

Y 3. C71/2: 2 / M 66/V. 1 / DOC

Colorado River
Compact negotiations
Part 1

missing
16
17

1-152

**MINUTES AND RECORD
OF THE
FIRST EIGHTEEN SESSIONS
OF THE
COLORADO RIVER COMMISSION
NEGOTIATING THE
COLORADO RIVER COMPACT OF 1922**

LIBRARY
Colorado State University
Fort Collins, Colorado 80526

EXPLANATION OF INDEX

The page numbers appearing in the Index which follows are identical with those shown on the photostatic reproduction of minutes, from which this mimeographed copy was prepared. It will be noted, however, that there are three series of page numbers as follows:

Pages 1 to 152, inclusive (see first and second pages of Index)

Pages 1 to 209, inclusive (see second, third and fourth pages of Index)

Pages 1 to 172, inclusive (see fourth and fifth pages of Index)



018401 9508227

MINUTES AND RECORD OF COLORADO RIVER COMMISSION

** LOG OF TOPICS **

	PAGE
Session No. 1 — Jan. 26, 1922	1
Purpose of meeting	1
Roster of Attendance	1-2
Opening Statement by Herbert Hoover, Secretary of Commerce	2-4
Selection of Hoover as permanent Chairman of Commission	4
Credentials of various states' commissioners	4-14
Statement, Delph E. Carpenter, Colorado Commissioner	15-17
Statement, James E. Scrugham, Nevada State Engineer	19
Statement, Hon. Stephen B. Davis Jr., New Mexico Commissioner	19-20
Statement, W. S. Norviel, Arizona State Water Commissioner	20
Statement, R. E. Caldwell, Utah State Engineer	21
Statement, W. F. McClure, California State Engineer	22
Statement, Frank C. Emerson, Wyoming State Engineer	23-27
Statement, Arthur P. Davis, Director and Chief Engineer of the Reclamation Service	28-33
Comments and questions on Davis' statement	33-39
Statement, O. C. Merrill, Executive Secretary, Federal Power Commission	39-40
Statement, Maj. Gen. Lansing H. Beach, Chief of Engineers, United States War Department	40-41
Comments and questions on Beach statement	41-44
Statement, N. C. Grover, Chief Hydraulic Engineer, Geological Survey	45
Motion to appoint commission committees (carried)	46-47
Additional statement and proposal by W. S. Norviel	49-50
Session No. 2 — Jan. 27, 1922 (2:30 p.m.)	55
Statement, Sen. Key Pittman of Nevada	55-57
Statement, Rep. Swing of California	58
Statement, Rep. Samuel S. Arentz of Nevada	60
Statement, Rep. Henry Z. Osborne of California	61
Session No. 3 — Jan. 27, 1922 (4 p.m.)	63
Session No. 4 — Jan. 28, 1922 (10 a.m.)	64
W. B. Mathews telegram	64-65
Session No. 5 — Jan. 28, 1922 (3 p.m.)	67
Davis-Carpenter instructed to prepare report on legal claims against waters of Colorado River	67
Ottamer Hamele, of Reclamation Service, requested to report on setting up permanent board of control	67-68
Session No. 6 — Jan. 30, 1922 (10 a.m.)	69
Table A — Estimates of areas and water requirements	69-70
Table B — Water Requirements for New Acres	71
Table C — Water Requirements for Cultivated Acres	72
Discussion and comments on tables and figures	73-76
Revised Table B	77
Revised Table C	78
Davis Formula as basis for Agreement	79-80
Davis Formula not approved	81
Chairman's proposition to vest full authority in Colorado River Commission	81
Chairman's proposal fails to get unanimous approval	81

missing
16-17

Log of Topics - Continued

PAGE

George Otis Smith letter re gaging summaries	82
Map, Colorado River Drainage Basin	83
Drainage statistics, Colorado River drainage basin	84-89
Green River at Green River, Wyoming	84
Green River near Bridgeport, Utah	84
Yampa River near Maybell, Colorado	85
Duchesne River at Myton, Utah	85
Uinta River at Fort Duchesne	85
Green River at Green River, Utah	86
San Rafael River near Green River, Utah	86
Grand River near Moat and Cisco, Utah	87
Grand River near Fruita, Colorado	87
San Juan River at Farmington, N. Mexico	87
Animas River at Farmington, N. Mexico	87
San Juan River near Bluff, Utah	88
Little Colorado River near Holbrook, Arizona	88
Virgin River at Virgin, Utah	88
Colorado River near Topock, Arizona	88
Colorado River at Yuma, Arizona	89
Gila River at Guthrie, Arizona	89
San Francisco River at Clifton Arizona	89
Annual Runoffs, Principal Gaging Stations in Colorado River Basin	90
Session No. 7 — Jan. 30, 1922 (2:30 p.m.)	91
Hoover draft of constructive plan in general terms	95
Comments and discussion	96
Carpenter proposal for general position for compact	105
Comments and discussion	113
McClure Proposal re Early Construction	125
Norviel Proposal re Development Limitations	127
Comments and Discussion	129
Motion to adopt Norviel proposal	133
Motion lost 4-3 on roll call	133
Hoover revision of Development Limitations proposal	134
Wyoming's position re Early Construction	135
Comments and Discussion	137
Hoover analysis of conference progress, differences	141
Comments and discussion	141
Motion to adjourn to earliest possible date	152
Motion to adjourn (carried)	152

Note: Page Numbers again start at No. 1

Session No. 8 — March 15, 1922	1
Roster of Attendance	1
Schedule of Hearings	1-2
Merrill letter re Dam at Diamond Creek	2

Log of Topics - Continued

PAGE

Session No. 9 — April 1, 1922	5
Roster of Attendance	5
Resolution for transcript of records of previous hearings (adopted)	5
Resolution calling for suggested forms of compact (adopted)	5
Resolution approving previous minutes (adopted)	6
Postponement of acting re Dam at Diamond Creek	6
Session No. 10 — Nov. 9, 1922	7
Roster of Attendance	7
Resolution to recess, to await late arrivals (adopted)	7
Resolution inviting Governors to attend executive sessions (adopted)	7
Resolution for legal and engineering advisors (adopted)	7
Resolution re Davis and Hamele attendance (adopted)	8
Resolution re poll on states' briefs and statements (adopted)	8
Resolution re reception of states' statements (adopted)	8
Session No. 11 -- Nov. 11, 1922	9
Roster of Attendance	9
Consideration of Methods of Procedure	11
Arizona Recommendations on Procedure	12-17
Comments and Discussion	18
California, no recommendations	20
Colorado Recommendations on Procedure	20-28
Comments and discussion	29
New Mexico, no recommendations	31-32
Nevada, no recommendations	32
Caldwell comments, recommendations	32-36
Comments and discussion	36
Carpenter analysis of compact needs	45
Abandonment of discussion of states' water apportionments	54
Discussion of diversion between groups of states	54
G. H. Hoodenpyl recommendations re compact	63-64
Comments and discussion	64-70
Session No. 12 — Nov. 12, 1922	71
Roster of Attendance	71
Continued discussion re diversion between groups of states	71
Roll call favoring establishing division between upper and lower states	93
Session No. 13 - Nov. 13, 1922 (10 a.m.)	95
Roster of Attendance	95
Arizona Acceptance of group of states diversion principle	96
Division point at Lee's Ferry, including the Paria	110
Discussion of averaging stream flow	110
Norviel statement on diversion possibilities	131
Discussion and comment	139

Log of Topics -- Continued

PAGE

Session No. 14 -- Nov. 13, 1922 (3 p.m.)	147
Roster of Attendance	147
Maxwell communication (National Reclamation Association)	148-151
Motion to admit L. Ward Bannister to meetings (carried)	152
Discussion of time limit on compact revisions	152-209

Note: Page Numbers again start at No. 1

Session No. 15 -- Nov. 14, 1922 (10 a.m.)	1
Roster of Attendance	1
Motion to admit A. J. McCune to meetings (carried)	2
Hoover summary of arguments to date	2
Motion for 5 million acre feet flow yearly past Lee's Ferry	33
Amendment for 4 million, 500 thousand acre feet (not accepted)	33
Roll call on original Scrugham motion (lost)	34-35
Scrugham modification to 4 million, 500 thousand acre feet	35
Roll call on modified minimum flow	37-40
McClure motion for 4 million acre feet minimum	40
Roll call on McClure motion	41
Norviel motion to set five-year study period	44
Roll call on five-year period (lost)	45
Carpenter motion for ten-year period	47
Call for approximation of flow at Lee's Ferry	56
Session No. 16 -- Nov. 14, 1922 (3 p.m.)	58
Roster of Attendance	58
Davis Report on Flow at Lee's Ferry	74
Hoover recap on figures on Lee's Ferry Flow	82
Hoover offer to consolidate views of north-south groups	87
Session No. 17 -- Nov. 15, 1922	89
Roster of Attendance	89
Davis statement for northern group states	90
Comments, Norviel, McClure, Davis	94-99
Recap on minimum flow, 5-year basis	101
Discussion and questions	102
Session No. 18 -- Nov. 16, 1922	114
Roster of Attendance	114
Hoover Report on Rough Principles of Agreement	115
Motion to adopt paragraph defining Colorado River Basin area in the United States (carried)	116
Motion to adopt paragraph setting basin division at point immediately below mouth of Paria (carried)	117
Introduction of paragraph providing for creation of new commission	118
Motion to adopt paragraph as revised (carried)	122-123
Introduction of paragraph defining priority on water rights and uses	123
Motion to adopt paragraph, subject to revision in final pact (carried)	135
Introduction of paragraph setting up to 7,500,000 acre feet annually for each division	136
Motion to adopt paragraph for 7,500,000 acre feet (carried)	137-138
Introduction of paragraph on establishing rights to beneficial use after expiration of period	138-139
Motion to adopt paragraph as revised (carried)	140

MINUTES AND RECORD OF COLORADO RIVER COMMISSION

-- LOG OF MEETINGS --

<u>Session No.</u>	<u>Date</u>	<u>Place</u>	<u>Page</u>
1	Jan. 26, 1922	Department of Commerce Washington, D. C.	1
2	Jan. 27, 1922	Department of Commerce Washington, D. C.	55
3	Jan. 27, 1922	Department of Commerce Washington, D. C.	63
4	Jan. 28, 1922	Department of Commerce Washington, D. C.	64
5	Jan. 28, 1922	Department of Commerce Washington, D. C.	67
6	Jan. 30, 1922	Department of Commerce Washington, D. C.	69
7	Jan. 30, 1922	Department of Commerce Washington, D. C.	91

Note: Page Numbers again start at No. 1

8	March 15, 1922	Federal Building Phoenix, Arizona	1
9	April 1, 1922	Brown Palace Hotel Denver, Colorado	5
10	Nov. 9, 1922	Bishop's Lodge Santa Fe, N. Mex.	7
11	Nov. 11, 1922	Bishop's Lodge Santa Fe, N. Mex.	9
12	Nov. 12, 1922	Bishop's Lodge Santa Fe, N. Mex.	71
13	Nov. 13, 1922	Bishop's Lodge Santa Fe, N. Mex.	95
14	Nov. 14, 1922	Bishop's Lodge Santa Fe, N. Mex.	147

Log of Meetings - Continued

Note: Page Numbers again start at No. 1

15	Nov. 14, 1922	Bishop's Lodge Santa Fe, N. Mex.	1
16	Nov. 14, 1922	Bishop's Lodge Santa Fe, N. Mex.	58
17	Nov. 15, 1922	Bishop's Lodge Santa Fe, N. Mex.	89
18	Nov. 16, 1922	Bishop's Lodge Santa Fe, N. Mex.	114

FOREWORD

This is a mimeographed reproduction of the minutes of eighteen meetings or sessions of the Commission which negotiated the Colorado River Compact. The Compact was signed in Santa Fe, New Mexico, on the 24th day of November, 1922. Subsequently it was ratified by all of the seven Colorado River Basin States and, in 1928, approved by the Congress of the United States.

There were in all twenty-seven sessions held by the Commission as follows:

First to Seventh, Washington, D. C., January 26-30, 1922;
Eighth, Phoenix, Arizona, March 15, 1922; Ninth, Denver, Colorado
April 1, 1922; Tenth to Twenty-seventh, Bishop's Lodge, Santa Fe,
New Mexico, November 9-24, 1922.

The minutes of the first eighteen sessions are included in this volume. Those for the Nineteenth to the Twenty-seventh sessions, inclusive, are not now available.

This mimeographed reproduction was prepared from a photostatic copy of the minutes supplied by the Bureau of Reclamation, Department of the Interior. A note from the Bureau of Reclamation concerning these photostatic copies, from which this mimeographed copy was prepared, states:

"NOTE:

"Data on the preceding image indicates that there were a total of twenty-seven (27) meetings of the Commission. This record concludes with the minutes of the eighteenth (18) meeting.

"Correspondence and search conducted in 1940 and 1941 failed to result in the location of the original minutes of the Commission or of another copy of the minutes which would permit the completion of the record.

Bureau of Reclamation"

This mimeographed copy is as nearly an exact reproduction of the above mentioned photostatic copy as possible and sets forth on each mimeograph page only the material which appears on the corresponding photostatic page,

including all corrections and insertions. Each page has been carefully read and compared with the original photostatic copy. The page numbers are those shown on the photostats, and it will be noted that there are three series of page numbers as follows:

Pages 1 to 152, inclusive (see first and second pages
of Index)
Pages 1 to 209, inclusive (see second, third and fourth
pages of Index)
Pages 1 to 172, inclusive (see fourth and fifth pages
of Index)

It will be observed that the note from the Bureau of Reclamation, above quoted, states that "correspondence and search conducted in 1940 and 1941 failed to result in the location of the original minutes of the Commission....."

