River compact is adopted, all of the water that Arizona will ever get out of the main river will be enough to irrigate only 280,000 acres of land, of which 130,000 acres are now embraced in the Yuma project and 110,000 acres in the Parker project?

Answer 10. The Colorado River compact does not attempt to divide the water of the river between individual States. Except for rights already initiated by California and Nevada, there is nothing in the compact that will prevent the State of Arizona from taking from the river all the water that it can put to beneficial use. Rights already initiated will have to be respected in any event, and future development under the compact will be undertaken only in competition with the two States named, and with the cooperation instead of against possible opposition of the States of the upper basin. The

present and prospective use of water in the lower basin is estimated, as follows:

Use of Colorado River, lower basin.

Lower basin.	Average irrigated, 1923.	Consumption of water, acre-feet.	New acreage.	Consumption of water, acre-feet.	Total acreage.	Total consumption of water, acre-feet.
Arizona.....	58,000	230,000	220,000	890,000	287,000	1,150,000
California.....	450,000	2,250,000	490,000	1,540,000	940,000	3,780,000
Nevada.....	5,000	20,000	35,000	140,000	40,000	160,000
Total—Main River.....	513,000	2,500,000	754,000	2,540,000	1,267,000	5,100,000

From this the surplus available for any further development that may be found feasible may be deduced as follows:

	Acre-feet.
Mean annual flow at Lee Ferry after deducting all future uses in the upper basin (see question 5).....	11,510,000
Total visible demands.....	5,100,000
Surplus.....	6,410,000

This would irrigate nearly 2,000,000 acres of land in addition to the acreage figured above, and since water must flow downhill, and since a reservoir at Boulder Canyon of the size proposed will completely control the stream at that point, it only remains to find the land to which this water can be profitably applied.

Question 11. What information have you with respect to the Arizona High Line Canal plan?

Answer 11. We have asked our field engineers for report on Arizona High Line Canal, which has just been received as follows:

"The Arizona High Line Canal as outlined more recently contemplates—

"A storage reservoir at or near Glen Canyon. Its capacity has not been stated in definite terms.

"A second dam at Boulder Canyon to be built to elevation 1,350 feet, or 1,375 feet, or a dam at the lower end of the Grand Canyon of a less height that will raise the water to the same elevation.

"A tunnel from the Detrital Sacramento Wash through the Black Mountains some 15 or 20 miles in length, which would come out on the western side of the Black Mountains in the general region of Eldorado Ferry, water to be delivered at the end of the tunnel at an elevation not less than 1,325 feet.

"A large canal, extending southward and generally parallel with the Colorado River, following along the west side of the Black Range, the greater portion of which would be in tunnel from a point back of Eldorado Ferry to Mount Davis. These tunnels may aggregate another 15 miles or more; thence an open canal crossing a detrital wash country with many deep washes southward along the Blue Ridge and Black Mountains, crossing Sacramento Wash and the main line of the Santa Fe Railroad a few miles from Franconia; thence south and southwesterly toward the Colorado River, where it would pass around the west face of the Chemehuevi Mountains and the Williams Mountains; thence easterly along the north side of the Williams River to a crossing on the Williams River. Through this region there would be more or less tunnel work.

"A crossing of the Williams River either by a high dam in that stream where the river is confined in a box canyon, through the Rawhide Mountains, or by a high aqueduct or a large siphon. Some surveys are being conducted at the present time by the Arizona Engineering Commission to ascertain data on this crossing. The canal would then run westerly along the south side of the Williams River through the Buckskin Mountains, tunnelling through the Osborne Pass; thence in a general southerly direction through the Cactus Plain to the general region of Bouse.

"The first tracts of tillable land of any consequence encountered would be that lying within what is commonly called the Bouse Valley. The proposed canal line would probably cross the Phoenix branch of the Santa Fe Railroad between Bouse and Vicksburg. What the irrigable area of these valleys amounts to is as yet an undetermined quantity.

"The main canal would continue in a southeasterly direction, passing to the south of the Little Harqua Hala Mountains through a pass that has been estimated to be from 10 to 25 miles in length. This part of the construction would be a deep cut, the depth of the cut depending upon the elevation at which a canal would reach that point. Before reaching this cut the

canal would bifurcate, some of the water being taken south and southwesterly to irrigate other possible areas. It is planned that the water would finally reach Centennial Wash. The south and southwesterly branch would pass between the S. H. Mountains and the Little Horn Mountains to the Palomas Plain, from which point it would be on the Gila watershed and would be conveyed to other lands on the Gila.

"These several branches would bifurcate, carrying water to different valleys, some of which contemplate considerable pumping lifts. The acreage under this possible system is impossible to state, as up to the present time it is nothing more than the roughest kind of a guess, and one upon which no figures can be given. There are not sufficient data at hand to make an estimate as to the cost of constructing such a large canal. The Arizona engineering commission is at the present time trying to ascertain the elevation of certain controlling points, and it is hoped that in the near future the commission will be able to give some idea as to the practicability or impracticability of conducting any further investigations as to the merits or demerits of such a scheme."

Question 12. It has been said that the Arizona High Line Canal project is just as feasible as the Columbia River Basin gravity project recently approved by Gen. George W. Goethals. Please compare the main features of these two projects.

Answer 12. As far as this office is advised no surveys or detailed estimates are available from which any statement of the construction quantities or costs involved in the main features of the Arizona High Line Canal can be even approximated. No comparison is therefore now possible.

Question 13. In his report on the Columbia River Basin project, General Goethals discusses a pumping plan which contemplates building a dam 285 feet high across the Columbia River near the head of the Grand Coulee and using the energy thus stored to operate 17 pumps, each with a capacity of 1,000 second-feet, which will raise the water 450 feet to an artificial lake, whence the water flows by gravity to the basin area, where 1,403,000 acres may be irrigated. The total estimated cost of this pumping project is \$241,487,285, or \$172 per acre, and the annual operating cost is estimated at \$1.56 per acre.

It has occurred to me that, as an alternative to the upper and more expensive part of the Arizona High Line Canal plan, consideration might be given to a pumping project, the essential features of which would be as follows:

A. Utilize the power site about 5 miles above Parker, for which application has been made by Beckman and Linden, by constructing a dam about 75 feet high for the generation of hydroelectric energy. If this dam will not provide enough power, after the flow of the Colorado River is regulated, then supplement the same by power developed in the Grand Canyon.

B. Raise the water about 900 feet by pumping from the Colorado River through a conduit or conduits about 15 miles long up the Osborne Wash to the level of the proposed Arizona High Line Canal, from whence it would flow by gravity as proposed in the original scheme.

I shall be pleased to receive your comments on this idea.

Answer 13. As to this, our field engineers report as follows: "This plan appears infeasible, but as a possibility the Arizona Engineering Commission has considered and is considering the possibility of a diversion at this point to divert water for the lands lying along the Colorado River south of the dam site spoken of above, with the possibility of pumping water therefrom to moderate lifts. From this dam site south to a point about opposite Lighthouse Rock, the topography is such that a canal might be constructed. At or near Lighthouse Rock it might be possible to raise water in the distant future some 100 or 150 feet, passing through the Trigo and Chocolate Mountains, reaching the plain lying east of Castle Dome at an elevation that certain lands lying on the lower Gila might be served. The acreage and the difficulties encountered in this are not definitely known and the whole proposition only stands out as a remote possibility of the development of lands on the extreme lower Gila."

Question 14. While I fully realize that the Colorado River compact makes no reference to the location of storage reservoirs on that stream, yet the subject is of great interest to the people of Arizona. I shall, therefore, appreciate it if you will make a brief comparison of the Bulls Head, Black Canyon, Boulder Canyon, Diamond Creek, and Glen Canyon dam sites.

Question 15. For the same reason, I would like to have a summary of the available information relative to the Sentinel, San Carlos, and Solomonville dam sites on the Gila, and the Hornshoe and Camp Verde dam sites on the Verde River.

Answers 14 and 15. The following table gives the data available in this office relative to these dam sites.

Name.	Storage capacity (acre-feet).	Estimated cost. <sup>1</sup>	Height of dam (feet). <sup>2</sup>	Width at base (feet).	Depth to bedrock (feet).	Character of rock in walls.	Horse-power developed.
San Carlos.....	1,600,000	\$9,792,763	249	222	20	Quartzite or quartzite sandstone.	6,500
Horseshoe.....	233,000	1,000,000	166	200	30	Sandstone.....	20,000
Camp Verde.....	421,000	1,701,400	210		25		
Salomonville-Guthrie.....	225,000		140				
Bentley.....	2,250,000	4,250,000	130		10	Basalt.....	341,000
Bull's Head.....	2,000,000		155			Granite.....	700,000
Boulder Canyon.....	31,400,000	55,000,000	594	605	140	do.....	600,000
	31,400,000	50,000,000	754			Volcanic breccia, talite, and andesite.	700,000
	31,400,000		590		123		600,000
Black Canyon.....	29,500,000		555				
Diamond Creek:							
Ultimate.....	1,250,000		420		45	Granite.....	805,000
Present.....	300,000	12,000,000	255	380	45	Sandstone.....	200,000
Glen Canyon.....	18,000,000		500				500,000

<sup>1</sup> Costs based on preliminary estimates and incomplete information; subject to revision in all cases.

<sup>2</sup> Above low-water level or stream bed.

<sup>3</sup> Developed at drop 20 miles below dam.

Foundation is lava or cemented gravel underlain by sand and silt to a depth of at least 200 feet.

<sup>4</sup> Assuming equated flow.

<sup>5</sup> Drilling not completed.

NOTE.—Average annual net evaporation loss measured at Roosevelt is 60 inches, and this figure has been the basis of evaporation estimates for most of the reservoir studies in this region.

*Question 16. It has been said that the Colorado floods have never initiated any serious damage to the Yuma project or the Imperial Valley, but that the Gila River constitutes the principal menace; that the only method of curbing the Gila is an adequate levee system, which can be constructed in 18 months at one-fifth the cost of the Boulder Canyon Dam. Will expensive levees have to be maintained on both sides of the Colorado River below Yuma after a large flood-control dam has been constructed on the main Colorado River?*

Answer 16. A dam at Boulder Canyon will control all the floods on the main river capable of doing any damage at Yuma except those from the Gila, and it is the only reservoir site on the river of sufficient capacity which is below the sources of all these floods. Until the Gila floods are otherwise controlled it will be necessary to maintain levees to prevent damage from the floods on this stream. As is well known, however, floods from the Gila are of flashy character, and while they may be of sufficient magnitude to inflict some damage, they will subside as quickly as they arise and the days and weeks of night-and-day struggle with the river during each recurring Colorado flood will be a thing of the past. Even if a Gila flood should be experienced of sufficient magnitude to break into the Imperial Valley, its quick subsidence would leave the breach practically dry for repair if the water from the main river could be cut off or regulated at Boulder Canyon.