A letter, dated May 3, 1948, from the National Archives, Washington D. C., states:

"This is in reply to your letter of April 12 requesting information as to the location of the original minutes of the Colorado River Compact Commission.

"We have searched the records of the Reclamation Bureau, the National Resources Planning Board, and the Department of Commerce, which are in the National Archives, and have been unable to find these minutes. The Weather Bureau, the Geological Survey, and the Department of Commerce have had searches made among records retained by them and have likewise been unable to find the minutes *** "

In recent years inquiry and search made by various persons for the original or a copy of all of the minutes of the Colorado River Compact Commission have failed to bear results. Such search has extended to available files of some of the compact commissioners.

The appendix contained in the book entitled "Colorado River Basin - The Colorado River Compact", by Reuel Leslie Olson, under the heading "Bibliography", Page 503, contains a copy of a letter from S. B. Davis, then Acting Secretary of Commerce, dated October 16, 1924, which reads:

Department of Commerce
Office of the Secretary
Washington

"Mr. R. L. Olson
Cambridge, Mass.
Dear Sir:

October 16, 1924

The minutes of the various meetings of the Colorado River Commission have not been completely edited or arranged, but they are all of them available here and you may have access to them at any time that you desire.

Very truly yours,
(Signed) S. B. Davis
Acting Secretary of Commerce"

It is observed that Mr. Olson quotes from minutes of the Colorado River Compact Commission sessions later than the eighteenth. All, or at least a considerable part, of these minutes which now appear to be unavailable must have been reviewed by him between October 1924, when the S. B. Davis letter was written, and September 1926, when his book was published. However, recent inquiry has failed to reveal any further information respecting his study of these minutes or concerning the location, extent and condition in which he found them.

.....

CSU -3015
Fred Schmidt
Documents Lib.

Date sent

10/10
NOV 10 '00

DUE

Mesa State College Library

10/06/2000 2:42 PM

Full Record

http://www.marmot.org:1096/cgi-bin/marc.cgi?fullRecord+S327+108+766038+1+1

PLEASE RETURN THIS
FORM WITH BOOK

MESA

STATE

Tomlinson Library

MESA STATE COLLEGE

[Back to Title List](#)

**PERSONAL LIST
MANAGER**

[Add this record to list](#)

[Review Search History](#)

[Save record\(s\) to disk](#)

[Email record\(s\)](#)

[Request item from
interlibrary loan](#)

[Display print version](#)

Database: Mesa State College

Search type: Title Browse

Search was: minutes and record of the colorado river
comm

[Next](#)

Corporate Author Colorado River Commission.
Title Minutes and record ... of the Colorado River Commission
negotiating the Colorado River Compact of 1922.
Publisher [S.L.] : The Commission. [1922?]
Description 2 v. : 28 cm.
Notes Cover title.
Contents [1] First eighteen sessions -- [2] Sessions nineteen thru
twenty seven.
Subjects Colorado River Commission.
Colorado River Compact Commission.
Water rights Colorado River (Colorado-Mexico)
Colorado River (Colorado-Mexico)

Full Status

Branch	Location	Date	Call Number	Status
Special Collections		07/18/92	HD1695.C7 C65 v.1	Library use only On
Special Collections		07/18/92	HD1695.C7 C65 v.2	Library use only On

[Next](#)

Vote on paragraph leaving whole remaining flow of basin for future determination (carried)	146
Introduction of paragraph defining responsibility of both basins in providing Mexico's share of Colorado River water	146
Vote on paragraph as revised (carried)	146
Introduction of paragraph on establishment of technical commission to collect data	147
Vote on paragraph as revised (carried)	149
Introduction of paragraph relating to diversions or storage between states	150
Motion to adopt paragraph as revised	164
Motion to establish 50-year period	166
Amendment for 40-year period	166
Motion for period to extend to June 30, 1963	167
Withdrawal of original motion for 50-year period (lost)	167
Vote on renewed proposal for 50-year period	168
Motion to consider date between June 30, 1963 and June 30, 1973 to be determined by chair and accepted by members of commission	168
Setting of June 30, 1868 as accepted date (45 years)	170
Motion to adopt June 30 as beginning date for 10-year calculations (carried)	170-171
Motion to appoint drafting committee (carried)	171
Appointment of drafting committee	171
Motion to include chairman as ex-officio member of committee (carried)	172

MINUTES AND RECORD OF THE
FIRST MEETING
COLORADO RIVER COMMISSION

In compliance with an act of Congress (H.R. 6877) 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, the Colorado River Commission, composed of representatives of the above enumerated states and a representative of the United States, met at the United States Department of Commerce, Washington, D. C. Thursday, January 26th, 1922, at 10:00 o'clock a.m.

There were present:

FEDERAL REPRESENTATIVE: The Honorable Herbert Hoover,
Secretary of Commerce

STATE REPRESENTATIVES:

ARIZONA.	Mr. W. S. Norviel, State Water Commissioner, Phoenix, Arizona
CALIFORNIA.	Mr. W. F. McClure, State Engineer Department of Public Works, Sacramento, Calif.
COLORADO.	Mr. Delph E. Carpenter, Commissioner for Colorado on Colorado River Comm., Greeley, Colorado
NEVADA.	Col. James G. Scrugham, State Engineer Carson City, Nevada
NEW MEXICO.	Hon. Stephen B. Davis, Jr., Commissioner for New Mexico on Colorado River Com- mission, Las Vegas, N. M.

UTAH. Mr. R. E. Caldwell, State Engineer,
Salt Lake City, Utah

WYOMING. Mr. Frank C. Emerson, State Engineer,
Cheyenne, Wyoming

Secretary Hoover: I am glad to have the honor of welcoming the Commissioners to Washington for the initial meeting of the Commission, and I consider it a great honor to have been chosen by the President, upon the recommendation of Secretary Fall, to represent the Federal Government in so great an undertaking.

This Commission has been established primarily to consider and if possible to agree upon a compact between the seven states of the Colorado Basin, providing for an equitable division of the water supply of the Colorado River and its tributaries amongst the seven states. Such a compact is subject to ratification by Congress and the Legislatures of the various states.

It is hoped that such an agreement may be arrived at by this Commission as will prevent endless litigation which will inevitably arise in the conflict of state rights, with delays and costs that will be imposed upon our citizens through such conflicts. The success of its efforts will contribute to the welfare of millions of people.

The problem is not as simple as might appear on the surface for while there is possibly ample water in the river for all purposes if adequate storage be undertaken, there is not a sufficient supply of water to meet all claims unless there is some definite program of water conservation. The Commission will, therefore, inevitably be driven into the consideration of a program looking further than the immediate legalistic relationship of the states if it is to find a solution to the problem.

The Federal Government is interested through its control of navigation, through protection of its treaty obligations, through development of national irrigation projects and through virtual control of power development depending upon the use of public lands.

The sole object of the Federal Government is to secure development of the river in the interest of all.

The problems before the Commission are not to be solved in a day. There are many interests to be considered and there is much to be heard from different factions of the community whose welfare is at stake. These problems have been under intense study by both state and national authorities for many years. There seems to be almost unanimity that the river should be considered as a whole, that its resources should be developed so as to give the greatest benefits to the nation.

It is fortunate that there is little established right on the river and that we have almost a clean sheet with which to begin our efforts. The importance of the river cannot be overestimated as a national asset. To-day there are some 2 1/2 million acres under irrigation in the drainage basin. With proper development this can be increased to over six million acres. There can be developed on the river over five million horsepower, and with rapid strides in transmission this enormous reserve of power will yet harness an enormous asset to the nation.

Populations depending upon the lower river are in extreme jeopardy through the violations of the river floods and the control of its flood flow has become vital to their very existence.

This Conference is unique in its attempt to determine states' rights over so large an area by amiable agreement. Indeed it has wider proportions than this in its realization of common interest, need of joint consideration, etc. in order that the greatest possible benefits may be derived for the whole of our people from one of the most precious possessions of our country.

Mr. Carpenter. Mr. Secretary, it affords me pleasure to nominate Secretary Hoover as permanent chairman of this Commission.

Mr. McClure. I second the motion.

Mr. Scrugham. It has been moved and seconded that Secretary Hoover be the permanent Chairman of this Commission. All in favor say "aye". ** The motion is carried.

Secretary Hoover (Chairman). As a matter of formality it might be proper to record the credentials of the various Commissioners.

I have here the following documents from the Governor of Arizona, Hon. Thomas E. Campbell: (reading)

EXECUTIVE OFFICE
State House
Phoenix, Arizona
January 21, 1922.

My dear Secretary Hoover:

In compliance with the suggestion contained in your wire of the 19th instant concerning the organization of the Colorado River Commission, formal notification is hereby given you that acting under the provisions of Chapter 46, Session Laws of 1921, approved by me on March 5th, 1921, and which became in full force and effect on that date, I notified the Governors of the states of California, Colorado, Nevada, New Mexico, Utah and Wyoming by telegraph of the appointment of W. S. Norviel, State Water Commissioner to represent the State of Arizona, provided for by this Act. There is attached to this letter copy of my telegram to the Governors of the states named, together with copy of my letter notifying the State Water Commissioner of his appointment and copies of formal notification to the Secretary of State and the State Auditor of Arizona.

You are further advised that I am in receipt of notifications from the Governors of California, Colorado, Nevada, New Mexico, Utah and Wyoming of the appointment by them of representatives on the joint Commission referred to. Copies of these official notifications are attached to and made a part of this letter.

In compliance with the provisions of the acts of Colorado and New Mexico to the effect that I shall notify the Governors of all interested states of the appointment and qualifications of all members of the Commission, I beg to advise you that I have today addressed and mailed in the United States Postoffice by registered mail, the following letter to the Governors of California, Colorado, Nevada, New Mexico, Utah and Wyoming:

"January 21, 1922.

"My dear Governor:

In order that the representatives of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming appointed as members of the Colorado River Commission may be fully qualified and the Commission may experience no delay in its organization at the meeting to be held at Washington, D. C., on the 26th instant, and in order to comply with the requirements of the acts of Colorado and New Mexico, providing for such representation and for notification of you by me to this effect, I am hereby formally notifying you that representatives have been appointed by the Governors of each of the seven states named and that they have qualified as such representatives. In detail these appointments have been made as follows:

On May 23, 1921, Governor Wm. D. Stephens appointed Mr. W. F. McClure, State Engineer, as Commissioner to represent the State of California;

On May 9, 1921, Governor O. H. Shoup of Colorado, pursuant to Chapter 246, Session Laws of Colorado 1921, appointed Delph E. Carpenter as Commissioner for Colorado to negotiate a compact between the State of Colorado and the United States Government and the other Colorado River states mentioned in Section one of said act. His commission was delivered and he duly qualified as said Commissioner on the date named;

Governor Boyle of Nevada has appointed C. P. Squires and Levi Syphus as members of the Colorado River Development Commission of Nevada, Colonel James G. Scrugham, State Engineer of Nevada is designated as a member of that Commission by the Nevada Law. The Colorado River Development Commission of Nevada has duly organized and has empowered James G. Scrugham to represent the State of Nevada on the joint Commission referred to;

On May 16, 1921, Governor M. C. Mechem of New Mexico notified me that he had appointed S. B. Davis, Jr. of East Las Vegas, New Mexico, to represent that State on the joint Commission;

Mr. R. E. Caldwell, State Engineer of the State of Utah has been appointed to represent Utah on the joint Commission referred to;

On May 9, 1921, Governor Robert D. Carey of Wyoming appointed Mr. F. C. Emerson, State Engineer, as Commissioner to represent that State on the Joint Commission;

Formal notification is hereby given you that, acting in compliance with the provisions of Chapter 46, Session Laws of 1921, I appointed Mr. W. S. Norviel, State Water Commissioner, on March 23, 1921, to be the representative of the State of Arizona on a joint Commission to be composed of a representative of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and a duly authorized representative of the United States of America, such Commission to be constituted for the purpose of negotiating and entering into a compact or agreement between the said States, and between said States and the United States, with the consent of Congress, respecting the further utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said States and the rights of the United States in and to the use and disposition of the waters of said stream and the benefits to be derived therefrom. His commission has been duly issued and he has qualified under the provisions of said enactment as said representative.

Further evidence of each and every one of these appointments is hereby submitted in the attached copies of letters and telegrams from the Governors of California, Colorado, Nevada, New Mexico and Wyoming, and copy of letter from Lamar Nelson, Secretary to the Governor of Utah, also copy of my letter to the Secretary of State, dated March 23, 1921.

Sincerely yours,

(GREAT SEAL)

THOMAS E. CAMPBELL

Attest:
Ernest R. Hall,
Secretary of State.

Governor of Arizona.

To:

Governor Wm. D. Stephens,
Sacramento, California.

Governor O. H. Shoup,
Denver, Colorado.

Governor Emmett D. Boyle,
Carson City, Nevada.

Governor M. C. Mechem,
Santa Fe, New Mexico.

Governor Chas. R. Mabey,
Salt Lake City, Utah.

Governor Robert D. Carey,
Cheyenne, Wyoming."

Trusting that you will find the foregoing to be in proper form
and in accordance with the requirements of the statutes of the
several states interested, I remain

Sincerely yours,

(GREAT SEAL)

THOMAS E. CAMPBELL

Governor of Arizona.

Attest:

Ernest R. Hall,
Secretary of State.

Hon. Herbert Hoover,
Washington, D. C.

COPY OF TELEGRAM

March 5, 1921.

Gov. Wm. D. Stephens, Sacramento, California.
Gov. Oliver H. Shoup, Denver, Colorado.
Gov. Emmet D. Boyle, Carson City, Nevada.
Gov. Merritt C. Mechem, Albuquerque, New Mexico.
Gov. Chas. R. Mabey, Salt Lake City, Utah.
Gov. Robert D. Carey, Cheyenne, Wyoming

Under terms of Senate Bill Sixty-Four signed by me
today and now a law State Water Commissioner W. S. Norviel
becomes representative on behalf State of Arizona on
Colorado River Commission.