The annually recurring menace to Yuma and the Imperial Valley against which they are without defense at present is that a Gila flood may come down on top of an early Colorado rise or that breaches made by Gila floods may open the way for the summer floods of the Colorado to break into Imperial Valley. The breaks of 1905-6 and the flood of January, 1916, illustrate the possibilities of such a combination.

*Question 17. It has been said that if the depth to bedrock for the foundation of the proposed dam at Black Canyon is found to be over 100 feet, as it is reported to be at Boulder Canyon, that it might be more economical to build the Glen Canyon Dam first so as to have the benefit of the regulated flow from the upper reservoir during the construction of the deep and difficult foundations either at Black or Boulder Canyons. What are the results thus far obtained in prospecting for bedrock at these dam sites?*

Answer 17. The maximum depth to bedrock at Boulder Canyon Dam site is about 140 feet below low water. Foundation and walls are of granite of excellent quality for a dam foundation. At site of the upstream cofferdam a line of drill holes shows a maximum depth of only 80 feet to bedrock. It is not considered advisable, however, to move the dam itself upstream to this point, as both the condition and the topography of the side walls at this point are much less favorable than at the site under consideration.

The greatest depth to bedrock found so far at Black Canyon is 123 feet. Sufficient borings have not yet been made to develop this site completely, and work is still in progress.

The foundation and walls at Black Canyon are described as a hard volcanic breccia, overlaid by flows of talite and andesite. This formation as exposed in the canyon walls is entirely suitable for the construction of a high masonry dam, and unless future borings disclose unexpectedly inferior material in the foundation or excessive depth to bedrock, the site should be

entirely satisfactory for the construction of a high masonry dam.

The rock in the abutments at the Glen Canyon site is a soft reddish sandstone, unsuitable for building stone or for either coarse or fine concrete aggregate, but probably of sufficient strength to support a concrete dam. Foundation conditions have not been fully tested, the single drill hole then being sunk having on December 15, 1922, reached a depth of 60 feet in the fine sand and silt of the river bed, without having reached bedrock. This drill work is being done by the Southern California Edison Co., and we have no later information as to the progress of this drilling.

As to the economy of building Glen Canyon Dam before one at the Boulder or Black Canyon site, attention is called to the fact that Glen Canyon is too far from power markets now available to be of value for power production for many years. For any given capacity up to complete regulation of the stream the height of a dam above low water at Glen Canyon must be greater than one at Boulder Canyon. Taking into consideration the greater distance from sources of supplies and labor, and other unfavorable conditions, a dam at Glen Canyon can not cost less than a dam of equal capacity at Boulder Canyon, and will produce absolutely no direct financial return for many years.

The amount estimated for river control and diversion during construction at Boulder Canyon is \$3,500,000. If the Glen Canyon dam cost \$50,000,000, as estimated for Boulder Canyon in the table, one year's interest at 6 per cent would practically absorb the savings on the Boulder Canyon dam, and even assuming for the sake of argument that it would cost only \$25,000,000, the saving would be swallowed up in two years. Under most favorable conditions power returns could not be realized in any considerable amount at Boulder Canyon in less time than that.

*Question 18. The Interior Department appropriation act for the next fiscal year contains an item making \$100,000 immediately available for further engineering investigations on the Colorado River by the United States Reclamation Service. Is it your intention to expend any part of this sum in ascertaining the depth to bedrock and in obtaining other information relative to the Glen Canyon dam site?*

Answer 18. It had been our intention to undertake the drilling of the Glen Canyon site and push it to a conclusion next winter, beginning as soon as the subsidence of the summer floods would permit. If, however, the work of the Southern California Edison Co., now under way at this site, results in satisfactory development of foundation conditions, it will not be necessary for the Reclamation Service to put in a drill outfit there.

*Question 19. Any further comment that you may care to make relative to the approval of the Colorado River compact by the Arizona State Legislature will be appreciated.*

Answer 19. The Colorado River compact provides that the lower basin shall be guaranteed an average of 7,500,000 acre-feet of water annually from the upper basin and all of the yield of the lower basin; and that any water not beneficially used for agricultural and domestic uses shall likewise be allowed to run down for use below. This provides for all known uses of water in the lower basin and a very large surplus for such

uses as may develop in the future. The greatest merit of the compact from the standpoint of Arizona is that it changes the attitude of the upper States from one of antagonism to one of friendship and advocacy of storage in the lower basin. If this fair offer is now rejected, the opposition of the upper basin to storage for the benefit of the lower basin will have stronger moral ground than ever, and the attitude of antagonism will be accentuated. This would accord with the wishes of those who are opposed to the development of the river and are opposing the compact. Arizona would thereby be placed in a position of preferring contention to development and her interests would suffer accordingly.

REPLIES MADE BY MR. OTTAMAR HAMELE.

Mr. Ottamar Hamel, for a number of years chief counsel of the United States Reclamation Service, acted as Mr. Hoover's legal advisor during the sessions of the Colorado River Commission last November at Santa Fe. I therefore considered him to be the best equipped to give a legal interpretation of the meaning of the compact. His replies to my questions will, I trust, clear up a number of misconceptions about it which are not founded on good law or sound reasoning.

DEPARTMENT OF THE INTERIOR,  
UNITED STATES RECLAMATION SERVICE,  
Washington, D. C., January 29, 1923.

HON. CARL HAYDEN,  
House of Representatives.

DEAR HAYDEN: I have received the nine questions prepared by you concerning the Colorado River compact and take pleasure in answering them below in the order given:

*Question 1. It has been said that the Colorado River compact is based upon the fallacious theory that the seven States named therein are jointly invested with the absolute ownership of that stream, and all rights arising out of or pertaining thereto, and consequently these States have power to divide its waters among themselves; but that as a matter of fact and law any right in and to the waters of the Colorado River can only be acquired by appropriation for a beneficial use, which right may be exercised solely by private citizens and not by any State, and therefore the proposed apportionment of the flow of the stream among the States of the upper and lower divisions can not be enforced because the Federal courts would grant relief to any citizen of the United States injured thereby who has a vested right in the stream, even though such right was initiated and acquired after the approval of the compact by the legislatures of the seven States and by the Congress. What is your answer to this contention?*

Answer 1. When the terms of the Colorado River compact shall have been properly and fully approved by a State, they will be a part of the law of that State relating to the use of water, and in so far as they conflict with prior law they will operate as a repeal. Rights vested before such approval of the compact would not be affected by its terms, while rights vested after such approval would be subject to these terms, as is true generally of other State legislation. Every arid State has adopted rules under which the citizen obtains a right to the use of water; to limit future appropriations to the allocated waters of the compact is merely an additional rule.

*Question 2. It has been suggested that no such compact between the seven States is necessary as an antecedent to the construction by the Federal Government of reservoirs on the lower Colorado, because Congress, acting for the United States as the owner of the dam and reservoir sites, could provide at the time when funds are made available that the building of such dams for power and irrigation purposes shall not be considered as creating any rights to the use of the waters of the Colorado River which might be adverse to subsequent appropriators in the upper basin. Has Congress now the power to thus limit or modify the right to the use of water from such reservoirs?*

Answer 2. There is a diversity of opinion on this point. In the Wyoming-Colorado case the United States took the position that the National Government is the owner of the use of the unappropriated waters of the arid West, and that the States have never acquired any rights therein. However, the court, in deciding the case, did not pass on this claim and the question remains an open one. Under the theory advanced by the Government, in that case, the United States apparently would have the right by legislation to place the limitations you mention on the water rights acquired in connection with Government dams and reservoirs.

If, however, it be contended that under existing law the State of Arizona, for instance, has a right as a sovereign to the use of the waters of the Colorado River under the doctrine of prior appropriation without reference to State lines,

and that appropriations by the Federal Government in that State must follow State law, it would seem that an act of Congress could not substitute for Government reservoirs in Arizona a new rule of appropriation not in agreement with the law of Arizona.

*Question 3. The regulation of the flow of the Colorado River by the construction of large reservoirs would undoubtedly result in making available an increased supply of water at all seasons of the year, and the fear has been expressed that this water might be promptly utilized for the irrigation of large tracts of land in Mexico. Would the prior appropriation of this water to a beneficial use in Mexico create any right which the American Government would be bound to respect in case of a conflict of interests arising out of the subsequent development of irrigation projects within the United States whereby these Mexican lands would be deprived of water?*

Answer 3. It would not. The rule of international law applicable to such a case was stated by Attorney General Judson Harmon in an opinion dated December 12, 1895 (21 Op. Atty. Gen. 274), concerning the Rio Grande. The following is taken from the syllabus of the reported opinion of the Attorney General:

"The rules, principles, and precedents of international law impose no duty or obligation upon the United States of denying to its inhabitants the use of the water of that part of the Rio Grande lying entirely within the United States, although such use results in reducing the volume of water in the river below the point where it ceases to be entirely within the United States.

"The fact that there is not enough water in the Rio Grande for the use of the inhabitants of both countries for irrigation purposes does not give Mexico the right to subject the United States to the burden of arresting its development and denying to its inhabitants the use of a provision which nature has supplied, entirely within its own territory. The recognition of such a right is entirely inconsistent with the sovereignty of the United States over its national domain."

*Question 4. Would a declaration by Congress or by the legislatures of any of the seven States, made at the time of the approval of the Colorado River compact, of an intention ultimately to use all of the water necessary for the irrigation of any lands which may thereafter be reclaimed within the United States, or within any such States, regardless of any irrigation development that may subsequently take place in Mexico, be effective in preserving the right to use such water in the future?*

Answer 4. Such a declaration by a State would be of no force, as the subject matter is one over which the State has no control. Such a declaration by the Congress would suggest a national policy, but would not prevent the making of a treaty having a contrary effect.

*Question 5. It has been urged that the State of Arizona should be guaranteed forever the right to the entire and undiminished flow of the Colorado River as it now comes, and for ages past has come, to the north boundary line of that State. Upon what legal theory can the demand for such a right be based, and, in the absence of any guarantee or acknowledgment of its validity by the States of the upper division, how can the State of Arizona now successfully maintain and enforce such a claim?*

Answer 5. The proposition you describe seems to be based on the common-law doctrine of riparian rights, which, however, does not obtain in the Colorado River Basin. Such a demand on the part of Arizona could not well be maintained. Other States could make the claim with equal force, to the detriment of Arizona. It would be contrary to the rule of prior appropriation which is the foundation of the present water law of Arizona and of the other States of the arid West. Also, it would be contrary to the decision of the United States Supreme Court in the Wyoming-Colorado case.

*Question 6. What is the legal meaning of the term "any period of 10 consecutive years reckoned in continuing progressive series" as used in paragraph (d) of Article III of the Colorado River compact? What means could any State of the lower division use to compel the delivery of 75,000,000 acre-feet of water during such a period? Would it be necessary to wait until the end of some 10-year period before invoking the remedy?*

Answer 6. The time referred to as "any period of 10 consecutive years reckoned in continuing progressive series" means the period from October 1, 1923, to October 1, 1933, the period from October 1, 1924, to October 1, 1934, and so on. If paragraph (d) of article 3 were being violated, suit could be brought to enforce its provisions. The aggrieved party would not necessarily have to wait until October 1, 1933, before instituting suit, but of course could not bring such suit until it appeared as a fact

that the compact was being violated. This paragraph could be eliminated without disturbing the plan of the compact, and should always be read in connection with paragraphs (a) and (b) of the same article.

*Question 7: If the States of the upper division should withhold water in violation of paragraph (c) of Article III of the Colorado River compact, what means would any State of the lower division have to compel the actual delivery of all water which was not being reasonably applied to domestic and agricultural uses?*

*Answer 7.* The same means such State now has to enforce its interstate water claims, supplemented, however, with the advantage of having its legal rights much more clearly defined. The plan of the compact is to reduce causes of controversy to a minimum, first, by agreeing upon the respective legal rights, and, second, by developing between the States, under the provisions of Articles V and VI, a spirit of cooperation and better understanding.

*Question 8. In the case of Howell v. Johnson (89 Fed. 556), the court held that "being the owner of these (public) lands in (the United States) has power to sell or dispose of any estate therein or any part thereof. The natural unnavigable streams flowing over the public domain are a part thereof, and the National Government can sell or grant the same or the use of the water separate from the rest of the estate under such conditions as may to it seem proper." Congress has passed the desert land act approved March 3, 1877 (19 Stat. 377), which provides that the "sources of water supply upon the public lands and not navigable shall remain and be held free for the appropriation and use of the public for irrigation, mining, and manufacturing purposes." If Article IV of the compact be construed as a declaration that the Colorado River is a non-navigable stream, could it be held that the effect of the approval of the compact by Congress would be to transfer the title to the unappropriated waters of the Colorado River from the United States to the seven States named therein, and also, as a repeal of the provision of the desert land act which I have quoted?*

*Answer 8.* Secretary of the Interior Albert B. Fall, who is generally recognized as an authority on relations between this country and Mexico, on January 12, 1923, upon request, made a report on the Colorado River compact to the House Committee on Irrigation of Arid Lands. In that report he stated:

"The said paragraph (a), Article IV, of the compact would, in my opinion, be regarded as a violation of the rights of Mexico, and, to any the least, might be made the basis of a claim against the United States. I am clearly of the opinion that said paragraph should not be approved by the Congress of the United States."

However, should Congress consent to the paragraph in question, such consent would not, in my opinion, operate as a transfer to the States of any right the Government now has in the waters of the Colorado or as a repeal of any part of the desert land act. The compact was drafted with the understanding that it should neither affirm nor deny either the claims of the States or the claims of the United States upon this point. The United States has no interest adverse to any State, and the compact is thoroughly workable without settling therein the point you raise.

*Question 9. What is your interpretation of the meaning of Article VIII of the compact? Does the use of the term "such rights" imply that "present perfected rights" in the use of water in the lower basin would have to be satisfied from stored water after a storage capacity of 5,000,000 acre-feet has been provided? Whenever a reservoir of that size is available, must all future appropriations of water in the lower basin be based upon stored water and not upon the natural flow of the river?*

*Answer 9.* The purpose of Article VIII is largely psychological. It represents a compromise reached after much discussion. The compact would be complete were it eliminated. As I stated above, vested rights can not be affected by the compact. John Doe can execute a deed purporting to convey the house and lot belonging to his neighbor Richard Roe, but such deed is ineffective as a conveyance until signed by Richard Roe. So with rights from the Colorado River. It is planned that eight parties shall approve the Colorado River compact; such approvals can affect only the interests which those eight parties have, and can not cancel the vested rights of a ninth party not a party to the compact.

In my opinion, in so far as Article VIII can be construed as an attempt to change vested rights, it is ineffective. I believe these general statements answer your first two queries under this number. As to your third query, inasmuch as substantially all of the low water flow of the main Colorado has already been appropriated, "future appropriations" from that stream for the lower basin necessarily must depend largely

upon storage. I would add that such appropriations would be based primarily not on storage but on the allocation of 8,500,000 acre-feet of water per annum under paragraphs (a) and (b) of Article VIII.

In conclusion, I would suggest that in considering the Colorado River compact two facts should be kept in mind. The first is that this compact represents a compromise of many conflicting claims, as must nearly always be true in any settlement of this kind, either in or out of court. However, this settlement was reached within a year, while the settlement in court in the Wyoming-Colorado case required about 11 years, and is very unsatisfactory, not to one alone, but to both of the States involved in that case. The second fact to keep in mind is that the compact is not intended to be a complete settlement of all possible water controversy in the Colorado River Basin, but is a big step in the right direction and as big a one as can apparently be made at this time.

Very truly yours,

OTTAMAR FLAMELE,  
Chief Counsel.

INFORMATION FURNISHED BY THE GEOLOGICAL SURVEY.

It has been well said that water is the essence of the compact. The United States Geological Survey has been engaged for many years in the work of measuring the flow of streams, and has the only reliable information on that subject. The following letter fully demonstrates that the water supply, if properly conserved, is ample for all purposes.

DEPARTMENT OF THE INTERIOR,  
UNITED STATES GEOLOGICAL SURVEY,  
Washington, January 30, 1923.

Hon. CARL HAYDEN,  
House of Representatives.

MY DEAR MR. HAYDEN: In reply to your letters of January 4 and 11, and with reference to frequent personal interviews on the subject, I am sending you herewith answers to the questions propounded relative to the Colorado River.

Yours very cordially,

PHILIP S. SMITH,  
Acting Director.

*Question 1. According to your records, what is the maximum, minimum, and average annual flow in acre-feet of the Colorado River between Yuma and Lees Ferry? I would also like to have the same information for all of the tributaries of the Colorado River in Arizona where you have a record of stream measurement.*

*Answer 1.* The summary of the principal records available for gauging stations on Colorado River and tributaries in the State of Arizona is shown by the attached blue-print sheets. The data given for each station are: The years or partial years of record, the maximum and minimum daily flow and dates of occurrence for each year, the average discharge for each complete year, and the total run-off for each year or partial year. The year used is the climatic or water year, beginning October 1 and ending September 30, unless otherwise noted.

The longest continuous record is that for Colorado River at Yuma, which begins with January, 1902. This record is collected by the United States Reclamation Service and furnished to the Geological Survey for publication. The point of measurement is below the mouth of the Gila, so the contribution of that stream is included in the record. The amounts diverted at Laguna Dam are not included in the record. The maximum year was 1908-9—run-off, 26,100,000 acre-feet; the minimum year was 1903-4—run-off, 9,870,000 acre-feet. The average annual run-off for 20 years is 17,450,000 acre-feet. It is of interest to note that the run-off during the year ending September 30, 1922, was about 1 per cent greater than the 20-year average.

The only records of flow of the Colorado River above Yuma are for one complete year at Lees Ferry, two complete years at Hardyville, and five complete years at Topock. The run-off at Lees Ferry for that year (1921-22) was 13,100,000 acre-feet. The average of the two years' records at Hardyville (1905-6, 1906-7) was 20,150,000 acre-feet. The records at Yuma show that the flow in these two years was 30 per cent greater than the 20-year average. The average run-off of five years at Topock (1917-1922) was 17,800,000 acre-feet. The records at Yuma show that the flow in the five years was 6 per cent less than the 20-year average. The run-off for 1921-22 at Topock was 6 per cent greater than the five-year average at Topock.

The records indicate that 1921-22 was approximately an average year of run-off. The inflow between Lees Ferry and Topock for that year, as shown by the records, was 2,900,000 acre-feet. There was an apparent loss of 1,400,000 acre-feet between Topock and Yuma, in addition to the total amount of

all inflow between the two points. This loss is partially accounted for by diversions for irrigation at Laguna Dam and other points above.

The available records for Little Colorado and Williams Rivers are too short to permit of reliable deductions as to the mean annual flow. The average annual contribution of these streams to the main Colorado has been estimated at 200,000 acre-feet for the Little Colorado and 75,000 acre-feet for Williams River.

Records have been obtained at several points on Gila River for periods of different length. The records for stations at Guthrie, Solomonville, San Carlos, and Kelvin have been assembled in the attached tabulation. Below the junction of the Salt there are records for one year near Sentinel and for three complete years in the vicinity of Dome. Records of several years' duration are available for Salt and Verde Rivers, and for periods of various length for San Francisco River, at Clifton; San Pedro River, near Fairbank; Santa Cruz River, at Tucson; Augua Fria River, near Glendale; and Hassayampa River, near Wagoner.

Inspection of the longer records for Colorado River at Yuma and those for Salt and Verde Rivers shows that during the past 20 years there were two periods or groups of years of high run-off. The first group contains the years 1905 to 1909, and the second group the years 1915 to 1917. It is evident, therefore, that figures representing average annual run-off at points on streams in Arizona, deduced from a record of only a few years in length, may be subject to considerable error.

**Question 2.** What percentage of the total flow of the Colorado River originates above Lees Ferry, and how much below that point?

**Answer 2.** Measurements of the flow of Colorado River at Lees Ferry have been made since July, 1921. The total run-off at that station for the water year ending September 30, 1922, was 16,100,000 acre-feet. For the same period the flow at Yuma was 17,600,000 acre-feet, and at Topock, 19,000,000 acre-feet. Therefore, for that year 91.5 per cent of the total flow as measured at Yuma and 84.2 per cent of that measured at Topock came from above Lees Ferry.

The mean annual flow at Yuma for the 20-year period 1903-1922 is 17,400,000 acre-feet. Therefore the water year ending September 30, 1922, was 200,000 acre-feet, or a little more than 1 per cent greater than the mean.

From the above it appears that between 85 and 90 per cent of the total flow of the Colorado River originates above Lees Ferry. Before the Lees Ferry records were available a study was made for the Colorado River Commission of records collected at gauging stations above Lees Ferry and the conclusion reached at that time—March, 1922—that about 91 per cent of the run-off at Yuma came from the States of Wyoming, Colorado, and Utah.

**Question 3.** What part of the total flow of the Colorado comes from the Gila River?

**Answer 3.** Records showing the flow of Gila River near the mouth are fragmentary. The Reclamation Service, however, has made an estimate of the total flow for the years 1903 to 1920, based on the available records and measurements of the Gila at or near Yuma. These estimates indicate an annual run-off of the Gila during 1903 to 1920 varying from less than 100,000 to 4,500,000 acre-feet, with a mean of about 1,100,000 acre-feet, which is about 6 per cent of the mean annual flow of the Colorado at Yuma.