Thomas E. Campbell
Governor.

Send Paid---Charge to Gov. Office.

EXECUTIVE OFFICE
PHOENIX ARIZONA

COPY

March 23, 1921.

My dear Mr. Hall:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64 passed by the Fifth State Legislature of Arizona, I have today appointed W. S. Norviel to represent the State of Arizona on the joint Commission to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona, and a duly authorized representative of the United States to negotiate and enter into a compact between said states and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Sincerely yours,

Thomas E. Campbell

Governor.

Hon. Ernest R. Hall,
Secretary of State,
Phoenix, Arizona

COPY

March 23, 1921.

My dear Mr. Fairfield:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64, passed by the Fifth State Legislature of Arizona, I have today appointed W. S. Norviel to represent the State of Arizona on the joint commission to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona and a duly authorized representative of the United States, to negotiate and enter into a compact between said states, and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Sincerely yours,

Thomas E. Campbell

Governor.

Hon. Chas W. Fairfield,
State Auditor,
Phoenix, Arizona

COPY

March 23, 1921.

My dear Mr. Norviel:

Formal notification is herewith given you that acting under the authority vested in me by Senate Bill No. 64, passed by the Fifth State Legislature of Arizona, I have today appointed you as Colorado River Basin Commissioner, to represent the State of Arizona on the joint commission, to be composed of representatives of the states of California, Colorado, Nevada, New Mexico, Utah, Wyoming and Arizona, and a duly authorized representative of the United States, to negotiate and enter into a compact between said states, and between said states and the United States, with the consent of Congress, respecting utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said states and the rights of the United States in and to the use and disposition of the waters of said streams.

Due notification has been given the Secretary of State and the State Auditor of your appointment, effective this date.

Sincerely yours

Thomas E. Campbell

Governor.

Mr. W. S. Norviel,
State Capitol.

THE STATE OF WYOMING

EXECUTIVE DEPARTMENT

Robert D. Carey
Governor
Bertram W. Bennett
Secretary

CHEYENNE

Governor's office
RECEIVED
May 12, 1921
Phoenix, Ariz.

May 9, 1921.

Hon. Thomas E. Campbell,
Governor of Arizona,
Phoenix, Arizona

My dear Governor Campbell:

This is to advise you that in accordance with Chapter 120 of the Session Laws of 1921, State of Wyoming, I have today appointed Mr. F. C. Emerson, State Engineer, as Commissioner to represent the State of Wyoming on the Joint Commission to be composed of commissioners from the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and two duly authorized representatives of the United States of America, such commission to be organized for the purpose of

negotiating and entering into an agreement between the said states and the United States respecting the future possession and disposition of the waters of the Colorado River and streams tributary thereto.

As under the provisions of this act the commissioner representing this state is not permitted to enter upon the performance of his duties until such time as representatives have been appointed by the other states named above, I would appreciate it if you would advise me as soon as possible as to whether or not the commissioner for your State has been appointed.

Very truly yours,

STATE OF UTAH

(Signed) Robert D. Caroy.

EXECUTIVE OFFICE

Governor's office

SALT LAKE CITY

RECEIVED

May 14, 1921

Phoenix, Ariz.

May 11, 1921.

His Excellency, Thos. E. Campbell,
Governor of Arizona,
Phoenix, Arizona.

My dear Governor:-

Mr. R. E. Caldwell, State Engineer, has been appointed to represent Utah on the Joint Commission to be composed of commissioners from the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and two duly authorized representatives of the United States of America, such commission to be organized for the purpose of negotiating and entering into an agreement between the said states and the United States respecting the future possession and disposition of the waters of the Colorado River and the streams tributary thereto.

Very truly yours,

(Signed) Lamar Nelson

Secretary to the Governor.

STATE OF NEW MEXICO
M. C. Mechem, Governor

SANTA FE

Governor's office
RECEIVED
May 18, 1921
Phoenix, Ariz.

May 16, 1921.

Hon. Thomas E. Campbell,
Governor of Arizona,
Phoenix, Arizona.

My dear Governor:

I beg to advise you that in accordance with **House Bill No. 182** "An Act providing for the appointment of a Commissioner on behalf of the State of New Mexico to negotiate a compact and agreement between the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and between said States and the United States respecting the use and distribution of the waters of the Colorado river and the rights of said states and the United States thereto," approved March 11, 1921, I have appointed S. B. Davis, Jr. of East Las Vegas, New Mexico, as Commissioner to represent the State of New Mexico in all negotiations provided for under said act.

Sincerely yours,

(Signed) M. C. Mechem

Governor of New Mexico

STATE OF CALIFORNIA

Governor's Office

SACRAMENTO

Governor's office
RECEIVED
May 26, 1921
Phoenix, Arizona.

May 23, 1921.

Hon. Thomas E. Campbell,
Governor of Arizona,
Phoenix, Arizona.

My Dear Governor:

I beg to advise you that in accordance with **Senate Bill 893**, "An act authorizing the governor of California to appoint a representative of the State of California to serve upon a joint commission composed of representatives of the states of Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming and the United States of America, and constituted for the purpose of negotiating and entering

into an agreement between the several states hereinabove mentioned and between said states and the United States of America, subject to the consent of congress, respecting further use and disposition of the waters of the Colorado river and streams tributary thereto, and fixing and determining the rights of each of said states and rights of the United States in and to the use, benefit and disposition of the waters of said stream and its tributaries," approved May 12, 1921, I have appointed Mr. W. F. McClure, State Engineer, of Sacramento, California, as Commissioner to represent the State of California in all negotiations provided for under said act.

Yours truly,

(Signed) Wm. D. Stephens,
Governor.

STATE OF CALIFORNIA

GOVERNOR'S OFFICE

Governor's office
RECEIVED

Sept. 3, 1921
Phoenix, Ariz.

August 31, 1921.

Hon. Thomas E. Campbell;
Governor of Arizona,
Phoenix, Arizona.

My dear Governor:-

Pursuant to the provisions of Chapter 88, Statutes of 1921, of the Legislature of California, I have appointed Mr. W. F. McClure, Forum Buildings, Sacramento, California, who is the State Engineer, to be the representative of the State of California on a joint commission composed of one representative from each of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and two duly authorized representatives of the United States of America, the principal duty of which commission shall be to negotiate and enter into an agreement between the several states herein mentioned and between the said states and the United States of America, subject to the consent of congress, respecting the further use and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of each of said states and the rights of the United States in and to the use, benefit, and disposition of the waters of the Colorado River and its tributaries.

I am directed in this act to notify the Governor of each of the above mentioned states of the appointment of said representative of California, giving his name and address.

It is provided that said representative shall not enter upon the performance of his duties until a representative, to serve upon said commission, shall have been named and qualified for each of the states named.

I enclose copy of the act passed by the Legislature and approved by the Governor.

Yours very truly,

(Signed) Wm. D. Stephens

Governor.

WESTERN UNION

TELEGRAM

Governor's Office

RECEIVED

Jan. 20, 1922

Phoenix, Ariz.

1922 Jan 19 PM 9 09

B294GS NL 1 EXTRA 1/66

CARSON NEV 19

Hon. Thomas E. Campbell

Governor of Arizona, Phoenix Ariz.

In accordance with Chapter One Hundred Fifteen Statutes of Nevada Nineteen Twenty One I have appointed C. P. Squires and Levi Syphus as members of the Colorado River Development Commission of Nevada stop James G. Scrugham State Engineer is designated as member by the law stop the commission has duly organized and has empowered James G. Scrugham to represent the State of Nevada in interstate and other conferences and to negotiate with the representatives of other States and of the United States pursuant and subject to the provisions of said Chapter One Hundred Fifteen stop

EMMET D. BOYLE

GOVERNOR

WESTERN UNION

TELEGRAM

Governor's Office

RECEIVED

Jan. 20, 1922.

Phoenix, Arizona.

1922 JAN 20 PM 4 41

A205S 81 BLUE 3 EXTRA

AU DENVER COLO 340P 20

Hon. Thomas E. Campbell

382

Gov. of Ariz., Phoenix Ariz.

You are hereby notified that pursuant to Chapter Two Hundred Forty Six Session Laws of Colorado Nineteen Twenty One on May Ninth Nineteen Twenty One Delph E. Carpenter of Greeley Colorado was duly appointed commissioner for Colo. there under to negotiate a compact between Colo and the United States and the other Colorado River States mentioned in section one of said act and that his commission was delivered and he duly qualified as said commissioner on the said date.

O. H. SHOUP

GOVERNOR OF COLORADO.

EXECUTIVE OFFICE

State House

Phoenix, Arizona

January 21, 1922.

To Whom These Presents May Come, GREETINGS:

The bearer of this letter, Hon. W. S. Norviel, State Water Commissioner of Arizona, was on March 23rd, 1921, appointed by me representative of the State of Arizona on a joint Commission to be composed of a representative of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, and a duly authorized representative of the United States of America, such Commission to be constituted for the purpose of negotiating and entering into a compact or agreement between the said States, and between said States and the United States, with the consent of Congress, respecting the further utilization and disposition of the waters of the Colorado River and streams tributary thereto, and fixing and determining the rights of the said States and the rights of the United States in and to the use and disposition of the waters of said stream and the benefits to be derived therefrom. Mr. Norviel's commission has been duly issued and he has qualified under the provisions of said enactment as said representative.

Sincerely yours,

THOMAS E. CAMPBELL

Governor of Arizona.

(Great Seal)

Attest:

ERNEST R. HALL

Secretary of State.

Secretary Hoover (Chairman). I think it would be desirable for us to hear from each of the Commissioners as to their views upon the problems before the Commission. I have the feeling that inasmuch as Mr. Carpenter has had a great deal to do with the foundation of this Commission, that we should hear from him first as to the basis on which he considers our work could most expeditiously proceed.

STATEMENT OF MR. DELPH E. CARPENTER, COMMISSIONER
FOR COLORADO ON COLORADO RIVER COMMISSION.

Mr. Carpenter: Mr. Chairman, and gentlemen, it would be impossible, probably inadvisable, for me at this time to go to any length into the details respecting the various phases that may be developed as this Commission proceeds. As you well observed in your opening address the prime object of the creation of this Commission was to avoid future litigation among the states interested in the Colorado River and the utilization of the benefits to be obtained from its water supply.

In order that due credit may be given, it gives me pleasure to say that Mr. Gillette, former State Engineer of New Mexico, was the first to offer the Resolution calling for the creation of this Commission, before the Resolutions Committee of the League of the Southwest at the meeting held at Denver in August 1920. I assisted in the preparation of the resolution and it gives me pleasure to observe the degree of progress made. The prime object of the Commission is to settle in advance those matters which otherwise would be brought into court. States coming into collision, finding themselves at variance--frequently actuated by political motives of the parties in power within the states--proceed upon the theory of their sovereignty before the United States Supreme Court. Now it was the primary intent of those

bility of getting too far afield. On the other hand it may develop in the course of our inquiry that there is a deficiency of water in the Colorado River unless we assume adequate storage. There may be a surplus if storage is provided. Therefore the solution of the whole problem may well be contingent upon storage. If that should develop in the course of the investigation, that would seem to me to necessitate consideration of much wider issues. I also have this feeling: We have here the unique situation of the representatives of the seven states primarily interested in this great problem. You comprise the seven men who are best able to speak for the seven states as to the exclusively interstate solution of this problem; you have also the full cooperation of Mr. Arthur P. Davis of the Reclamation Service who has devoted years to this matter and who is so universally esteemed by all.

It would seem to me that it would be a great misfortune if we did not give to Congress and to the country a broad project for development of the Colorado River as a whole--that, obviously, in the nature of a suggestion of a course that might rightly develop.

This problem perhaps appeals to me to an unusual degree as it is one of the greatest development problems in America and I dislike seeing an opportunity go by for the furtherance of national development or advancement of thought upon it by limiting ourselves to a purely legalistic setting. I do not at all contest the notion that we are under limitations as to action but at the same time those very limitations may imply the consideration of wide interests. I agree with Mr. Carpenter that it is unnecessary to travel further afield in our formal work than is necessary, but our opportunity to advance national thought on what is one of the greatest assets of the United States should not be missed.

I would like to hear from Mr. Scrugham.

STATEMENT OF COLONEL JAMES G. SCRUGHAM,
STATE ENGINEER, CARSON CITY, NEVADA.

Mr. Scrugham. Mr. Secretary and Gentlemen of the Committee, the terms of the Bill authorizing this Commission are of such a character as to leave the Commission a wide field of usefulness. There is no question but that the people of the Southwest, particularly in those states which are most directly interested in the Colorado River, look to this Commission for definite recommendations for action. I think we can put that objective before us in a very clear cut manner. I concur in the suggestion of Mr. Carpenter that, if there are any delegations or individuals having particular plans or particular suggestions to offer, they should be presented first. Then we can go into executive session for consideration of the business of the Commission.

STATEMENT OF HON. STEPHEN B. DAVIS, JR., COMMISSIONER FOR NEW
MEXICO ON COLORADO RIVER COMMISSION, LAS VEGAS, N. M.

Mr. Davis. Mr. Secretary and Gentlemen; I came here with an absolutely open mind. Of course like the other Commissioners I have been working on this problem for some little time and I supposed we all have some general ideas as to how it should be handled. I can say, if we deal in generalities and decide to lay down a general plan the details of which will be worked out later, we will have a much simpler task than if we attempted to work out an entire scheme. On the other hand, if we are going to achieve completeness I suppose we have got to try the second idea. What I would very much like would be to get the facts before us as rapidly as possible, hearing from whoever may be here first and I would suggest that perhaps each state could use their maps and what documents they have and make a full

statement that can go into the record as to what the full situation of each state is. I think all of you are engineers except Mr. Carpenter and myself who are lawyers and do not know very much about engineering but we have each one an engineer with us and I would suggest that when we reach that point we proceed that way, and have the states one by one give a full statement of the situation, giving the actual figures as to their respective states, and after that is done it seems to me that we can act more wisely as to what will give the best final results.

Secretary Hoover (Chairman). We will be glad to hear from Commissioner Norviel.

STATEMENT OF MR. W. S. NORVIEL, STATE WATER COMMISSIONER,
PHOENIX, ARIZONA

Mr. Norviel. Mr. Chairman and Gentlemen: I hardly know what I should say at this time. Arizona is particularly interested in the Colorado River and its development at the earliest possible date. We have as much at stake, I presume, as any of the other states, inasmuch as we are almost wholly within the Basin of the Colorado, and we desire very much that the work laid out by this Commission proceed in a proper and orderly manner that the end may be attained as early as possible and that the river may be so developed or the beginning of the development may be at the earliest possible date, for there is a serious condition in the lower part of the river for both Arizona and California. I have a written statement. I do not know whether this is the proper time to present it or not. If it is I will be glad to submit it; if not, I will wait until a later time.

Secretary Hoover (Chairman). I am wondering if we cannot confine ourselves for the present to a consideration of a program.

Mr. Norviel. I think Mr. Carpenter's statement is a very good one in that there are those present who seem to have some statements to make; they could be heard in the early part of these sessions and then, perhaps, we could go farther and deeper into the subject, perhaps alone, at a later time. Then perhaps my statement should not be made at this time.

STATEMENT OF MR. R. E. CALDWELL, STATE ENGINEER,
SALT LAKE CITY, UTAH.

Mr. Caldwell. Mr. Chairman and Gentlemen of the Commission: Ever since my attention has been brought to this matter I have been trying to learn something about it. The thing that impresses itself upon me at this time is that it may not be just definitely settled by anything that has been enacted or anything that has been said heretofore just what the duties of this Commission may turn out to be. I would like to know myself whether this is going to be a continuing body or not; whether it should continue or not. It seems to me that it would be a very good idea if we can in the opening proceedings of our first day lay down our foundation on which this Commission is going to rest. I make that as a general statement and I do not think it is necessary to elaborate on it any farther.

We have been building, individually, a great deal on the statement that has been current and that has been generally accepted, I believe, that there is enough water in the river for all of the interests. The other aspect of it is that perhaps the duty of this Commission is to fully consider the water rights in the river and allocate on this general proposition. Just how far the allocation according to water rights will lead us into legal and other matters is a matter that will develop in the course of the hearing. I do not know that anybody should be called upon to lay that down at this

time. I may say, while I am on my feet for Utah, that Utah has depended a great deal on this meeting for a definite program to come out of it so that she may know how to proceed in the light of knowledge of all the work to be done by this Commission.

I fully agree with what has been said that it would be the part of courtesy and wisdom to hear from those who have come a long way to meet with this Commission and to give the Commission the benefit of any facts that they may be in a position to know about with regard to any part of the river with which they are particularly familiar.

STATEMENT OF MR. W. F. McCLURE, STATE ENGINEER, DEPARTMENT OF
PUBLIC WORKS, SACRAMENTO, CALIFORNIA.

Mr. McClure. Mr. Chairman and Gentlemen: As the first speaker, Mr. Carpenter, made his remarks, I was reminded that he represents a state containing the highest of the lands within the basin and I represent the state containing the lowest. Referring to the matter of jealousy on the part of Congress, referred to by Mr. Carpenter, I do not apprehend any reason for exciting any such feeling; Congress has, in my mind, a very vital interest in this tremendous national asset. It has an interest first, because we yet have public lands in the Southwest which may be very greatly benefited by the application of the waters of the Colorado River. Your remark, Mr. Chairman, was quite apropos when you stated that there is not enough water for all unless it is conserved.

The State of California, although having the smallest amount of land within the Basin, has the largest present monetary interest in the Colorado River because of the very great and valuable development in the Imperial Valley. We have already experienced a deficiency of water during the irrigation season.

Plans--Mr. Chairman--California has nothing definite.

The Colorado River is, in a measure, in the same category as the Sacramento River as to navigation and Congressional interest.

The Sacramento River is classed as a navigable stream and is navigable for a portion of each season for many miles above Sacramento City.

A few years ago, working in cooperation with the Reclamation Service, it was my privilege to help outline and make a report upon the Iron Canyon project. In that report we incorporated some phraseology like this: "that the time has come when navigation interests should be subservient to irrigation interests, irrigation being by far the most important". I doubt if we have a Congressman who would for a moment question the soundness of that statement. It applies in full force to the Colorado River. Indeed Congress has already practically consented to such a policy in that it gave consent to the construction of the Laguma Dam. I am looking to Mr. A. P. Davis and the Reclamation Service for an outline of procedure as to construction and I do not believe we will be disappointed.

Secretary Hoover (Chairman). We would like to hear from Mr. Emerson.

STATEMENT OF MR. FRANK C. EMERSON, STATE ENGINEER,
CHEYENNE, WYOMING.

Mr. Emerson. Mr. Chairman and Gentlemen: Wyoming rather shares the position of Colorado in sitting upon the lid of the United States. You can stand at one point in the Wind River Mountains in Wyoming and throw stones in three directions. One stone will land in the drainage that will go into the Pacific Ocean by way of the Columbia Water Shed; another will fall in waters that will empty into the Mississippi and land in the Gulf; and the third would land in the drainage area of the Colorado River.

During the past two years, especially, the matter of interstate questions, referring to water rights, has come to Wyoming with great force and I have devoted a considerable portion of my time the last two years to a study of the questions that are involved. We have had some experience, heretofore, over a considerable period of years on interstate streams. We have our neighbor to the south, Colorado, with whom we have just finished another round in the Supreme Court of the United States: for the third time the old Colorado-Wyoming case was argued before the Supreme Court. When decision will come, we know not yet. We have had a situation upon the North Platte River that has been a thorn in the flesh of Wyoming for a large number of years. I am very glad to say that that situation is well worked out at this time; but the work has come after instead of before.

The plan that is now proposed for the solution of the Colorado River proposition appears to me a very happy and fortunate one in appearance at least and I hope it may work out so in order that we may solve the large part of these vexing questions before injustice is done or development is held up.

It is going to mean cooperation. It is going to mean cooperation both ways, that is, the lower river with the upper river and the upper with the lower.

I know Wyoming and its Green River rather well and in knowing that I know the problems, the possibilities and the ambitions of the upper states more or less. In order to become acquainted with the situation in the Lower River so that I may be in a position to judge more fairly of the questions that will arise and the matters we will have discussed, I made it a point to go down upon the Lower River

I am not certain in my own mind as to whom credit belongs for the creation of this plan. It seems to me that in the Denver meeting in August 1920 the feeling was rather spontaneous: I know that the suggestion occurred to me during that meeting and before the resolutions came in, of the desirability of such a plan.

Having had the experience that we did in Wyoming and getting no place today, as for instance in the Colorado-Wyoming case, it seemed to me that the possibility of getting together and in cooperation on these things was certainly well worth considering. And here we have this great river. It drains area in seven states and then runs for some distance through Mexico; it seems to me that the cooperative plan is entirely the proper one and if we have the right spirit in this Commission we can go a long way towards solving the vexatious problems that will otherwise be very difficult to solve and will no doubt take years to overcome.

Mr. Carpenter. Mr. Secretary. I always want to give credit where credit is due. The pioneer of the cooperative plan of investigation and analysis and final agreement regarding interstate water problems I believe is the State of Wyoming and Mr. Emerson, I believe, was on such a Board. That was not a formal compact Commission. It was more in the nature of an agreement between the Department of the Interior upon the one hand and the State of Wyoming on the other in the matter of the policy and plan, but it may be truly said that Wyoming is largely the pioneer in that quarter, as in many other respects in our western reclamation.

Secretary Hoover (Chairman). I think Mr. Emerson has struck one of the fundamentals of the Commission's work and that is that we should have a presentation of the claims of each state. That is

last month to see what they were trying to do and what they needed to do for their protection at present as well as for the developments of the future. There is a very urgent need of certain things down there.

The Imperial Valley certainly needs protection from the Colorado River to save itself from submersion, to prevent the breaking of those great levees that are kept up yearly at very great expense. The need there is urgent.

There is no particular apparent need in Wyoming at this time. However, we have some great interests upon the Green River, interests that will take some time to develop. We do want to go ahead with development as fast as the same may become feasible.

While the need on the Lower River is more apparent, we can see no reason why we should not have assurance that we may go ahead with our development as it does become feasible and that is what we wish for, and what we want in connection with the consideration of the matter of the Colorado River.

I feel that we can have full cooperation and to my mind I will want only that which is reasonable for Wyoming. If I can obtain that I will surely go to the limit in helping developing the lower river or any other part of the river. It is going to make a very considerable difference whether or not we will be content to a general finding as to water supplies to the effect that we can arrive at the conclusion that development can go ahead in the upper states as fast as is found economically feasible without any interference from the lower river. If we enter into the consideration of the various uses and distribution of the water of the Colorado River it seems to me that it will take some form of uniform analysis of the proposals of the different states: that is illustrated probably to some extent, or

the need of same is illustrated by two reports we have had upon the possibilities on the Green River in Wyoming. In 1915 we had a cooperative investigation between the State and the Reclamation Service as to the possibilities upon the Green. The report found it was possible for development to the extent of one million and twenty-five thousand of acres. In 1918 a report was made by an Engineer of the Reclamation Service; this report found there were three hundred and forty thousand irrigable acres. There is quite a difference between three hundred and forty thousand and over a million. That one point will show the necessity of a uniform system of analysis.

I believe, myself, that each state, through its Engineer or through its Commissioner, should present to the Commission what it thinks of the possibilities for the future as well as what rights have been established in the past. That will be necessary. We must have those facts which Mr. Carpenter states are needed as a basis to work from.

Fortunately the development of such projects as the Boulder Canyon Reservoir are desirable in the interests of the upper states almost as much as in the lower states for by the storage of flood water of that stream we will have the use of water in the upper states during the latter part of the irrigation season that would otherwise interfere with priorities on the lower river, so that in the consideration of the protection of water supplies it is very desirable for the construction of a very great conservator of water.

I agree with the other gentlemen that whoever is here who has something to present to the Commission should be given the opportunity of expression before we go into the work as a Commission.

I am not certain in my own mind as to whom credit belongs for the creation of this plan. It seems to me that in the Denver meeting in August 1920 the feeling was rather spontaneous: I know that the suggestion occurred to me during that meeting and before the resolutions came in, of the desirability of such a plan.

Having had the experience that we did in Wyoming and getting no place today, as for instance in the Colorado-Wyoming case, it seemed to me that the possibility of getting together and in cooperation on these things was certainly well worth considering. And here we have this great river. It drains area in seven states and then runs for some distance through Mexico; it seems to me that the cooperative plan is entirely the proper one and if we have the right spirit in this Commission we can go a long way towards solving the vexatious problems that will otherwise be very difficult to solve and will no doubt take years to overcome.

Mr. Carpenter. Mr. Secretary. I always want to give credit where credit is due. The pioneer of the cooperative plan of investigation and analysis and final agreement regarding interstate water problems I believe is the State of Wyoming and Mr. Emerson, I believe, was on such a Board. That was not a formal compact Commission. It was more in the nature of an agreement between the Department of the Interior upon the one hand and the State of Wyoming on the other in the matter of the policy and plan, but it may be truly said that Wyoming is largely the pioneer in that quarter, as in many other respects in our western reclamation.

Secretary Hoover (Chairman). I think Mr. Emerson has struck one of the fundamentals of the Commission's work and that is that we should have a presentation of the claims of each state. That is

fundamental if we are to determine whether there is a sufficiency or deficiency of water in the river. In order that we may give every opportunity to those who have come some distance to attend this meeting I would like to know what associations and organizations are here this morning? We might give them an opportunity to present their views and after we have had those presentations I think we will want very much to hear from those men who have given their lives to a great degree to the technical phases of these problems, especially Mr. Davis of the Reclamation Service. In the meantime I would like to know who are represented here and who would like to present their views?

If there are no organizations represented here at this time, we will be glad to hear from Mr. Davis on this question.

STATEMENT OF MR. ARTHUR P. DAVIS, DIRECTOR AND CHIEF ENGINEER
OF THE RECLAMATION SERVICE, DEPARTMENT OF THE INTERIOR.

Mr. Davis. Mr. Chairman and Gentlemen of the Commission: I can add very little to what has already been said. A year ago last August, in the meeting of the League of the Southwest in Denver, for the first time in public I was able to state that the progress of the investigations had reached a point where I felt confident that with proper and sufficient conservation which was thought advisable there would be sufficient water for the irrigation of all the lands that could be favorably reached from the standpoint of economics within or adjacent to the Colorado Basin, not only by gravity but by reasonable pumping.

It is a vast study. My first studies of the Colorado River began in 1895 when we established stations on the Colorado at Yuma

and various points in the basin and the work was greatly accelerated in 1902 by the passage of the Reclamation Act recognizing the importance of the Colorado and its tributaries in irrigation. Those investigations were greatly extended including much wider investigations of the water supply which were made in connection with the Geological Survey largely and the topographical work also, on which we had the cooperation of the Geological Survey. At the same meeting at which I gave the information and basis for the conclusion as to whether there was water enough or not it was concluded to initiate the movement that has culminated in the appointment of this Commission with a legal status.