**Question 4.** What are the dates of some of the highest floods in the Colorado River at Yuma and the flow in second-feet at the peak?

**Answer 4.** The maximum daily flow for each year during the period of record is shown on the attached sheets. The maximum recorded flow at Yuma was on January 22, 1916, when the mean flow for the day was 240,000 second-feet. It should be noted that this flood originated primarily from the Gila, as, during the winter, the main Colorado River is at low stage. The next highest flood occurred June 8, 1920, when the mean daily flow was 100,000 second-feet. This flood came from that part of the drainage area above the Gila. In general, winter floods at Yuma come from the Gila and summer floods from the Colorado River above the Gila.

**Question 5.** What are some of the low-water dates of the Colorado River at Yuma and the minimum flow in second-feet?

**Answer 5.** The minimum daily flow for each year of record is shown on the attached sheets. The minimum recorded flow at Yuma occurred January 10, 1910, when the mean flow was 1,800 second-feet.

**Question 6.** During what periods has all of the flow of the Colorado been diverted into the Imperial Canal, leaving the river dry in Mexico below the intake?

**Answer 6.** The Reclamation Service has obtained the following information from the Imperial Irrigation district:

"In 1915, from September 20 to September 27, and again on October 2 and 3, all the water of the Colorado River was diverted into the Imperial Valley canal system, in spite of which an actual shortage, though not severe nor disastrous, existed there part of that time. In 1919 there was another shortage, the entire flow of the river during the period September 2 to September 14 being diverted into the canal system.

"During this period the mean flow was 3,325 second-feet, the usual diversion at this time of year being 5,000 second-feet. Under date of October 31, 1922, a report in this office shows that the entire flow of the river had again been diverted, the river having been dry below the heading since October 2 and the mean flow for the period October 2-31 was reported at 3,800 second-feet.

"This is the third time, so far as known, that the entire low-water flow of the river has been actually diverted into the valley, but at least one other year of record, 1902, had a minimum and mean flow for the month of September so low that the entire flow would not have satisfied the demands of the lands now under irrigation in Imperial Valley."

**Question 7.** What are the dates of some of the highest floods of the Gila River at Yuma and the flow in second-feet at the peak?

**Answer 7.** The Reclamation Service has recorded the following floods on Gila River of over 50,000 second-feet:

Date	Second-feet
February, 1901	105,000
February, 1905	82,000
March, 1905	95,000
November, 1905	95,000
Feb. 8, 1915	80,000
Jan. 22, 1916	200,000
Jan. 31, 1916	141,000
Nov. 30, 1919	72,000
Feb. 25, 1920	95,000

**Question 8.** During what part of the year is there usually no water flowing from the Gila into the Colorado River?

**Answer 8.** The Reclamation Service has recorded the Gila as having been dry at its mouth during entire months, as follows:

Years	Months
May	8
June	13
July	11
August	0
September	8
October	0
November	8
December	8

**Question 9.** Have both the Gila and Colorado Rivers been in high flood at the same time?

**Answer 9.** The records show no periods when both the Colorado and Gila Rivers were in high flood at the same time. During three Gila floods there were considerable flows in the Colorado above the Gila, as follows:

Date	Yuma Peak	Colorado	Gila
March 20, 1905	111,000	16,000	85,000
January 22, 1916	240,000	41,000	200,000
April 20, 1917	70,000	30,000	40,000

**Question 10.** When has the Colorado River broken into Imperial Valley, and when were these breaks in the levees closed?

**Answer 10.** The Colorado has "broken into the Imperial Valley" from August, 1905, to November 4, 1906, and again from December 7, 1906, to February 10, 1907. (These dates have been obtained from papers by C. E. Grunsky, entitled "The lower Colorado River and the Salton Basin," published in Transactions of the American Society of Civil Engineers, vol. 59, pp. 1-50, and by H. T. Cory, entitled "Irrigation and river control in the Colorado River delta," published in Transactions of the American Society of Civil Engineers, vol. 70, pp. 1204-1571.)

**Question 11.** How many acre-feet of water were poured into the Salton Sink by each of these floods?

**Answer 11.** There is no exact record of the total flow of water to the Salton Sea during these breaks, but it is approximately the same as the total flow at Yuma for the same periods. The recorded run-off at Yuma during the first period was about 22,000,000 acre-feet and during the second period about 2,500,000 acre-feet.

**Question 12.** How many acre-feet of silt are deposited in the Colorado River delta each year?

**Answer 12.** The All-American Canal Board, in report published in 1920 (pp. 24-26), estimates the average quantity of silt carried in suspension annually at Yuma at 90,000 acre-feet and the bed load at 12,000 acre-feet, making a total load of silt of 102,000 acre-feet.

Engineers of the Reclamation Service estimate the average annual quantity of silt carried at Yuma at 113,000 acre-feet (S. Doc. No. 142, 67th Cong., 2d sess., p. 3).

Question 13. What is the estimated number of acre-feet of silt carried by the Colorado River annually at Boulder-Canyon and at Lee Ferry?

Answer 13. The Reclamation Service has estimated (S. Doc. No. 142, 67th Cong., 2d sess.) that the amount of silt carried by Colorado River at Boulder Canyon averages about 88,000 acre-feet annually.

Question 14. Do geologists generally agree that the Gulf of California once extended over the Imperial Valley and the Salton Sink?

Answer 14. Geologists generally agree that the Gulf of California once extended over the Imperial Valley and Salton Sink.

Question 15. Arrangements were made last June or July for an engineering commission consisting of Messrs. E. C. LaRue of the Geological Survey, Porter J. Preston of the Reclamation Service, and Homer E. Turner representing the Arizona State water commissioner, to make a reconnaissance of lands irrigable from the Colorado River in western Arizona. How far have the investigations of this commission proceeded, and what results have been obtained up to the present time?

Answer 15. The Arizona engineering commission, consisting of E. C. LaRue, P. J. Preston, and H. E. Turner, is a State commission, for which Mr. LaRue has been lent by the Geological Survey and Mr. Preston by the Reclamation Service. The commission will make its report directly to State officials. There is therefore no report in Washington of findings of the commission to date, and none is expected until the State makes the report public.

Summary of stream-flow records for gauging stations in Arizona.

Gauging station.	Number of complete years of records.	Annual run-off in acre-feet.		
		Maximum.	Minimum.	Average.
Colorado River at Lees Ferry.....	1	16,100,000		
Colorado River at Hardyville.....	2	21,500,000	18,400,000	20,150,000
Colorado River at Topock.....	5	21,500,000	12,900,000	17,400,000
Colorado River at Yuma.....	20	20,100,000	9,870,000	17,450,000
Little Colorado River at Woodruff.....	1		85,200	
Little Colorado River at Halbrook.....	1		103,000	
Chevelon Fork near Winslow.....	1		80,300	
Clear Creek near Winslow.....	2	116,000	78,100	97,000
Williams River near Swansea.....	5	733,000	102,000	331,000
Gila River at Guthrie.....	5			

Annual discharge for the years ending September 30, 1902 to 1922.

Year.	Maximum day.		Minimum day.		Annual mean (second-foot).	Annual run-off (acre-feet).
	Second-foot.	Date.	Second-foot.	Date.		
Colorado River at Yuma, Ariz.:						
1902-3.....	50,300	May 23.....	3,050	Sept. 29.....	15,200	7,110,000
1902-3.....	72,200	June 27.....	2,600	Jan. 12.....	13,600	11,020,000
1903-4.....	51,200	June 7.....	3,170	Dec. 26.....	26,200	9,870,000
1904-5.....	110,900	Mar. 20.....	3,480	Dec. 27.....	26,200	18,020,000
1905-6.....	102,700	Nov. 30.....	4,200	Jan. 10.....	24,500	10,200,000
1906-7.....	115,000	June 27.....	6,800	Dec. 30.....	35,800	26,030,000
1907-8.....	61,700	June 26.....	5,600	Jan. 20.....	18,700	13,600,000
1908-9.....	149,500	June 24.....	5,800	Jan. 12.....	30,000	26,100,000
1909-10.....	70,300	May 24.....	4,100	Dec. 31.....	20,600	15,000,000
1910-11.....	78,300	June 24.....	3,700	Jan. 10.....	22,400	16,200,000
1910-11.....	144,000	June 22.....	3,400	Jan. 12.....	20,900	19,600,000
1911-12.....	62,500	June 10.....	2,600	Jan. 20.....	16,000	12,000,000
1912-13.....	137,000	June 14.....	3,300	Jan. 7.....	27,400	18,900,000
1913-14.....	98,500	Feb. 3.....	2,700	Sept. 20.....	21,800	15,800,000
1914-15.....	240,000	Jan. 22.....	3,500	Oct. 2.....	20,600	21,500,000
1915-16.....	143,000	July 4.....	5,100	Dec. 28.....	30,500	22,100,000
1916-17.....	94,300	July 3.....	4,100	Sept. 13.....	18,000	13,100,000
1917-18.....	57,000	June 6.....	1,800	Jan. 16.....	14,200	10,300,000
1918-19.....	100,000	June 8.....	3,700	Oct. 10.....	30,100	21,900,000
1919-20.....	180,000	June 28.....	5,100	Dec. 27.....	26,600	19,300,000
1920-21.....	118,000	June 10.....	4,200	Jan. 31.....	24,400	17,600,000
1921-22.....						
Period.....	240,000		1,800		28,100	17,450,000
Little Colorado River at Woodruff:						
1905 (August-December).....	10,000	Nov. 27.....	5	Aug. 20.....		48,000
1906 (January-December).....	2,280	Mar. 13.....	1	Sept. 10-26.....	118	85,000
Little Colorado River at Halbrook:						
1905 (April-September).....	2,080	Apr. 26.....	5	July 28.....		91,500
1905-6.....	20,200	Nov. 27.....	3	June and July.....	253	183,000
1906-7 (October-April).....	2,100	Mar. 23.....	4	Nov. 1-7.....		91,400
Chevelon Fork near Winslow:						
1906 (January-December).....	3,870	Mar. 27.....	0.25	September and November.....	110	80,300
Clear Creek near Winslow:						
1906 (January-December).....	2,245	Dec. 5.....	3	Aug. 5.....		22,300

1 January to September.

\* Flood from Gila River.

Summary of stream-flow records for gauging stations in Arizona—Con.