The investigations of the Basin are by no means complete at the present time. We have only had men and time and money enough to hit the high points and have used that information but we have been looking forward from the very first to questions of an international and interstate character that require the possession of basic information upon which the water supply of the Colorado River could be distributed. Various theories have been promulgated from time to time concerning the best use of the Colorado River. At one time it was thought that there was an abundance of water for the lower river without storage. That never appealed to me and a little investigation proved it unfounded but the possibilities of storage in the lower basin as well as in the upper basin are so great and the feasibility is so clearly established to what extent it would be necessary that we feel certain in saying that the waters of the Colorado River can practically all be conserved. There are some small drainage areas which can not be intercepted but they are trivial in comparison with the whole. At the junction of the Green and the Grand we have 72 percent of the

total flow, on the average in the higher basin. The largest area of lands susceptible of irrigation are in the lower basin; not only the largest areas but the warmest climates and longest seasons are there. We have not only given attention to the water supplies of the stream itself but to those sections which are available to use it. We have investigations on some of these projects and some we have only touched upon very lightly. On some we have depended mainly on topographical maps for the location of water supply so it is not to be understood that our information throughout the Basin is even. It is intense in spots and general in others.

The points that are most impressed on my mind in the whole thing--that has been so often impressed and is emphatic--is the preponderance of water in the Upper Basin and the preponderance of land in the lower basin and the difficulty of development in the Upper Basin before you reach the Grand Canyon. There are a few points of comparative ease of development and from which the results will be very large. Across Wyoming was the first transcontinental railway construction. Development began shortly after that which was more than half a century ago, and as every one acquainted with the West knows the most feasible projects have been developed, and a great many others have been developed at a financial loss and a great many have resulted in failure. The remaining opportunities are all difficult. It is therefore of the first importance that nothing be done that will add in any degree to that difficulty; that the development of the lands in the Upper Basin and in that section included all the states involved except the State of California. There is no doubt that whatever water supply can be used in the basin should be so used and that is true of every tributary of the river.

In looking at this question from a broad national standpoint, which I hope the Commission will do and which certainly I have tried, and I believe successfully, to do, I cannot too strongly insist upon the importance of the principle which I have just said. Any burden that is avoidable, that is placed upon the development of the tributaries of the Colorado, in irrigation, is wrong. Any further burden will decrease the feasibility of development in those regions and they are small at best. They are difficult enough at best and while, of course, we all hope for reciprocity of action and opportunity in all these matters: this is one thing which should be kept always in mind by any one desiring the greatest possible benefits to the country.

The development of the little spots here and there throughout the northern states is important on account of their bearing on the grazing and mining industries and the local developments which insure subsistence of both man and beast. It is obvious that if irrigation were strangled the industries likewise would be strangled.

Therefore, in view of the fact that, when we touch upon the development of the Lower Basin, it is not necessary to place any additional avoidable burdens upon the Upper Basin because the full conservation of the water of the Basin insures enough for all and if any are left out the water will run to waste and none of you desire to waste any water that can be feasibly and economically used. A great deal of the basin, over 20 per cent of the Basin, is in the Arizona valley, and Arizona will need all its water supply if it is found feasible to develop it but we have not depended upon any Arizona water for the working out of any possibilities below.

An attempt has been made in this report to condense all the investigations which have been made. There is a bibliography of the various streams, and a condensation of all their results; there is a list of the results of borings and there have been a large number of borings at reservoir sites and dam sites that have been made by the government and they are listed. Such information that we have up to date concerning the areas are here given (indicating report). They are, very few of them, final. All are subject to correction and many of them are subject to probably very large correction but it has been our effort throughout to resolve doubts for the purpose of this report in favor of the larger development and I think it will be found that the areas here given are irrigable on the various tributaries of the Colorado are very liberal. In some cases when doubtful about cutting the areas down, we kept to that liberal policy because we do not want to forestall possible future development by cutting it out. Of course it is not to be understood that some are not cut out. We have allowed 500,000 acres distributed throughout the Upper Basin that will probably be watered as extensions to present projects. We could not locate all these extensions of present projects, but we have allowed about 25 percent of the future development of the Basin where we know the areas, for those areas included in the Column "X" (indicating column in report.)

In our table here (indicating) of small developments which in the aggregate are probably quite large--that has been impressed upon me by a study of the Census reports which show a large growth of irrigation development which we can not locate by individual projects; they are too small and too scattered; they are not included except in the detailed enumerations of the Census, and of course while that is

very rough yet it is impressive in its results and for that reason we have made a large allowance for possibilities that are not known and still it leaves a large margin, still there will always be water running to waste in the Gulf if there is not a greater development of irrigation and the full development of power and every possible use made of it. There must be a conservation of flood water as well as the normal water flow, and that of course presumes the irrigation of all the lands in Mexico, and the United States is indirectly interested in the development of our sister Republic and it is not to be in any way restricted or hampered by a poor development of the river above. I do not think I can add any more, Mr. Chairman, than to say that I wish to be of service to the Commission and I feel a considerable responsibility. The United States has undertaken this study for the benefit of the country involved and for the country at large and the information we have is all at your disposal and we will be very glad to be of any assistance possible.

Mr. Norviel. Mr. Davis, this report which you have here, is it the report which was made under the Kinkaid Act?

Mr. Davis. Yes, sir; the report was in fact completed and delivered to the Secretary of the Interior on the 8th day of July; it included certain recommendations, and I had been assisted in preparing it by various organizations, but on the day that the report was delivered we had a telegram from a District in California protesting against some recommendations although their representative here was satisfied. This held up the whole report, and gave us time for more study of some of the facts and there have been a few modifications made so that this report is slightly different from the one still in the hands of the Secretary of the Interior which I will ask him to

exchange for the revised report, which contains revised figures, revised recommendations; and further facts.

It should not be understood that this report is in any sense a finality of the Colorado Basin. I do not expect to see any such a report no matter how industriously we follow it up but this report contains in condensed form the existing information with a fair degree of description: that is passed on so that some correct ideas can be had as to what parts are subject to the most radical changes and what parts are not. I think we have demonstrated the possibility of full conservation of the water of the Colorado River, with an advantageous use of the water for power and a full use of the water for irrigation so far as that is feasible. That does not mean in any of these respects that we have the information in the utmost detail--that is not the fact except in a few cases but the general information is there and I think that the basis on which this Commission is proceeding--I am very glad to see that there is a general acceptance of what we believe to be the basic fact--is that there is sufficient water in the river for both the Upper and Lower Basins, and that neither need hamper the full development of the other Basin in irrigation. The development in the Upper Basin will, of course, greatly deplete the possibilities of power throughout the Canyon region. We sometimes hear the statement that the use of water in irrigation does not deplete the water supply. Lands do consume water and the water is consequently less; there actually is a loss and we have made a study so that we know about what that loss will be.

Mr. Carpenter. I might suggest that our expert has just concluded a very complete analysis of a very detailed investigation in the State of Colorado. Mr. Meeker has worked hard on that report,

and I regret that it was delayed, but we spent the better part of two summers in the field. That data and the results of Mr. Meeker's work are at your disposal and if it will be of any assistance to you Mr. Meeker is also at your disposal.

Mr. Davis. I will be very glad to do so and I think I should have acknowledged the cooperation I had with State Officials generally in assembling the data we have. It is large in quantity and they have been most generous in their attitude towards this full development. It is not to be assumed that we have all that they could give us because they have also been working. It is very pertinent that an acknowledgment of that kind be made.

Mr. McClure. Mr. Davis: How soon might this report be made available to this Commission?

Mr. Davis. I do not know; that depends whether the Secretary of the Interior wants to transmit it to Congress before making it available and after that the various officials of the Government will have their say as to when it will be reproduced.

Secretary Hoover (Chairman). Do you think we could get it for the confidential use of this Commission?

Mr. Davis. I do not think there is any objection to that.

Mr. McClure. Having some presentation of claims to make, I am reminded that when in Los Angeles Mr. Mathers, counsel for the water department and Mr. Scattergood, representing the electrical department, came to my hotel and asked me whether at this meeting of the Commission there would be an opportunity for the hearing of parties who wanted to present any matters pertinent to their interests. I replied that I was not in a position to answer for the Commission-- I did not know how the Commission would act, but I gave it as my

judgment that this would be the time to hear the presentation of any municipal or private interests. That may be wrong but that was my judgment.

Mr. Scrugham. I think it is desirable to call attention to what Mr. Davis has brought out in his statement; that the plan adopted need not necessarily contain any restrictions upon local developments.

Mr. Davis. That is correct within the Basin; the possibilities of taking water outside of the Basin are not included. I think they are small at the present time, and they are so indefinite that no final statement on that point can be made at the present time.

Mr. Scrugham. If this view is correct, it undoubtedly simplifies our problem. However, in order to properly finance projects, they must have a very definite assurance of adequate water supply.

Mr. Carpenter. I have proceeded on the assumption that such was the condition and that will undoubtedly simplify our work.

Mr. Caldwell. I understood this work applied particularly to irrigation and did not necessarily include power in the same scope?

Mr. Davis. No; the possibilities or the facts connected with that are such that so long as the water is not taken out of the Basin, the development of the power would not interfere with the use of the same water for irrigation in the Northern Basin--that is the total of the power in the Upper Basin. There is the possibility of manipulating the water in the Northern Basin that power development might there interfere with irrigation development, but the statement I made there was that the possibilities of irrigation development can be all complied with with the water supply properly conserved and also power development can be carried out. At the same time the possibility of interfering with irrigation by power development throughout the Canyon

and Upper Regions might also be included because it is necessary to conserve the water below. Now, whether it is used for power or not the depletion would be by evaporation from large reservoirs which might be constructed for power purposes in the Upper Basin. That might go on to a very large extent but the general statement I have made is confined to irrigation.

Secretary Hoover (Chairman). That, however, does imply conservation of water?

Mr. Davis. Absolutely, that is the strong point--at least it is the one which appeals to me the strongest and first in studying the need of water in the Lower Basin. We found it was far cheaper to supply the Imperial Valley and the valleys in the Lower Colorado with the necessary storage by reservoirs in the Upper and Green River Regions where there are favorable reservoir sites, whereas if you had to put your reservoirs in the Lower Basin you would have the silt problem to deal with, and the engineers proposed and contended that we should not undertake any storage in the Lower Basin on account of the silt and the great expense involved in getting down to bed rock. Privately I expostulated to those gentlemen with the same reasons I have now but the point stands out so clearly that viewed in the narrow selfish way as it looked a few years ago it would be very much easier for the Lower Basin to provide itself with storage above: that seemed the proper course. The difficulty was that such a storage, carried out and controlled in a way that would be necessary for use, looking only to the interests of the Lower Basin, would interfere with the Upper Basin not only for irrigation but also for power development: it also would greatly deplete the possibilities of power throughout

the Canyon Region, and that, as well as the possibility of that interfering with irrigation development, led me to the conclusion that no matter what it costs, provided it was feasible, we should develop storage in the Lower Basin, and pursuing that line it occurred to me that we would have difficulties to overcome which I found were non-existent. In the first place it was obviously not feasible to build great storage reservoirs in the Lower Basin for the reason that they cannot take care of the silt proposition and carry out irrigation from the proceeds of irrigated land.

The waste of water in delivery is a very important question and is discussed in this report. The full needs for irrigation cannot be foreseen and it is always necessary to have enough water running so as to have no shortage and to provide for the extreme case, which seldom happens, but that means that most of the time a great deal of the water runs away and that is always the case with a large river reservoir and at Boulder and Black Canyon there will be some waste on account of their great distance but they are closer and more centrally located than any of the reservoirs of the Upper Basin or any of the other reservoirs in the Lower Basin.

Mr. McClure. It is your idea that wherever power is developed it shall be subservient to irrigations?

Mr. Davis. Yes, sir; I think that should be insisted on. I have so recommended in this report, and another point which none of you have mentioned except Mr. Emerson is the importance of regulating the river to prevent the destructive floods that have so menaced the existence of Imperial Valley and are so expensive to the valleys along the river itself because during high stages of the river it changes its course, doing all sorts of inexplicable things and being a

menace to the existence of Imperial Valley and also to some smaller areas. All this could be largely relieved throughout the region by a moderate discharge.

Secretary Hoover (Chairman). Mr. Davis raises one point, viewing the conservation of water from a practical financial standpoint, and in that connection I think we will be glad if Doctor Merrill could say a few words on the power relationship.

STATEMENT OF MR. O. C. MERRILL, EXECUTIVE SECRETARY,
FEDERAL POWER COMMISSION.

Mr. Merrill. I do not think I can say much at your session to-day except as to the general situation on the river. There are some six million water horsepower possible of development on the Colorado River and its tributaries, and at the present time the Federal Power Commission has applications for four and one-half millions horsepower. The Commission has suspended action on these applications awaiting the views of the Colorado River Commission with regard to the distribution or allocation of water among the several states, and also the preparation of some general plan of development of the river, especially in regard to flood control, in order that any project for which the Federal Power Commission gives license may fit into some such general plan of development. It is my judgment, personally, and I believe it will be the judgment of the Commission, although they have not taken formal action at this time, that power development throughout the Basin of the Colorado should be secondary to irrigation and flood control. There is, as I recall, only one acre in thirty that is irrigable in the basin. There is more water power than the basin can use in generations, even if it carries the surplus into adjacent markets: it seems to me, then, that the consideration of power in all sections of the River should be secondary to irrigation. That does

not mean on the other hand that in the consideration of irrigation you should forget the power altogether because the location of your reservoir sites, their capacities and points at which you carry your primary storage may have a very serious effect on power development on that River, because the main power possibilities are in the Canyon section from the Arizona-Utah line down to the vicinity of Boulder Canyon. Four million horsepower can be developed in that section with the normal flow of the river, and sufficient, even with full use of the water for irrigation in the upper section, to make power development feasible in the Canyon section from water which must be released for use on the lower river. Regardless of what may be the legal limitations upon the powers of this Commission, whether its statutory authority does or does not go beyond the consideration of the mere question of water rights and water distribution—I believe it would be advisable for this Commission to take it into consideration and to make recommendations, even if they cannot make conclusive findings, on the broad outline of a general plan of development of the river, sufficient in its scope so that the details can be carried out without interference with the general plan. I, and the other members of the staff of the Commission will be only too glad at any time to give any information we have or any assistance we can render to you in your work here.

Secretary Hoover (Chairman). Perhaps General Beach can give us something on this problem of navigation on the Colorado.

STATEMENT OF MAJOR GENERAL LANSING H. BEACH, CHIEF OF ENGINEERS,
U. S. WAR DEPARTMENT.

General Beach. Mr. Secretary and Gentlemen of the Commission. I can only say that such problems of the Colorado as have arisen in the past, have not ordinarily come before the department of which I have charge.

The difficulties and the problems which you have to discuss are pretty serious and are large and important. The very fact of the existence of this Commission is proof to that effect and I would only say that while the work that you have in hand comes largely and mainly under other Departments of the Government, if there is any possible way that my Department can assist and help in settling these large matters or in smoothing the work for you, I hope you will feel free to call on me at any time.

There have been few problems on the Colorado before us in recent years. Speaking generally you will find that in the past there are cases where streams were utilized sometimes in an endeavor to obtain transportation and boats may have been used under difficulties that would not permit their use today. For instance, I remember one case of a stream where it was claimed to be navigable because boats had navigated to a certain point on it. I found that a boat had occasionally run up to that point in flood times but that the last time a boat got there it was caught by the water falling and it remained there for ten months until the next high water when it was taken out. While the lower Colorado did have some navigation on it in the seventies there is nothing on it today to justify navigation being regarded as of foremost importance.

Mr. McClure. I would like to ask if such a stream as you have just described would be declared by your Department to be a navigable stream?

General Beach. That is entirely a question of the length of time the stream was of navigable depth. The Court decisions are to the effect--the United States Supreme Court--that a stream is a navigable

stream where navigation has existed or where it may exist under ordinary methods and the introduction of the motor boat has vastly extended the navigable capacity of our streams. We find there are many localities where boats are carrying one, two or three tons, maybe five tons, engaged in actual business enterprises and parties bring their produce and goods down to such points where they can be reached by the boats and the goods are then either transferred to larger boats or are put on the railroads.

Mr. Norviel. And what would be your report when your boat load of produce was held up for ten months?

General Beach. I reported that stream as not a navigable stream because I do not regard it as a navigable stream where you can simply run on top of a flood and not on the ordinary level. The court ruling is that a stream is navigable where navigation is or can be carried on under the ordinary methods of navigation. This means navigation for considerable periods at a stretch. I would not say for instance that the Ohio is not a navigable stream and yet there are times when one can not navigate it, for two or three months of the year when at its lowest stage and bars are formed, but one can navigate it for most of the year in the lower portions and for probably eight or nine months in the upper portions where navigation is somewhat interrupted by ice.

Secretary Hoover (Chairman). Under treaty obligations are you allowed the construction of any works that might interfere with the normal navigation of the river?

General Beach. Up as far as the mouth of the Gila it is navigable.

Mr. Caldwell. I think my question was answered before I asked. Do I understand that navigation extends to the mouth of the Gila?

Mr. Scrugham. We have navigation far above that, where they actually did mining they brought mining machinery prior to the construction of the railroads. In the early days there was considerable navigation from the mouth up to Black Canyon.

Mr. Caldwell. May I ask what effect the construction of the Laguna dam has on the navigation of the river?

Mr. Davis. It was authorized by the Act of Congress due to the fact that the river was navigable and it actually stopped navigation. It is not possible to navigate past that dam. At that time there were, I believe, three boats plying on the Lower Colorado River and it had been for a long time a navigable stream and the commerce had been considerable at one time. It is gradually declining on account of the railroads tapping many points and being much more accessible for the transportation necessary and now Laguna Dam is a stop to navigation. Navigation is possible above and below but not through the dam.

Mr. Norviel. Is the river navigable below Yuma?

Mr. Davis. Of course the larger depletion of the river by deflection into Imperial and to a smaller extent into the Yuma Valley makes it non-navigable for a considerable period but there is still a period when it is navigable during high water but it has not been for many years. It may be a fact that most of the time the water is too shoal in Volcano Lake to permit navigation but the distance between Volcano Lake and Laguna Dam could be navigated for probably a few months of the year in ordinary years. As a practical fact Laguna Dam is the diversion for the Yuma project and the Imperial Valley project and it has destroyed practical navigation below. Every use of the

water for irrigation depleted the supply. The navigation of the river was one of the problems that we had to meet and following the Act of Congress, all trouble was overcome by the purchase of the steamboats on the river by the government. The operation of these boats had become unprofitable for there had been no profit in navigation for a good many years; the boats were old and no new ones were put into commission. They were used for construction purposes and finally were put out of service.

Mr. Norviel. A little bit outside of this problem. Mr. Davis, there were several bills introduced in the House in 1904 whereby the California Development Company asked Congress to grant to them water rights of 10,000 second feet of water. Can you tell us what happened to those bills?

Mr. Davis. I can tell it more briefly by saying they did not pass. There was great opposition to the bills, the objection being to granting such privileges to a corporation, a water-selling corporation, although it was supposed that many of the irrigators themselves in Imperial Valley were directly interested in the corporation. Some members of Congress who discussed the question with the Secretary of the Interior and me were of the opinion that, if any grant was made, it would be to the irrigators and not to a selling corporation: consequently there was no grant of water-rights by the government other than the diversion by the Water Department to the districts that are practically built up. So it is not necessary to enter into the legal status so far as I can see. It seems to me that the investigations we have made are gratifying in reaching and leading to conclusions that there need be no serious legal difficulties in the distribution of the water supply of the whole Colorado Basin.

Secretary Hoover (Chairman). Is there any one present from the Geological Survey?

STATEMENT OF MR. N. C. GROVER, CHIEF HYDRAULIC ENGINEER,
WATER RESOURCES BRANCH, GEOLOGICAL SURVEY.
DEPARTMENT OF THE INTERIOR.

Mr. Grover. Mr. Secretary and Gentlemen of the Commission. I do not know that there is anything I have to say except that I want to place at your disposal any of the reports of the Geological Survey, and any information we may have; and we will be glad to help you in any way possible to obtain other information. I think I can speak for Director Smith in saying that whatever we can do to assist you in this work we will gladly do and we will place our files at your service.

Secretary Hoover (Chairman). I thank you very much. We would be glad to hear from Mr. Kruckman now.

Mr. Kruckman (Arnold Kruckman, Secretary of the League of the Southwest). Thank you very much for calling on me at this time. I wish to be excused. I may say something later.

Secretary Hoover (Chairman). Is there anyone here who would like to present anything to the Commission in a preliminary way? If not, I would suggest that we now proceed with our work by appointing some sub-committees. This would expedite the collection of data, and we may then re-assemble and consider the results. It appeals to me that in order to get ahead with our work we need a Committee on the volume of water available without storage and with storage; and we need a committee on water requirements of the various states, with the anticipation that the various representatives of the respective states will lodge with that Committee the claims for water to cover their necessities and those claims will be used to develop some unit

basis. We will also need a Committee on legal questions. I think it will be necessary to look into the Mexican treaties and it may be necessary to make some survey of the already existing rights to clear up points formally; and there also may be a legal question in connection with power in this sense--that while no power rights have been granted that are consequential the allocation of the water would need to be followed by some subsequent action in the matter of letting water rights that did not give any one priority as against such an allocation of water. Therefore I would like to suggest for the consideration of my fellow Commissioners the desirability of setting up these three Committees so that we can get ahead for formal action.

Mr. Emerson. May I ask, Mr. Hoover, whether it is supposed that these Committees can work now and report back later to the Committee as a whole?

Secretary Hoover (Chairman). I think we would make better progress if we had someone to condense the facts into basic statements. It is more a matter of selecting material for presentation to the Commission as a whole. If we had a Committee working with Mr. Davis of the Reclamation Service we could arrive at the volume of water available both with and without storage. If we had a digest of the requirements of the various states, we could immediately test out the availability with the claims. I did not know whether that appeals to the Commission, to have some preliminary work done of that kind.

Mr. Scrugham. Mr. Chairman, if a motion is desirable, I move that the Chairman appoint such Committees.

Mr. Carpenter. I second the motion.

Secretary Hoover (Chairman). It is moved and seconded that the three committees as indicated should be appointed. All in favor say "aye."

CARRIED.

I would suggest that Mr. McClure and Mr. Emerson might serve on the Committee upon volume of water available, in co-operation, of course, with Mr. Davis of the Reclamation Service; that Mr. Norviel, Mr. Caldwell and Mr. Scrugham should serve on a Committee with regard to water requirements of the various states; and that Commissioner Carpenter and Judge Davis should consider the legal phases of matters to be laid before the Commission.

Mr. Carpenter. Mr. Chairman, may I state that Colonel R. M. Meeker, Hydraulic Expert for the State of Colorado, will be at the entire disposal of the two Committees on volume of water and water requirements and I ask that he be permitted to work with us on behalf of Colorado.

Judge Davis. I should like to have the same understanding for our Mr. May, of New Mexico.

Secretary Hoover (Chairman). Then I would suggest that the various state representatives co-operate with the various committees. I would suggest therefore that we sit in general hearing to-morrow afternoon at 2:30 o'clock, and in the meantime the committees will have opportunity to work.

Mr. Davis. Mr. Chairman, I would like to announce that the office, and in fact the best place for the committees of the Commission to work, is available on the sixth floor in the southwest corner of the Interior Department, and I think one or two of the Committees

might find it the most convenient place for their study as our records will be readily accessible and also Mr. Bissell, who has had a great deal to do with the editing and publishing of this report (indicating), and the data on which it is based (up until about three or four years ago), is compiled in those three large volumes that are on the table there (indicating), and then there is considerable information contained in the eighteenth annual report; and there also is a complete copy of the proceedings, which has not been manifolded to furnish more than one report to this Commission, but you are welcome to consult it fully and to use the services of Mr. Bissell and of myself, of course, at any time, and I suggest that a convenient place for the Committee men would be in that office.

Mr. Grover. It is probably unnecessary for me to make an additional statement, but it is generally understood and I may assume that you will need some of the stream flow records of the Geological Survey. They have been generally published in the series of Water Supply Papers but the unpublished data is also at your disposal and will be prepared for your Committee. You also know, no doubt, that the Geological Survey has topographical maps that may be of interest and I have no doubt but that Doctor Smith will place all of those at your disposal.

Secretary Hoover (Chairman). Thank you. I understand also that the legal advisers of both the Reclamation Service and the Federal Power Commission, and certainly of the Department of Commerce, will be available to any of you who wish an investigation made into some of these questions, for instance, state interference. It may be desirable to clear up some of these questions so that we will know where we stand.

Mr. Davis. Has any arrangement been made in regard to stenographers?

Secretary Hoover (Chairman). If the Committees make their headquarters in this Office, I can furnish stenographers and probably the Interior Department can furnish a stenographer over there.

This afternoon and tomorrow morning will be devoted to Committee work and tomorrow afternoon we will have the public hearing which I do not think will take any great length of time.

Mr. Norviel. I think it proper that I complete my statement. As I said in the beginning, Arizona is very much interested in this matter, and not knowing what angle this meeting might take, I would like at this time to read the statement which I have prepared. I do not more than simply submit this for your consideration. (Reading)

"WHEREAS the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, being either within or partially within the basin of and each claiming an interest in the waters of Colorado River and (or) its tributaries, and

"WHEREAS, the legislatures of the several states have each authorized the appointment of a representative of the state by the Governor of each of said states, and the Congress of the United States has authorized the appointment of a representative of the United States by the President, to form a Commission for the purpose of negotiating a compact or agreement between the said states, and between the said states and the United States, respecting the use and distribution of the waters, and the benefits to be derived from the utilization of the waters of the said Colorado River and its tributaries, and

"WHEREAS, all of said representatives having been so appointed by the respective governors of the said states, and by the President of the United States, and all being present, now, therefore, be it,

"RESOLVED that the name of this Commission shall be and hereafter shall be called the COLORADO RIVER COMMISSION.

"WHEREAS, the purpose of the organization of the Colorado River Commission is to determine the relative rights of the said states and of the United States, and the citizens thereof, in and to Colorado River and its tributaries and to the use and the benefits derived from the utilization of the waters thereof; to establish and fix a policy and regulations to govern the further development of the river.

"THEREFORE, this Commission assumes jurisdiction over said Colorado River and its tributaries, and the waters thereof for the above purposes, and shall retain full jurisdiction and authority over the same during the life of this Commission.

"That by "Colorado River" is meant the bed of the stream and the waters flowing therein. It has been referred to as a navigable river. Where the boundary of the bed of the stream has not been fixed by meander lines, the boundary lines of the bed of the stream shall be fixed at the line of high water mark on each side of said stream to this date.

"The Colorado River is third in size and perhaps of importance of the rivers of the United States. It rises in the high Rocky Mountains in Colorado, flows in a southwesterly direction and empties into the Gulf of California.

"It forms a portion of the boundary between the State of Arizona and the Republic of Mexico, thence it flows through a portion of the Republic of Mexico to the gulf.

"It has a number of tributaries which rise in various parts of the basin which flow into the main stream. The largest of the tributaries is the Green River which rises in the Wind River Mountains in Wyoming, flows southerly and empties into the Colorado in Utah at what was formerly the junction of the Green and Grand Rivers. This tributary furnishes a greater amount of water than any other. Some of the tributaries are flashy in character and at times carry great floods, notably the Gila.