Gauging station.	Number of complete years of records.	Annual run-off in acre-feet.		
		Maximum.	Minimum.	Average.
San Francisco River at Clifton.....	3	681,000	106,000	357,000
Gila River near Solomonville.....	4	1,560,000	124,000	900,000
Gila River near San Carlos.....	4	1,500,000	83,300	871,000
Gila River near Kelvin.....	8	2,450,000	152,000	1,620,000
Gila River near Sentinel.....	1			318,000
Gila River at Yuma and Dome.....	3	3,050,000	201,100	1,787,000
San Pedro River at Fairbank.....	0	148,000	20,300	60,200
Santa Cruz River at Tucson.....	6	80,200	1,850	25,000
Salt River at Roosevelt.....	14	2,746,000	190,700	1,610,000
Salt River at McDowell.....	9	3,101,000	248,400	1,142,000
Verde River at Camp Verde.....	6	524,000	174,000	321,000
Verde River at McDowell.....	17	1,509,000	198,200	571,000
Agua Fria River near Glendale.....	4	806,000	34,200	332,000
Hassayampa River near Wagoner.....	2	36,400	2,500	19,500

Annual discharge of Colorado River at Lees Ferry, Hardyville, and Topock 1 years ending September 30.

Year.	Maximum day.		Minimum day.		Annual mean, sec.-ft.	Annual run-off, acre-feet.
	Sec.-ft.	Date.	Sec.-ft.	Date.		
Lees Ferry (July, 1921, to September, 1922):						
1921.....	66,800	Aug. 25.....	7,000	Sept. 30.....	22,200	14,540,000
1921-22.....	110,000	May 31.....	3,680	Jan. 14.....		16,100,000
Hardyville (June, 1905, to September, 1907):						
1905.....	99,800	June 15.....	4,530	Sept. 26.....	28,000	17,210,000
1905-6.....	116,000	June 20.....	2,850	Jan. 5.....	29,600	18,830,000
1906-7.....	112,000	June 12.....	5,500	Dec. 5.....	29,600	21,500,000
Topock (February, 1917, to September, 1922):						
1917.....	140,000	June 30.....	6,000	Feb. 4.....	21,000	18,800,000
1917-18.....	120,000	June 19.....	4,100	Jan. 16.....	22,000	15,500,000
1918-19.....	77,300	June 4.....	4,100	Jan. 16.....	22,000	12,900,000
1919-20.....	155,000	June 1.....	5,500	Jan. 22.....	28,100	20,400,000
1920-21.....	174,000	June 22.....	5,900	Dec. 27.....	20,800	21,500,000
1921-22.....	121,000	June 3.....	0,360	Sept. 28.....	26,200	19,000,000

1 Partial year.

Annual discharge for the years ending September 30, 1902 to 1922—Continued.

Year.	Maximum day.		Minimum day.		Annual mean (second-feet).	Annual run-off (acre-feet).
	Second-feet.	Date.	Second-feet.	Date.		
<b>Williams River at Planet, near Swansea:</b>						
1913 (January-September)					108	26,400
1913-14					700	78,100
1914-15	8,100	Jan. 30	14	April to September		116,000
<b>Gila River at Guthrie:</b>						
1910-11 (November-September)	3,200	July 25	6	May-June		131,000
1911-12			3	July 16		149,000
1912-13	3,000	Apr. 3	20	July 11-14	141	192,000
1913-14	2,000	July 20	22	May 12-19	313	227,000
1914-15	15,000	Dec. 20	30	July 10	4,010	733,000
1915-16	6,310	Jan. 20	36	June and July	404	336,000
1916-17	8,600	Jan. 20-21	26	July 19	354	250,000
1917-18 (October-June)	205	Mar. 7	24	May 15		39,100
<b>San Francisco River at Clifton:</b>						
1913-14	1,280	July 4	21	June 28	140	106,000
1914-15	14,000	Dec. 20	30	June 20	639	681,000
1915-16	2,850	Mar. 23	40	June-July		1,205,000
1916-17			2	October	300	281,000
1917-18 (October-June)	238	Mar. 1	33	June 15		41,100
<b>Gila River near Solomonville:</b>						
1914 (May-September)	4,200	Aug. 31	64	June 29	2,100	218,000
1914-15	31,000	Dec. 20	80	July 2		1,580,000
1915-16	78,600	Jan. 10	110	June 21-24	1,810	1,320,000
1916-17	46,000	Oct. 14	80	Sept. 0	825	638,000
1917-18	1,100	July 1	75	Sept. 30	171	121,000
<b>Gila River near San Carlos:</b>						
1914 (May-September)	3,220	Aug. 31	1	July 1		107,000
1914-15		December		December	2,100	1,594,000
1915-16		January	12	July 6	1,880	1,370,000
1916-17	33,500	Oct. 15	14	July 1	732	580,000
1917-18	1,540	Aug. 7	3	June 30	115	85,300
<b>Gila River near Kelvin:</b>						
1911-12	32,000	Mar. 12	3	June 1-5	722	621,000
1912-13	3,450	Feb. 27	0	June-July	250	181,000
1913-14	8,550	Aug. 10	1	June 15-19	612	443,000
1914-15	60,000	Dec. 24	45	July 17	4,680	2,050,000
1915-16	76,230	Jan. 20	20	July 7	1,840	1,390,000
1916-17	32,000	Oct. 15	24	June 30	801	601,000
1917-18	5,340	Aug. 7	4	July and September	210	162,000
1918-19	12,600	July 10	0	Oct. 19	1,020	736,000
1919-20 (October-April)	9,100	Dec. 5	131	Nov. 2		619,000
<b>Gila River, near Sentinel:</b>						
1913-14 (October-September)	19,000	Feb. 23	0	October and June	440	318,000
<b>Gila River at Yuma and Dome:</b>						
1903 (January-September)	2,000	April	0			47,500
1903-1	4,500	Aug. 30	0	Dry one or more months each year.	278	201,000
1901-5	95,000	Mar. 20	0		4,980	3,054,000
1905-6	16,000	Nov. 30	0		2,930	2,110,000
1906 (October-December)	29,000	Dec. 7	0			332,000
<b>San Pedro River near Fairbank:</b>						
1912-13	846	August and September	1.7	June and July	32.8	23,700
1913-14	12,300	Aug. 17	2	Oct. 20	205	148,000
1914-15			17	May and August	4,320	604,300
1915-16	1,700	Aug. 16	2	October and June	47.2	361,200
1916-17	5,180	July 24	2	October and January	125	90,200
1917-18	920	July 1	1	June and September	28	20,300
1918-19					131	94,000
1919-20	2,280	Aug. 11	2	Sept. 1	61.3	46,100
1920-21	6,700	July 30	1.5	June 29	110	102,000
1921-22	1,900	Aug. 10	1	April and May	50.4	36,500
<b>Santa Cruz River at Tucson:</b>						
1912-13	60	Aug. 7	0		3.0	2,810
1913-14	200	July	0		2.5	1,520
1914-15	8,510	Dec. 21	0		412	80,200
1915-16	4,000	January	0		51.4	37,300
1916-17	2,710	September	0		39.2	28,400
1917-18	1,490	Aug. 8	0		0.8	4,000
<b>Salt River at Roosevelt:</b>						
1901 (January-September)	4,172	February	71	July 17		446,100
1901-2	4,675	Aug. 12	45	July 11	272	190,700
1902-3	2,800	Dec. 14	88	July and August	358	268,200
1903-4	14,700	Aug. 22	50	July 12	337	244,200
1904-5	45,470	Apr. 18	146	Oct. 5	3,800	2,740,000
1905-6	97,710	Nov. 27	217	Oct. 12	2,300	1,706,000
1906-7	36,600	Dec. 3	255	Oct. 25	1,760	1,276,000
1910 (January-September)					1,100	312,700
1910-11					771	795,200
1911-12					660	558,000
1912-13					738	405,000
1913-14					2,460	634,400
1914-15					3,330	1,770,000
1915-16					1,140	2,413,000
1916-17					656	822,000
1917-18						402,100
<b>Average of 14 years</b>						
						1,011,000
<b>Fall River at McDowell:</b>						
1897 (May-September)	2,000	May	83	July		174,800
1897-98	1,235	August	137	August	466	237,500
1898-99	3,700	Jan. 10	135	October	384	278,400
1900-1	13,700	Aug. 23	38	July 10	343	246,400
1901-2	60,600	Apr. 13	334	Oct. 5	4,280	3,101,000
1905-6	138,000	Nov. 27	276	Nov. 1	2,750	1,984,000
1906-7	38,000	Dec. 4	270	Oct. 24	1,080	1,432,000

1 High-water periods in March and July not included.  
 2 Dec. 11, 1915, to Mar. 8, 1916, not included.  
 3 Discharge estimated for several months. Maximum daily discharge not determined for floods of December, 1904, and January, 1906.  
 4 Near Yuma during 1903. Near Dome during 1904 to 1906.  
 5 No record during floods of December and January.  
 6 Beginning October, 1913, records are sum of records for Salt River above reservoir and Tonto Creek.

Annual discharge for the years ending September 30, 1901 to 1922—Continued.

Year.	Maximum day.		Minimum day.		Annual mean (second-feet).	Annual run-off (acre-feet).
	Second-feet.	Date.	Second-feet.	Date.		
<b>Salt River at McDowell—Continued.</b>						
1907-8.....	30,000	Feb. 4.....	214	July 9.....	1,520	1,103,000
1908-9.....	35,000	Dec. 17.....	60	Jan. 11-17.....	1,800	1,304,000
1909-10.....					671	486,000
Average 9 years.....						
<b>Verde River at Camp Verde:</b>						
1913 (January-September).....	7,000	Apr. 1.....	120	May and June.....	265	264,000
1913-14.....	7,181	Feb. 22.....	31	June 28.....	535	191,000
1914-15.....	3,400	Mar. 26.....	42	July 15.....	724	308,000
1915-16.....			40	Oct. 5.....	459	524,000
1916-17.....	7,650	Apr. 23.....	95	June 16.....	241	330,000
1917-18.....			38	June 9.....		174,000
<b>Verde River at McDowell:</b>						
1907 (May-September).....	5,000	September.....	90	July.....	327	119,500
1907-08.....	1,890	July.....	115	do.....	274	236,500
1908-09.....	2,500	September.....	100	August.....	426	198,200
1909.....	6,610	January.....	29	July.....	382	302,600
1910 (January-December).....	6,030	July 31.....	32	July 20.....	2,170	276,600
1911-12.....	32,970	Feb. 4.....	125	July 12.....	1,250	1,560,000
1912-13.....	61,480	Nov. 27.....	105	July 4.....	1,190	901,800
1913-14.....	32,200	Mar. 6.....	144	July 20.....	628	859,700
1914-15.....	14,400	Feb. 4.....	98	July 7.....	1,039	455,000
1915-16.....	51,600	Dec. 10.....	116	June 29.....	655	783,500
1916-17.....					917	474,100
1917-18.....					625	664,500
1918-19.....					515	452,300
1919-20.....					545	373,000
1920-21.....	17,125	Feb. 23.....	78	July 1.....	950	394,000
1921-22.....	15,675	Jan. 30.....	95	July 20.....	1,230	705,000
1922-23.....	73,350	Jan. 19.....	115	July 10.....	1,240	937,000
1923-24.....	6,000	Apr. 18.....	128	July 5.....	773	643,000
1924-25.....	54,300	Mar. 14.....	112	June 13.....		559,000
Average, 17 years.....						
<b>Agua Fria River near Glendale:</b>						
1914-15.....	(1)	Jan. 29.....	2	Oct. 25.....	345	250,000
1915-16.....	(2)	Jan. 27.....	2	Oct. 20.....	1,110	800,000
1916-17.....	22,800	Apr. 18.....	5	July 1.....	332	240,000
1917-18.....	1,500	Aug. 10.....	2	May to September.....	47	34,200
<b>Hasanyampa River near Wagoner:</b>						
1912-13 (December-September).....	235	Sept. 4.....	0	June.....	3.6	2,970
1913-14.....	108	July 24.....	0	May to September.....	50	2,580
1914-15.....	690	July 23.....	0	October.....		36,400
1917-18 (October-May).....	500	Mar. 8.....	1	October.....		4,100

<sup>1</sup> Crest discharge on Jan. 29 estimated as 60,000 second-feet.

<sup>2</sup> Crest discharge on Jan. 27 estimated as 105,000 second-feet.

DATA FROM THE FEDERAL POWER COMMISSION.

In order to secure late information relating to all the applications for power sites on the Colorado River within the State of Arizona I made inquiry of the Federal Power Commission, and under date of January 2, 1923, received the following data from Col. William Kelly, the chief engineer:

No. 111, Southern California Edison Co., Los Angeles, Calif.: Dam at Grand Wash just west of Nevada-Arizona line, backing water to Diamond Creek.

Dam at Diamond Creek, backing water to west boundary of Park.

Dam at Marble Canyon just above Park, developing head to Lee Ferry.

Dam at Glen Canyon, 500 feet high, backing water approximately to mouth of Green River.

Total development, 2,500,000 horsepower.

No. 258, Southern California Edison Co., Los Angeles, Calif.:

Dam at Bulls Head Rock near Fort Mohave, 220 feet high, creating backwater to Old Callville.

Dam at Old Callville, creating backwater to Grand Wash. Capacity of project, 800,000 horsepower.

No. 238, City of Los Angeles, Calif.: Dam at Black Canyon, 500 feet high, developing 600,000 horsepower.

No. 210, James B. Glrand, Phoenix, Ariz.: Dam at mouth of Andrus Canyon, about 25 miles above Diamond Creek, developing 65,000 horsepower—alternate scheme to the one of Mr. Glrand providing for raising the Diamond Creek Dam.

No. 231, James B. Glrand, Phoenix, Ariz.: Dam at Pierce Ferry about 30 miles below Diamond Creek, to create backwater to Diamond Creek and develop about 65,000 horsepower.

No. 30, Beckman & Linden Engineering Corporation, 604 Mission Street, San Francisco, Calif.: Dam above Parker, Ariz., creating backwater to Needles, Calif., and developing 115,000 horsepower.

No. 50, E. I. Royard, Seligman, Ariz.:

Series of dams from Boulder Canyon to Lee Ferry, developing all the power in the stream except the part within national park.

Applicant has made no showing of preparedness to develop any part of this extension scheme.

No. 265, Guy P. Mohler, box 561, Needles, Calif.:

Project to develop all the power in the Colorado River between Fort Mohave and Boulder Canyon.

Applicant has made no showing of financial ability to carry out his proposed undertaking.

All of the above projects have been advertised in accordance with the provisions of the Federal water power act, but action upon them has been suspended pending the investigations and report of the Colorado River Commission.

No. 121, James B. Glrand, Phoenix, Ariz.: Dam at Diamond Creek, 270 feet high, with provision to raise the same to 400 feet, developing 130,000 primary horsepower and with installed capacity of 200,000 horsepower.

A preliminary permit was granted to the Interior Department and by the Forest Service about 1917. An application for a final permit was pending when the Federal water power act was passed, and in accordance with the provisions of section 23 of the act the application was transferred to this commission. The application as prepared did not comply with the regulations of this commission because of the fact that the new act contained many provisions not set forth in the previous act, under which a preliminary permit had been granted. Accordingly this commission gave Mr. Glrand a preliminary permit on July 19, 1921, so as to maintain his priority. Pursuant to this preliminary permit, a new application for a license was filed in March, 1922, which was satisfactory from an engineering point of view; but in view of the fact that the Colorado River Commission had been created, and in view of the Swing-Johnson bill providing for the construction of a large dam at Boulder or Black Canyon by the Federal Government, action on Mr. Glrand's application was temporarily suspended. Mr. Glrand's permit was to have expired July 8, 1922, but it was extended to October 19, 1922, and again extended to March 19, 1923.

APPROVAL OF COMPACT BY CONGRESS.

On December 18, 1922, Hon. FRANK W. MUNDRELL introduced a bill (H. R. 13480) granting the consent and approval of Congress to the Colorado River compact, a copy of which I shall print as an extension of my remarks. Nothing will be done with that measure until the compact is approved by the

legislatures of all of the seven interested States, because Congress can not be expected to act in advance of such an agreement. The bill was referred by the chairman of the Committee on Irrigation of Arid Lands to the State and Interior Departments and to the Federal Power Commission. The following reports have been received:

DEPARTMENT OF STATE,  
Washington, December 30, 1922.

Hon. Addison T. Smith,  
House of Representatives.

Sir: I have the honor to acknowledge the receipt of your letter of December 21, 1922, transmitting a copy of the bill (H. R. 13480) granting the consent and approval of Congress to the Colorado River compact, and requesting me to furnish your committee such information and suggestions as may be proper regarding the proposed legislation.

The compact does not pertain to matters coming within the jurisdiction of this department, except in so far as the control and use of the waters of the Colorado River system may possibly affect the international relations of the Government. The fact that the Colorado River has international aspects and the possibility that questions of an international character concerning the use of the waters may arise, necessitating action by the Federal Government with respect to the distribution of the waters, appears to be recognized and adequately provided for by Article III (c) of the compact.

I may, however, call attention to what appears to be a slight inaccuracy in lines 11, to 14, page 2, of the bill, in which it is stated that the compact was signed by representative commissioners of the States mentioned "and the representative appointed by the President." I think it would be more accurate to state that the compact was signed by the representative commissioners and "approved by the representative appointed by the President." The second paragraph of Article XI, as well as the signatures to the compact (page 11 of the bill) indicate that only the States in question are to be considered signatories.

I have the honor to be, sir,  
Your obedient servant,

CHARLES E. HUGHES.

DEPARTMENT OF THE INTERIOR,  
Washington.

Hon. Addison T. Smith,  
Chairman Committee on Irrigation, House of Representatives.

MY DEAR MR. SMITH: Answering your request for report upon H. R. 13480, a bill granting the consent and approval of Congress to the Colorado River compact, which measure is designed to ratify a compact executed at Santa Fe on November 24, 1922, by representatives of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, and approved by a representative of the United States.

Paragraph (a) of Article IV of the compact would make navigation subservient to domestic, agricultural, and power uses. In this connection, I direct attention to the fact that under the treaty of 1854 the Republic of Mexico appears to have certain rights with reference to the "Rio Colorado." The first paragraph of Article IV of this treaty reads as follows:

"The provisions of the sixth and seventh articles of the treaty of Guadalupe Hidalgo having been rendered nugatory for the most part by the cession of territory granted in the first article of this treaty, the said articles are hereby abrogated and annulled and the provisions as herein expressed substituted therefor. The vessels and citizens of the United States shall in all time have free and uninterrupted passage through the Gulf of California, to and from their possessions situated north of the boundary line of the two countries. It being understood that this passage is to be by navigating the Gulf of California and the River Colorado; and not by land without the express consent of the Mexican Government; and precisely the same provisions, stipulations, and restrictions in all respects are hereby agreed upon and adopted, and shall be scrupulously observed and enforced by the two contracting Governments in reference to the Rio Colorado, so far and for such distance as the middle of that river is made their common boundary line by the first article of this treaty."

The sixth and seventh articles of the treaty of Guadalupe Hidalgo, as decreed by this language, were rendered nugatory "for the most part," but you will note the language with reference to the mutuality of rights of the two Governments is expressly insisted upon.

The provisions of this treaty and the articles of the treaty of Guadalupe Hidalgo referred to were considered by the Supreme

Court of the United States in what is known as the "Rio Grande Dam" case.

During the administration of Mr. Taft a form of convention was presented by this country to Mexico, and was agreed upon for the settlement of the irrigation question and use of water on the lower Colorado.

This convention was never executed nor the commissioners thereunder appointed because of the Mexican revolution, and the matter, as between the United States and Mexico, remains in this shape.

I also direct attention to the decisions of the United States Supreme Court in the case of United States against Rio Grande Irrigation Co. (174 U. S. 40; 184 U. S. 476), in which latter decision the court sets out the treaty provisions, equally applicable to the Rio Colorado, and states—

"These treaties, with the above and other acts of Congress, being in force, the present suit was brought"

And the court concluded by saying—

"We can not resist the conviction that if we proceed to a final decree upon the present record great wrong may be done to the United States, as well as to all interested in preserving the navigability of the Rio Grande. . . . We are the better satisfied with this disposition of the case because the questions presented may involve rights secured by treaties concluded between this country and the Republic of Mexico. As the latter country cannot be indifferent to the result of this litigation and is not a party to the record, the court ought not to determine the important question before us in the absence of material evidence; which we are not at liberty upon this record to doubt would be in the record but for the somewhat precipitate action of the trial court."

It will thus be seen that the Supreme Court finally recognized the rights of Mexico under treaty provisions and remanded the case for further evidence, among other reasons, because of the recognition of Mexico's rights.

Thereafter, our Government entered into an arrangement with Mexico for the construction of a reservoir upon the Rio Grande, under the terms of which, among other things, Mexico was granted in perpetuity 60,000 acre-feet of water annually from such reservoir for her use or that of her citizens free of all costs.

On January 8, 1913, a preliminary draft of a proposed convention with Mexico, dealing with the waters of the Colorado, was submitted by the Secretary of State to the then Secretary of the Interior for his consideration and comment. Other preliminary drafts of proposed convention have been submitted by each Government and considerable discussion had taken place, as shown by correspondence on file in this department. The United States insisted upon the appointment of a commission to make studies; the Mexican Government insisted upon the Joint Boundary Commission making such studies. On February 8, 1913, the State Department forwarded a final draft of proposed convention to this department, together with a copy of letter from Secretary Knox to the American ambassador in Mexico. The latter letter advised the ambassador that the department had retained the wording of the preamble as proposed originally, and commented on various counterproposals. This proposal was approved by the Interior Department and submitted by Ambassador Wilson to the then Mexican administration. Thereafter, events which took place in Mexico resulted in the recall of the ambassador, leaving the drafts of the convention practically approved by both Governments but without final conclusion, either by treaty or appointment of commissioners.