"The Colorado River is subject to annual floods, sometimes of great volume, principally in the summer months. At times the water carries a large percentage of solid matter in suspension which is deposited as silt, by which means it has built up its delta cone completely across the upper portion of the Gulf of California forming a dam many miles in width. The water in the upper portion of the gulf having evaporated has left a basin now called the Imperial Valley having as its lowest portion the Salton Sea 250 feet or more below sea level. On this delta cone the river bed is now thirty or more feet above sea level and above a large portion of the surrounding country, particularly the Imperial Valley. The bed of the stream is building higher each year, thus becoming a serious flood menace, which has made necessary the building of protective dikes and levees.

"In addition to the foregoing, the Colorado River Commission recognizes the following facts:

"That the Colorado River is an international and interstate stream;

"That it forms a portion of the boundary between the United States and the Republic of Mexico;

"That the international rights and agreements between the United States and the Republic of Mexico as set forth in the treaty of Guadalupe Hidalgo, proclaimed July 4, 1848, and as recited and added to in the Gadsden Treaty, proclaimed June 30, 1854, and in the Boundary Convention, Rio Grande and Rio Colorado, proclaimed September 14, 1886, and by any and all other treaties, agreements and conventions between the United States and the Republic of Mexico with respect to the Colorado River, are binding upon this Commission and the status of the river in that respect shall be regarded as having been fixed and settled;

"That the Colorado River has been declared to be a navigable stream, though many army engineers who have been detailed to examine and report on the navigability of the river and the advisability of improving the same for navigation, have each recommended against any improvement because of the unworthy character of the stream for navigation and lack of necessity for its use as such at the time. The construction of the Laguna Dam, under authority of the Government, has impaired the navigability of the river.

"The Commission recognizes that there is urgent need of the earliest possible development in the lower Colorado River, (1) for flood control, (2) to meet the increasing demand for irrigation water, (3) for the creation of hydro-electric power to meet the demand of the general growth of industry in the southwest.

"The Commission recognizes a future demand for a more extensive utilization of the waters of the Colorado and its tributaries throughout the entire basin or watershed of the Colorado River for irrigation, power development and other uses.

"Therefore, being fully advised, the Commission makes, agrees to and promulgates the following principles and policies with respect to the use of the waters of the Colorado River and tributaries:

"1. That the Common Law doctrine of Riparian Rights does not obtain and shall not be recognized in the Colorado River Basin.

"2. That no state, nor any of the citizens thereof, shall obtain nor shall any development on Colorado River in any of said states thereby create, a priority of right as to time or quantity of water by virtue of the earlier development and use of the waters of Colorado River as against any other state, or the citizens thereof; that all priorities as between said states, with respect to the use of the waters of Colorado River, are hereby specifically waived. Provided, however, it is understood and agreed that the acreage of lands to be cultivated and irrigated in the Colorado River Basin from the waters of the Colorado River or its tributaries diverted above the Boulder Canyon damsite and reservoir shall be limited, for the period of twenty years, to new acreages in the several states, in addition to the new acreages irrigated and cultivated during or prior to the

year 1921, as follows: Wyoming, 510,000 acres; Colorado, 777,000 acres, Utah, 444,000 acres; New Mexico, 365,000 acres; Arizona, 140,000 acres; and Nevada, 15,000 acres. At the end of the period specified a new adjustment of the acreages may be made if conditions justify.

"3. That the waters of Colorado River shall not be stored except for beneficial purposes, and shall not be held in storage for an unreasonable period of time when there is need of the water below;

"That the beneficial purposes for which water may be stored, and the utility value of the water and the storage thereof is and shall be in the following order:

1. Flood Control
2. Domestic
3. Irrigation
4. Power
5. Navigation
6. Other uses.

"4. That reciprocal arrangements or agreements shall be made and entered into between any of the said states; or any of the citizens thereof, where the diversion of the water from Colorado River or any of its tributaries may be more advantageously made in one state for use in another state, and no request for such a permit shall be denied without just cause. Failing to reach an agreement, or the denial of the application in such case, the matter shall be submitted to this Commission on an agreed statement of facts for adjustment, as to an arbitrator, and the decision of this Commission shall be final in such matters and respected by the officers in said states.

"5. All development work on Colorado River in any state, whether for the purpose of applying the waters thereof to a beneficial use or otherwise, shall be under the laws, rules, regulations and control of that state.

"6. Where development work is partially in one state and partially in another, the laws, rules and regulations of each state shall govern and control the portion of the work in such state.

"7. No water shall be diverted from Colorado River or any of its tributaries for use outside the Colorado River Basin, except by unanimous consent of the Commission.

"8. As soon as practicable each member of this Commission shall collect information showing all of the uses of the water from Colorado River and its tributaries, the cultivated acreage of land irrigated in his state, with maps showing same and furnish the same to the Secretary of this Commission to be by him compiled and plated, or otherwise prepared for the convenient use and information of the

members of this Commission, and shall keep the Secretary of this Commission fully informed of all new applications to appropriate said waters to beneficial uses in his state, furnishing detailed information as required.

"The Commission makes the following recommendations:

"1. That the Government of the United States, through the Reclamation Service or any other authorized agency of the Government, immediately construct a dam in the Colorado River at or near Lee's Ferry, in northern Arizona, of a sufficient size to impound at least the average annual flow of the river for one year, to control the flood of the river, to equalize the flow for the irrigation of the present cultivated lands and the reclamation of arid lands, and for the production of hydro-electric power. A large dam at the point above suggested would practically desilt the river, would control the flow of water and make the further development of the river below much easier and far less expensive.

"2. That the Government of the United States, through the Reclamation Service or any other authorized agency of the Government, immediately construct a dam in the Colorado River, in the northwest part of Arizona at or near Boulder Canyon, of sufficient size to impound at least the average annual flow of the river for one year, to control the floods, to equalize the flow of the river for the irrigation of the present cultivated lands below the proposed dam and the extension of the reclamation of arid lands, and for the production of hydro-electric power. The site for such dam shall be selected, other things being equal or nearly so, looking to the fullest utilization of the waters of the river for the reclamation of arid lands below such dam.

"3. That in the event the Government of the United States shall be unable or unwilling to immediately undertake the construction of the dam referred to in recommendation No. 1, then we recommend that any person, firm, company, corporation, municipality or state having the financial ability and readiness and willingness to construct such dam for the uses and purposes suggested, under proper regulations and agreements conserving to the public the inalienable rights to the uses and benefits to be derived from the utilization of the waters of the Colorado River, be granted a permit or permits or license for such development.

"4. That in the event the Government of the United States, or any state or municipal corporation should construct, own and control such dam or dams referred to in recommendations 1 and 2 above, and should such development work or improvement be not subject to taxation, then we recommend that the state, in which such development work is located, be allocated, without cost to such state, a block of electric power at the switchboard commensurate in amount and in lieu of the tax that would be assessed against such development work if done and owned by private capital.

"5. We recommend that when the Colorado River is controlled then the Government of the United States immediately proceed to improve the navigability of the river by dredging or by other suitable method or methods a channel in the thread of the stream from some justifiable point below Boulder Canyon to the Gulf of California to make the said river navigable."

Secretary Hoover (Chairman). I think that some portions of it we can assign to one or more of the Committees.

Mr. Norviel. That was the reason why I thought best to submit it now.

Secretary Hoover (Chairman). I think it is desirable to have a definite program, and therefore I would suggest that we refer these proposals to the Committees for their consideration. I think the consensus of opinion is that we turn Mr. Norviel's suggestions over to the various Committees.

Mr. Emerson. It is very far reaching and it seems to me that the matter should not be released to the press for if it is we will have unfavorable reactions.

Secretary Hoover (Chairman). It should be understood that the resolution will not be released to the press.

The meeting adjourned at 12.30 o'clock p.m.

CHARENCE C. STETSON,

Acting Secretary.

MINUTES OF THE2ND MEETINGCOLORADO RIVER COMMISSION

The second meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Friday afternoon, January 27th, at 2:30 P.M. There were present:

Herbert Hoover	Representing the U. S. . . .	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.		Acting Secretary

The meeting was called to order by the Chairman at 2:30 P. M.

MR. HOOVER: "We had intended to devote this afternoon to statements of those who are interested in presenting their views to the Commission."

The Chairman called upon Senator Key Pittman of Nevada, who made the following statement:

"I appreciate very much the honor of being here this afternoon. I came particularly for the purpose of hearing the Chairman and others outline the scope of the work of this Commission and the jurisdiction as you understand it.

"I do not think that there is any more important internal work, as affecting the western section of this country, now under way, or even in anticipation. I am very pleased, Mr. Chairman, that this procedure has taken the course that it has. I think that the Western States ought to be congratulated upon the fact that they have as Chairman of this Commission not only an eminent engineer but an eminent economist. I feel also that the work of this Commission, the successful work of it, I may say, may be anticipated from the very constitution of this Commission. It is a very fortunate thing indeed that the Secretary of the Interior, burdened down as he is by the work that he has now, should have been agreeable,

to the formation of a commission of this character, which may be composed of representatives from the various States that are interested in the development of this project, a commission that will have the time and the knowledge and the experience to work out and develop a plan that will undoubtedly be successful and will be approved by the Congress.

"I do not know at the present time under what particular authority this project will be finally completed. I assume that that is a matter which the Commission will take up among other things for consideration.

"There is a doubt, possibly, as to whether or not it might be constructed and operated under the Federal Water Power Commission Act.. It might be contended that it was the purpose of Congress in creating that Commission to simply supervise the building of a project, or if built by the Government, to supervise its operation by other persons in the Government. In other words, the question arises as to whether or not the Water Power Commission is authorized by Congress to operate as a Government enterprise such a project. There is still another question affecting that Water Power Act, and that is this: That in dealing with navigable streams it appears from the construction of the Act that Congress intended that the project should not be constructed unless there was a prior finding by the Federal Water Power Commission to the effect that the proposed project would aid navigation. The whole Act was based upon the theory of the Constitutional authority of Congress to facilitate interstate and foreign commerce. I believe that the Colorado River has been defined as a navigable stream. As to whether or not the Water Power Commission could make the necessary finding under the Act that this work would benefit navigation on that stream to facilitate commerce, I do not know.

"There is another Act, and that is the Reclamation Act, under which in my opinion this project could be constructed.

"It may be desirable, however (and undoubtedly that is another matter that the Commission will give careful attention to), to obtain an additional authority from the Congress of the United States dealing separately and particularly with this enormous project.

"These questions all involve, of course, not only constitutional questions which will be examined very carefully by the legal representatives of this Commission and by the legal representatives of the War Department and the Department of the Interior, but it involves the practical question of so presenting the matter to Congress that they may feel justified in providing the necessary funds for this great undertaking.

"I have not the slightest doubt that the Chairman of this Commission will be able to convince Congress that this will be a paying project, that the money which is advanced will be a good loan and a sensible loan and a tremendous benefit to a large section of this country, which will be reflected in prosperity and in increased taxable property.

"I thank you, Mr. Chairman, for having given me this opportunity. I did not expect to impose upon this Commission at this time by making a statement. We are about to vote upon a very important measure in the Senate, but I hope to have the pleasure and opportunity at such times as may be convenient to the Commission to keep informed with regard to their work and to assist in any possible way, both as a representative in the Senate and as a citizen of the State of Nevada, and one who is, of course, interested as much as any one in the development of the country. After this matter has developed further, if there are any suggestions that I might make, I will communicate my desires to the Chairman of the Commission. Meantime I thank you and wish you every success."

MR. HOOVER: "I am sure the Commission will be more than glad to have any assistance. Representative Swing, you come from California and are interested

in this problem. Let us have your advice and views."

REPRESENTATIVE SWING: "Gentlemen of the Commission, the starter on an engine that gets your car going is a very small part of the mechanism of the car. In like manner, the little Imperial Valley in relation to the Colorado River Valley is a very small part of the great project you have in mind, but it has given the impetus to this great undertaking. It is because we have to build up a dyke between our Valley and the waters of the Colorado River, which runs down from the up-stream States in flood season, and keep on building up that dyke at the rate of about a foot a year without knowing where the limit will be, that we became and now are vitally interested in this great proposal.

"We started by sending delegations back here like children crying in a wilderness, we did not know exactly what the remedy should be but knew we were in danger of being badly hurt. Finally we got the Kindaid Bill passed which appropriated \$20,000, conditional on the interested parties putting up a like amount. Imperial Valley has put up \$100,000 to match the \$20,000, and in addition \$5,000 from the State of Arizona; and \$5,000 from our neighbor Coachella Valley. While it started as our project and as our problem, I have always felt that what we are proposing was to be only the first step or unit in a great big undertaking.

"When I was at Secretary Lane's conference in Denver in 1914, I spoke and had in mind a Colorado River Commission to take that river and develop it as a private person would his private property, systematically, and scientifically as one harmonious whole, so that when it was completed it would be the proud boast of our people that not an ounce of energy nor a drop of water went to waste. I made an unfortunate mistake of suggesting a Federal Colorado Commission, and found the conference to be slightly unpopular at that time towards such a commission. I believe, since that time, the Government has conducted itself in such a manner that it has reinstated itself in the good graces of everybody, and I hope of the citizens of Colorado.

"This is the greatest constructive project before the American people to-day. It is a great proposition and must be worked out as a whole. I would like to see you gentlemen, as well as ourselves, have faith in it as a unified project, and take the broad view of it, plan and develop the property as a whole, and if you do, your names will go down to posterity as men who have done what is worth while. It is dangerous to look at it from a point of view of your particular State, losing the perspective that it is a great national project. It is comparable with the Panama Canal. In fact, the Panama Canal was built for the world while all the benefits from this project will be returned to the United States and its citizens, and there will be a never-ending dividend for each of your States and for the American people in the production of new wealth, agricultural, mineral, and electric power. You can no more think of dividing this river up and leasing out independent segments of it to different interests than you could think of leasing separate parts of a Transcontinental Railroad to independent local operating concerns and then try to run a train across the continent without having accidents and wrecks on every mile. It must be a coordinating and harmonious whole, each part fitting in with the other projects. It is a big project and I know you men see it and feel it that way and that you are going to take a glory in being a part of it, and making it a success.