The matter received consideration during the Wilson administration, various references thereto being made in official correspondence.

In October, 1921, I received from the State Department a communication inclosing translations of communications from the Mexican de facto authorities, referring to meetings of governors of the various States who were discussing rights to the use of waters and requesting that Mexico be allowed to participate in any arrangement concerning the distribution and use of the waters of the Colorado, and that Mexico might be represented as an interested party in any proceedings taken under the act of Congress of August 19, 1921. I replied to this communication and called attention to the fact that on June 27, 1921, I had written the Secretary of State calling his attention to treaty provisions and stating:

"I do not understand that the result of any such consideration (by the commission of which Mr. Hoover is a member) would affect Mexico in any way, as, of course, the United States would not be a party to any agreement with individual or col-

lective States which would constitute a breach or violation of any treaty which it may have entered into with Mexico."

At a meeting in San Diego, Calif., about December 1, 1921, where discussion was had as to report which I was preparing to send to Congress with respect to the use of the waters of the Colorado River, Mexican officials were unofficially present and their informal suggestions listened to. I explained publicly that I favored the construction of a reservoir by the Government for the impounding of waters for the protection of the lower Colorado River for irrigation of present irrigable lands of the United States and Mexico and that I did not favor the granting of any individual rights for power or otherwise until this Government could decide its course of action, for the reason, among others, that the Government was the only authority or power through which the treaty rights of Mexico as well as the rights of the several States of the Union could properly be protected.

The said paragraph (a), Article IV, of the compact would, in my opinion, be regarded as a violation of the rights of Mexico and, to say the least, might be made the basis of a claim against the United States. I am clearly of the opinion that said paragraph should not be approved by the Congress of the United States.

Section 2 of the bill apparently covers the same subject matter as Article X of the compact and appears to be surplusage.

With respect to existing rights to the use of the waters of the Colorado River, treated in Article VIII of the compact, I direct attention to the fact that the United States Government has constructed or is constructing several reclamation projects upon the Colorado River and its tributaries and investigations have been made of other projects which may at some future time be undertaken. I also direct attention to the existing system which irrigates the lands in Imperial Valley, Calif., in the United States, as well as certain lands in Mexico, the main canal passing through Mexico for a long distance prior to entering the irrigable lands of Imperial Valley. With respect to the history of this project, reference is made to volume 33, Land Decisions, page 391, and to pages 14, 15, and 16 of Senate Document No. 103, Sixty-fifth Congress, first session, copy inclosed.

In view of the foregoing, I suggest that there be substituted for the present section 2 of the bill the following:

"Sec. 2. That this act is not intended and shall not be construed as an approval by the United States of the provisions of paragraph (a) of article 4 of the compact, nor as abrogating, limiting, or in any way affecting any existing rights of the United States or of the Republic of Mexico concerning the subject matter of the compact."

It would be appropriate in section 1, line 3, after the word "that," to insert the words "subject to the provisions of section 2 of this act"; in section 1, line 11, to change the word "signed" to "executed," and in section 1, line 14, after the word "and," to insert the words "approved by."

Subject to the suggestions above made I favor the enactment of the measure.

Respectfully,

ALBERT B. FALL, *Secretary.*

FEDERAL POWER COMMISSION,  
Washington, December 29, 1922.

[Secretary of War, chairman; Secretary of the Interior; Secretary of Agriculture; O. C. Merrill, executive secretary.]

Hon. ADDISON T. SMITH,

*Chairman Committee on Irrigation of Arid Lands,  
House of Representatives.*

DEAR MR. SMITH: In reply to your request for information and suggestions on H. R. 13480, granting the consent and approval of Congress to the Colorado River compact, I have to inform you that practically all development on the Colorado River is suspended pending the acceptance by the interested States and the United States of some compact to apportion the waters equitably among the States.

There are several developments now under consideration which have merit and a fair chance of success, and in the interest of that region they should be permitted to proceed.

The compact quoted in H. R. 13480 is the result of many conferences and discussions; it has been agreed to by the representatives of all the interested States and offers the best, if not the only, chance of terminating an obstructive controversy. It is believed therefore that H. R. 13480 should receive favorable action.

Very truly yours,

JOHN W. WEEKS,  
*Secretary of War, Chairman.*

It will be noted that the Secretary of State approves of the compact. The Secretary of the Interior also favors its ap-

proval by Congress except that, in his opinion, Congress should not agree to paragraph (a) of Article IV, which makes navigation subservient to domestic, agricultural, and power uses. His objection is based upon the fear that to do so might violate the terms of existing treaties with Mexico. This advice by Secretary Fall is gratuitous, since the Department of the Interior has no jurisdiction over the question of the navigability of streams within the United States, which is a function of the War Department, and the conduct of all foreign relations is vested by law in the Department of State. This suggestion may therefore be considered as merely an expression of his personal views which, however, should be given attention as coming from a distinguished international lawyer who has made a profound study of Mexican affairs.

Since the Secretary of the Interior has made these observations upon a matter over which he has no official authority I feel even more free to say that I do not agree with him at all. First, because, in truth, navigation is now, and for many years has been, the least of all the uses of the waters of the Colorado River and there is no way in which Mexico can suffer any injury by a frank recognition of that fact.

Second, because the provisions of the treaties quoted and referred to by Secretary Fall do nothing more than prohibit action by either the Government of the United States or the Government of Mexico along the common boundary line which might impede navigation in the Colorado River. Therefore, anything done wholly within the United States and not along the common boundary line would not violate either the letter or the spirit of these treaties even though navigation were made impossible.

Third, because the general proposition that Mexico has any interest in maintaining the navigability of that part of the Colorado River which is wholly within the United States is completely refuted by the opinion of Attorney General Judson Harmon, dated December 12, 1895, a part of which has been quoted by Mr. Hamele in answer to one of my questions. I am advised that this opinion has always been considered by the State Department to be a sound and accurate statement of the international law governing such cases.

The decision of the Supreme Court in the case of United States v. Rio Grande Irrigation Co. in no way modified or disturbed the legal principles thus laid down by Attorney General Harmon.

The references made by Secretary Fall to the various ineffectual efforts that have been made to conclude a convention between the United States and Mexico dealing with the waters of the Colorado River have absolutely no bearing on the question of navigation. An examination of the terms of these proposed conventions will disclose that nothing was provided except that a joint commission be appointed to study, agree upon, and report the basis of distribution and appropriation of the waters of the Colorado River, the findings of the commission, if and when approved by the two Governments, to be embodied in a treaty.

The report of the Secretary of War, as chairman of the Federal Power Commission, also approves of the compact. His statement that practically all water-power development on the Colorado River is suspended pending the acceptance by the interested States of some such compact confirms what I understand to be a fixed policy of the Harding administration. I am informed that it has been agreed that no applications for power sites on the Colorado River will be granted until the Colorado River compact is approved by the legislatures of the seven States and by Congress. This includes the application of Mr. James B. Girard for the Diamond Creek site in Arizona.

At my request the legislative reference service of the Library of Congress has furnished the following information:

AGREEMENTS AND COMPACTS BETWEEN STATES OF THE AMERICAN FEDERAL UNION TO WHICH CONGRESS HAS GIVEN ITS ASSENT.

BOUNDARY COVENANTS.

1. Kentucky and Tennessee: May 12, 1820. (Stat. L. vol. 3, p. 609.)
2. New York and New Jersey: June 28, 1834. (Stat. L. vol. 4, pp. 708ff.)
3. Virginia and Maryland: March 3, 1870. (Stat. L. vol. 20, pp. 481ff.)
4. New York and Vermont: April 7, 1880. (Stat. L. vol. 21, p. 72.)
5. New York and Connecticut: February 20, 1881. (Stat. L. vol. 21, pp. 351ff.)
6. Connecticut and Rhode Island: October 12, 1888. (Stat. L. vol. 25, p. 553.)
7. New York and Pennsylvania: August 10, 1800. (Stat. L. vol. 26, pp. 329ff.)

## PROTECTION OF FISH IN BOUNDARY WATERS.

1. Oregon and Washington; April 8, 1918. (Stat. L. vol. 40, p. 515.)

## JURISDICTION OVER BOUNDARY WATERS FOR SPECIFIC PURPOSES.

1. North Dakota, South Dakota, Minnesota, Wisconsin, Iowa, and Nebraska; March 4, 1921. (Stat. L. vol. 41, pp. 1447ff.)

## CONSTRUCTION AND OPERATION OF TUNNELS.

1. New York and New Jersey; July 11, 1910. (Stat. L. vol. 41, p. 158.)

## DEVELOPMENT OF THE PORT OF NEW YORK.

1. New York and New Jersey; August 23, 1921. (Stat. L. vol. 42, pp. 174ff.)

2. New York and New Jersey; July 1, 1922. (Stat. L. vol. 42, pp. 822ff.)

## ERECTION, MAINTENANCE, AND OPERATION OF WATERWORKS.

1. Kansas and Missouri; September 22, 1922. (Stat. L. vol. 42, p. 1058ff.)

## THE MONDELL BILL.

The following is a copy of H. R. 13480, which contains the text of the Colorado River compact:

## IN THE HOUSE OF REPRESENTATIVES,

December 18, 1922.

Mr. MONDELL introduced the following bill; which was referred to the Committee on Irrigation of Arid Lands and ordered to be printed.

A bill (H. R. 13480) granting the consent and approval of Congress to the Colorado River compact.

Whereas the act approved August 19, 1921, entitled "An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," gave the consent of Congress to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming to negotiate and enter into a compact or agreement providing for an equitable distribution and apportionment among the said States of the waters of the Colorado River and of streams tributary thereto, upon condition that a suitable person, to be appointed by the President of the United States, should participate in said negotiations; and

Whereas under the authority of said act the representative commissioners of the said States did on the 24th day of November, 1922, at the city of Santa Fe, N. Mex., sign a compact under the provisions of the said act, which compact was approved by the representative appointed by the President of the United States; Therefore

*Be it enacted, etc.,* That the consent and approval of Congress is hereby given to a compact signed at the city of Santa Fe, N. Mex., on the 24th day of November, 1922, under and in accordance with the authority of the act approved August 19, 1921, entitled "An act to permit a compact or agreement between the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming respecting the disposition and apportionment of the waters of the Colorado River, and for other purposes," which compact was signed by the representative commissioners of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and the representative appointed by the President of the United States under said act, which compact is as follows:

## "COLORADO RIVER COMPACT.

"The States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, having resolved to enter into a compact under the act of the Congress of the United States of America approved August 19, 1921 (42 Stat. L. 171), and the acts of the legislatures of the said States, have, through their governors, appointed as their commissioners:

- "W. S. Norvick, for the State of Arizona;
- "W. F. McClure, for the State of California;
- "Delph E. Carpenter, for the State of Colorado;
- "J. G. Scruggam, for the State of Nevada;
- "Stephen B. Davis, Jr., for the State of New Mexico;
- "R. E. Caldwell, for the State of Utah;
- "Frank C. Emerson, for the State of Wyoming;

who, after negotiations participated in by Herbert Hoover, appointed by the President as the representative of the United States of America, have agreed upon the following articles:

"ARTICLE I. The major purposes of this compact are to provide for the equitable division and apportionment of the use of the waters of the Colorado River system; to establish the relative importance of different beneficial uses of water; to promote interstate comity; to remove causes of present and future controversies; and to secure the expeditious agricultural

and industrial development of the Colorado River Basin, the storage of its waters, and the protection of life and property from floods. To these ends the Colorado River Basin is divided into two basins, and an apportionment of the use of part of the water of the Colorado River system is made to each of them with the provision that further equitable apportionments may be made.

"ART. II. As used in this compact—

"(a) The term "Colorado River system" means that portion of the Colorado River and its tributaries within the United States of America.

"(b) The term "Colorado River Basin" means all of the drainage area of the Colorado River system and all other territory within the United States of America to which the waters of the Colorado River system shall be beneficially applied.

"(c) The term "States of the upper division" means the States of Colorado, New Mexico, Utah, and Wyoming.

"(d) The term "States of the lower division" means the States of Arizona, California, and Nevada.

"(e) The term "Lee Ferry" means a point in the main stream of the Colorado River, 1 mile below the mouth of the Paria River.

"(f) The term "upper basin" means those parts of the States of Arizona, Colorado, New Mexico, Utah, and Wyoming, within and from which waters naturally drain into the Colorado River system above Lee Ferry, and also all parts of said States located without the drainage area of the Colorado River system which are now or shall hereafter be beneficially served by waters diverted from the system above Lee Ferry.

"(g) The term "lower basin" means those parts of the States of Arizona, California, Nevada, New Mexico, and Utah within and from which waters naturally drain into the Colorado River system below Lee Ferry, and also all parts of said States located without the drainage area of the Colorado River system which are now or shall hereafter be beneficially served by waters diverted from the system below Lee Ferry.

"(h) The term "domestic use" shall include the use of water for household, stock, municipal, mining, milling, industrial, and other like purposes, but shall exclude the generation of electrical power.

"ART. III. (a) There is hereby apportioned from the Colorado River system in perpetuity to the upper basin and to the lower basin, respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist.

"(b) In addition to the apportionment in paragraph (a), the lower basin is hereby given the right to increase its beneficial consumptive use of such waters by 1,000,000 acre-feet per annum.

"(c) If, as a matter of international comity, the United States of America shall hereafter recognize in the United States of Mexico any right to the use of any waters of the Colorado River system, such waters shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then the burden of such deficiency shall be equally borne by the upper basin and the lower basin, and whenever necessary the States of the upper division shall deliver at Lee Ferry water to supply one-half of the deficiency so recognized in addition to that provided in paragraph (d).

"(d) The States of the upper division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years reckoned in continuing progressive series beginning with the 1st day of October next succeeding the ratification of this compact.

"(e) The States of the upper division shall not withhold water, and the States of the lower division shall not require the delivery of water, which can not reasonably be applied to domestic and agricultural uses.

"(f) Further equitable apportionment of the beneficial uses of the waters of the Colorado River system unapportioned by paragraphs (a), (b), and (c) may be made in the manner provided in paragraph (g) at any time after October 1, 1923, if and when either basin shall have reached its total beneficial consumptive use as set out in paragraphs (a) and (b).

"(g) In the event of a desire for a further apportionment as provided in paragraph (f) any two signatory States, acting through their governors, may give joint notice of such desire to the governors of the other signatory States and to the President of the United States of America, and it shall be the duty of the governors of the signatory States and of the President of

the United States of America forthwith to appoint representatives, whose duty it shall be to divide and apportion equitably between the upper basin and lower basin the beneficial use of the unappropriated water of the Colorado River system as mentioned in paragraph (f), subject to the legislative ratification of the signatory States and the Congress of the United States of America.

"ART. IV. (a) Inasmuch as the Colorado River has ceased to be navigable for commerce and the reservation of its waters for navigation would seriously limit the development of its basin, the use of its waters for purposes of navigation shall be subservient to the uses of such waters for domestic, agricultural, and power purposes. If the Congress shall not consent to this paragraph, the other provisions of this compact shall nevertheless remain binding.

"(b) Subject to the provisions of this compact, water of the Colorado River system may be impounded and used for the generation of electrical power, but such impounding and use shall be subservient to the use and consumption of such water for agricultural and domestic purposes and shall not interfere with or prevent use for such dominant purposes.

"(c) The provisions of this article shall not apply to or interfere with the regulation and control by any State within its boundaries of the appropriation, use, and distribution of water.

"ART. V. The chief official of each signatory State charged with the administration of water rights, together with the Director of the United States Reclamation Service and the Director of the United States Geological Survey, shall cooperate, ex officio:

"(a) To promote the systematic determination and coordination of the facts as to flow, appropriation, consumption, and use of water in the Colorado River Basin, and the interchange of available information in such matters.

"(b) To secure the ascertainment and publication of the annual flow of the Colorado River at Lee Ferry.

"(c) To perform such other duties as may be assigned by mutual consent of the signatories from time to time.

"ART. VI. Should any claim or controversy arise between any two or more of the signatory States: (a) With respect to the waters of the Colorado River system not covered by the terms of this compact; (b) over the meaning or performance of any of the terms of this compact; (c) as to the allocation of the burdens incident to the performance of any article of this compact or the delivery of waters as herein provided; (d) as to the construction or operation of works within the Colorado River Basin to be situated in two or more States, or to be constructed in one State for the benefit of another State; or (e) as to the diversion of water in one State for the benefit of another State; the governors of the States affected, upon the request of one of them, shall forthwith appoint commissioners with power to consider and adjust such claim or controversy, subject to ratification by the legislatures of the States so affected.

"Nothing herein contained shall prevent the adjustment of any such claim or controversy by any present method or by direct future legislative action of the interested States.

"ART. VII. Nothing in this compact shall be construed as affecting the obligations of the United States of America to Indian tribes.

"ART. VIII. Present perfected rights to the beneficial use of waters of the Colorado River system are unimpaired by this compact. Whenever storage capacity of 5,000,000 acre-feet shall have been provided on the main Colorado River within or for the benefit of the lower basin, then claims of such rights, if any, by appropriators or users of water in the lower basin against appropriators or users of water in the upper basin shall attach to and be satisfied from water that may be stored not in conflict with Article III.

"All other rights to beneficial use of waters of the Colorado River system shall be satisfied solely from the water apportioned to that basin in which they are situate.

"ART. IX. Nothing in this compact shall be construed to limit or prevent any State from instituting or maintaining any action or proceeding, legal or equitable, for the protection of any right under this compact or the enforcement of any of its provisions.

"ART. X. This compact may be terminated at any time by the unanimous agreement of the signatory States. In the event of such termination all rights established under it shall continue unimpaired.

"ART. XI. This compact shall become binding and obligatory when it shall have been approved by the legislatures of each of the signatory States and by the Congress of the United States. Notice of approval by the legislatures shall be given by the governor of each signatory State to the governors of

the other signatory States and to the President of the United States; and the President of the United States is requested to give notice to the governors of the signatory States of approval by the Congress of the United States.

"In witness whereof the commissioners have signed this compact in a single original, which shall be deposited in the archives of the Department of State of the United States of America, and of which a duly certified copy shall be forwarded to the governor of each of the signatory States.

"Done at Santa Fe, N. Mex., the 24th day of November, A. D. 1922.

"W. S. NORVIEL,  
"W. F. McCLURE,  
"DELPH E. CARPENTER,  
"J. G. SCRUGHAM,  
"STEPHEN B. DAVIS, Jr.,  
"R. E. CALDWELL,  
"FRANK C. ELLERSON.

"Approved:

"HERBERT HOOVER."

Sec. 2. That the said compact shall not be binding and obligatory on any of the parties thereto unless and until the same shall have been approved by the legislature of each of the said States and proclamation thereof shall be made by the President upon receipt by him from the governors of all the signatory States of notice of approval of such compact by the legislatures thereof.

DEDICATION, ENDICOTT-JOHNSON STADIUM, BINGHAMTON, N. Y.

Mr. CLARKE of New York. Mr. Speaker, I ask unanimous consent to extend my remarks in the Record by inserting in 8-point type a copy of my speech at the dedication of the First Ward Endicott-Johnson Stadium at Binghamton, N. Y., together with the statement of the labor policy of the Endicott-Johnson Corporation.

Mr. STAFFORD. It is not necessary that gentlemen request that their remarks be printed in 8-point type. If they are the gentleman's own remarks they will be printed in 8-point type.

The SPEAKER. Is there objection?

There was no objection.

Following are the speech and statement referred to:

SPEECH AT DEDICATION FIRST WARD ENDICOTT-JOHNSON STADIUM, BINGHAMTON, N. Y.

"Fellow members of the First Ward Endicott-Johnson Athletic Association, I was glad to become a member of this athletic association about a year ago, and I am doubly glad and proud to claim membership now when I see this wonderful athletic field and stadium so full of possibilities that you have built.

"Helpfulness is the final test of the success or failure of the man, of our institutions, our Government; yes, civilization itself.

"On every hand we find mute monuments that bear their silent but certain message that noble men and heroic women have contributed their time and means and selves in order to be helpful, to lighten the loads of others less fortunate, to make easier the way, to render opportunity more accessible to all.

"Our schools, our hospitals, our churches; yes, our Government itself, all bear the indelible imprint of hearts and minds—yes; lives—dedicated to helpfulness, not alone to the children of this day but to all of the children of all the to-morrows.

"Tom Brown doffed his cap as he stood at the grave of his beloved teacher, Doctor Arnold, of Rugby. A flood of memories of school days came rushing back and of how his dear old beloved teacher had put of himself in his effort to help his boys.

"Sir Christopher Wrenn was the architect of St. Paul's Cathedral in London; he put of himself in his work, and how fitting the epitaph you find over the entrance of his masterpiece: 'If you seek his monument look about you.'

"So, too, this wonderful stadium is an enduring monument, first, to those dauntless pioneers who conceived and dared to undertake; to those who persisted amidst a multitude of discouragements; to the Anseo Co. for its unselfish contributions; to Frank Walters and Roy Barnes for willingly and cheerfully assisting in directing the efforts of a multitude of earnest, enthusiastic souls; but most of all to your Mr. George F. Johnson, a kindred soul with a kindly heart, who understood the yearnings of these young people.

"Christened in the laboratory of honest toil.

"Tried and not found wanting in the crucible of competition. "No helpful effort in this community seems to escape your observation or fails to enlist your hearty and thoughtful cooperation.

"Helpfulness is your watchword, as it should be ours.