"In my opinion Congress will get back of whatever you gentlemen agree upon as the right thing to do. If you men can agree, and here's hoping you do, I would like to get back of your proposals and will help. It will be necessary to have legislative appropriations. I gladly pledge you my support in your efforts."

MR. HOOVER: "There is one little thing we are in need of. There is no appropriation for this Commission at all."

REPRESENTATIVE SWING: "I have never had the pleasure of meeting General Dawes and you have."

MR. CARPENTER: "The States made separate appropriations for their Commissioners and their expenses, including the expenses of the whole Commission. In the bill,

Congress passed, a certain \$10,000 appropriation clause appears. As I understand, the Treasury Department has ruled that that is not an appropriation. Therefore, The Commissioner of the United States is without purse for traveling and other incidental expenses."

REPRESENTATIVE SWING: "I will be very glad to take it up with Chairman Madden."

MR. HOOVER: "I have asked the Budget Commission to send it forward and I hope you might interest yourself a little in it."

The Chairman then called upon Representative Samuel S. Arentz of Nevada, who made the following statement:

"I did not know until I went to the office at 12 o'clock that I had an invitation to attend this Committee Meeting. The development of the Colorado River and construction of the Boulder Canyon Dam are matters that have been very close to my heart for a number of years. I know the Colorado River country from Wyoming to Imperial Valley. I think it was the Chief Engineer of the Assouan Dam of Egypt, on the Nile, who in traveling over the Southern Pacific railroad and seeing a portion of the Imperial Valley, and crossing the Colorado River, stated that he wished he were a young man. He said: 'If I were a young man, it would be my ambition to have even a small interest in the development of the Colorado River for in many ways it presents the same difficulties I overcame on the Nile and possesses the same great possibilities of development.' He looked at it as a great many of you gentlemen, if not all of you, look at it, as one of the most important undertakings for the development of the interior of our country. With the development of the Colorado River, we are going to develop the West--the Pacific Coast. In that development we are going to produce tonnage. This tonnage will will help in a great measure to solve the railroad problems of the West. I can assure you that I hope that I can give at least a little help towards the consummation of this wonderful undertaking and it is a privilege, I am sure, to be here with you this afternoon."

The Chairman then called upon Representative Henry Z. Osborne, of California who made the following statement:

"Mr. Chairman, I have in years gone by given considerable attention to the Colorado River. Some years ago I was intimately connected with it and I wrote a pamphlet about it, 'The American Nile.' At that time, as well as now, I was greatly impressed by the wonderful potentialities of the Colorado River. I remember at that time my idea was, looking at it from a rather local point of view, that large reservoirs should be constructed up to the Grand Canyon for the purpose of controlling the floods and also of perfecting the irrigation system. At that time we figured on the amount of territory that could be reclaimed south of the Grand Canyon. Then there was less land in cultivation in southern California than there is now. The entire cultivated area south of Santa Barbara in California, including the 400,000 acres in the Imperial Valley, is about 1,000,000 acres, and we thought at that time that it would be possible, including the Mesa lands as well as the valley lands, to reclaim two or three millions of acres. When we think of the great richness of the soil of that territory, and that there would be two or three millions of acres of it, compared with the million now under cultivation, the possibilities are made quite graphic. I came here to hear and not to speak, but I thank you for giving me an opportunity of telling you what my general ideas are.

I think that taking this matter up in this broad way is very important. There are international considerations involved. The treaty with Mexico is potent still. The treaty of Guadalupe Hidalgo provides that the navigation of the Colorado River shall be preserved. At that time there was navigation as far as Yuma and even to The Needles. That will all have to be taken into account. I feel the greatest confidence in this Commission that it will deal successfully with this great subject."

MR. HOOVER: "Is there anyone else here who would like to express their views to the Commission? (Mr. Kruckman was called but was not present). If there is no one else, I suggest we adjourn to give the subcommittees an opportunity for further study. If you are in agreement, we will adjourn until to-morrow at 2:30 P.M."

The meeting then adjourned.

CLARENCE C. STETSON,

Acting Secretary.

- 0 -

MINUTES OF THE3RD MEETINGCOLORADO RIVER COMMISSION.

The 3rd meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Friday afternoon, January 27th, at 4 P.M. There were present:

Herbert Hoover	Representing the U.S.	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.		Acting Secretary.

The meeting was called to order by the Chairman at 4 P.M.

There was a general discussion.

The meeting adjourned at 5:30 P.M., the next meeting to be held Saturday morning at 10 o'clock at the Department of Commerce.

CLARENCE C. STETSON,

Acting Secretary.

The above minutes were approved at the 7th meeting of the Commission, Monday afternoon, January 30th.

MINUTES OF THE4TH MEETINGCOLORADO RIVER COMMISSION.

The 4th meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Saturday morning, January 28th, at 10 A.M. There were present:

Herbert Hoover	Representing the U.S.	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.		Acting Secretary.

The meeting was called to order by the Chairman at 10 A.M.

There was a general discussion.

Mr. W. F. McClure read the following telegram from W. B.

Mathews:

"January 27, 1922.

Los Angeles, Calif., 1050A 27.

W. F. McClure,
Hotel Raleigh, Washington, D. C.

Total hydro-electric power resources of Los Angeles along its aqueduct and on natural streams in Owens River watershed tributary to its aqueduct water supply both developed and undeveloped are not more than sufficient to provide power demands within city exclusive of electric railways for three to five years. Only source from which city

can secure adequate power supply for reasonable period of years is Colorado River. Position of city is that of cooperation with Federal Government and interested States and communities for establishment of storage reservoirs in order that damage by flood may be averted and large additional areas of land irrigated and hydro-electric power opportunities created. City's Chief Engineer Mulholland and Chief Electrical Engineer Scattergood and its Consulting Board Durand, Ryan and Ensign are of strong conviction after careful study based on data heretofore acquired by Reclamation Service Geological Survey and other agencies and inspection in field that a major project at Boulder Canyon of more than thirty million acre feet as recommended by Director Davis is proper integral part of ultimate complete plan of development and that part which should for many economic and operative reasons be first developed.

City of Los Angeles desires to obtain opportunities for development of hydro-electric power on Colorado River, portion of which it may develop in the immediate future, with other portions developed by it from time to time later on. Its total rights being commensurate with the demands for electric power within its boundaries in like proportion as demands of other communities may be provided from the Colorado River Supply. City of Los Angeles has established hydro-electric power generating transmission and distributing system and desires such power opportunities on the Colorado that they may be developed by it as an integral part of its municipal system and believes that Federal Government should hold power opportunities for benefit of and apportion same among various States and communities in proportion to their respective needs, leaving to those communities the manner in which they desire to develop the same or have it developed for their benefit.

Attention of Commission is respectfully directed to the application of the City before the Federal Power Commission, Number 238, for right to develop hydro-electric power at Boulder Canyon site, from which source it seeks to secure needed hydro-electric power in immediate future, preferring that Government should finance and construct dam, and if not Government, then City is willing to undertake same under Government supervision and control so that interests of all communities may be protected. City requests opportunity to be heard before Colorado River Commission.

W. B. MATHEWS."

On motion duly made and seconded, the Commission elected Clarence C. Stetson - Executive Secretary of the Commission.

The meeting was adjourned at 12:45 P.M., the next meeting to be held the same afternoon at 2:30 at the Department of Commerce.

CLARENCE C. STETSON,

Executive Secretary.

The above minutes were approved at the 7th meeting of the Commission, Monday afternoon, January 30th.

MINUTES OF THE5TH MEETINGCOLORADO RIVER COMMISSION.

The 5th meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Saturday afternoon, January 28th, at 3 P.M. There were present:

Herbert Hoover	Representing the U.S.	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.		Executive Secretary.

Arthur P. Davis, Director of the Reclamation Service, Dept. of the Interior.
 Ottamar Hamele, Chief Counsel, Reclamation Service, Dept. of the Interior.

The meeting was called to order by the Chairman at 3 P.M.

There was a general discussion.

Judge Stephen B. Davis and Mr. Delph E. Carpenter, members of the Sub-Committee on Legal Problems, were requested to prepare at the earliest possible moment a statement of the legal claims against the waters of the Colorado, including the possible claims of Mexico.

Mr. Ottamar Hamele, of the Reclamation Service, was requested to report on the possible establishment and

delimitation of powers of a permanent Board of Control
for the Colorado River.

The meeting was adjourned at 5:30 P.M., the next
meeting to be held Monday, January 30th, at 10 A.M.,
at the Department of Commerce.

CLARENCE C. STETSON,

Executive Secretary.

The above minutes were approved at the
7th meeting of the Commission, Monday
afternoon, January 30th.

MINUTES OF THE6TH MEETINGCOLORADO RIVER COMMISSION.

The 6th meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Monday morning, January 30, 1922, at 10 A.M. There were present:

Herbert Hoover	Representing the U. S. . . .	Chairman
R. E. Caldwell.	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.		Executive Secretary.

The meeting was called to order by the Chairman at 10 A.M.

Mr. McClure stated that the Report of the Committee on Volume of Water would be ready in the afternoon.

The Commission then proceeded to consider the following Tables A, B and C with reference to water demand and available water supply.

The following Table A, prepared by the Reclamation Service and showing the Estimates of Areas and Water Requirements of the interested states was submitted:

W.

TABLE A.
AREAS AND WATER REQUIREMENTS.
(Reclamation Service Data)

State	Acres		Water...	Acre feet of water...	
	Irrigated	Probable addition-	use-	Probably	
			per	used on	Probable
			acre	acres	additional
1920	al	acre	irrigated	required	
Wyoming	367,000	543,000	1.5	550,500	814,500
Colorado	740,000	1,018,000	1.5	1,110,000	1,527,000
Utah	359,000	456,000	1.5	538,500	684,000
New Mexico	34,000	483,000	2.0	68,000	966,000
Nevada	5,000	2,000	2.5	12,500	5,000
Arizona	501,000	676,000	3.0	1,503,000	2,028,000
California	458,000	481,000	4.4	2,015,200	2,116,400
Total U. S.	2,464,000	3,659,000		5,797,700	8,140,900
Mexico	190,000	610,000	4.4	836,000	2,684,000
Grand Total	2,654,000	4,269,000		6,633,700	10,824,900

Note (1): All data involve estimation in varying degree. The acre-feet of past use are in the nature of guess, but the water used is not included in run-off data used in estimates for the future. Figures for additional acres assume construction of storage and feasible canals.

Note (2): Figures of water requirement are intended to be "consumptive use" except for California and Mexico, for which figures of total diversion are used because return flow is not available for reuse.

Mr. Norviel then submitted on behalf of the Committee on Water Requirements the following Tables B and C:

TABLE B.

REPORT OF COMMITTEE ON WATER REQUIREMENTS ON TOTAL NUMBER NEW ACRES CLAIMED IRRIGABLE FOR WHICH WATER IS ASKED BY STATES IN COLORADO RIVER BASIN TO BE IRRIGATED FROM COLORADO AND TRIBUTARIES.

	: Acres- new	: Acre : : ft. : : duty	: Acre feet : Diversion	: Acre- : : feet : : return	: Acre : : ft. : : per	: Acre feet.. : consumptive : use
Wyoming	: 580,000	: 2 1/2	: 1,450,000	: 1	: 1 1/2	: 870,000
Colorado	: 1,515,000	: 2	: 3,030,000	: 7/10	: 13/10	: 1,969,500
	: 310,000	: 1	: 310,000	: 0	: 1	: 310,000
Utah	: 1,000,000	: 3	: 3,000,000	: 1/2	: 2 1/2	: 2,500,000
New Mexico	: 1,400,000	: 2 1/2	: 3,500,000	: 3/4	: 1 3/4	: 2,450,000
Nevada	: 82,000	: 3	: 246,000	: 1	: 2	: 164,000
Arizona	: 1,172,000	: 3 1/2	: 4,102,000	: 1, 1/2	: 2	: 2,344,000
Calif. (new & old)	: 939,000	: 4	: 3,756,000	: 0	: 4	: 3,756,000
Total, U.S.	: 6,998,000		: 19,394,000			: 14,364,500
Total						
Mexico (new and old)	: 820,000	: 4	: 3,280,000	: 0	: 4	: 3,280,000
Grand Total	: 7,818,000		: 22,674,000			: 17,644,500

Practically all of the acres in this table in the State of Arizona are on the Gila and its tributaries, and the Little Colorado, - Perhaps more than 75% of the total, on both this and the Table C of cultivated lands, leaving a very small acreage to be irrigated direct from the Colorado River, the engineering data for which is insufficient upon which to base any accurate statement.

TABLE C.

REPORT OF COMMITTEE ON WATER REQUIREMENTS ON
CULTIVATED ACRES OF STATES IN COLORADO RIVER.

	: Cultivated : acres old	: Acre : feet : duty	: Acre feet : diversion	: Acre : feet : return	: Acre : feet : loss	: Acre feet : consumptive : use
Wyoming	: 400,000	: 2 1/2	: 1,000,000	: 1	: 1 1/2	: 600,000
Colorado	: 850,000	: 2	: 1,700,000	: 0.7	: 1.3	: 1,105,000
Utah	: 188,000	: 3	: 564,000	: 1	: 2	: 376,000
Nevada	: 35,350	: 3	: 106,050	: 1	: 2	: 70,700
New Mexico	: 57,000	: 2 1/2	: 142,500	: 3/4	: 1 3/4	: 99,750
Arizona	: 521,500	: 3 1/2	: 1,825,250	: 1 1/2	: 2	: 1,043,000
California	: <u>694,000</u>	: 4	: <u>2,776,000</u>	: 0	: 4	: <u>2,776,000</u>
Old U. S. (total)	: 2,745,850		: 8,113,800			: 6,070,450
Mexico	: <u>200,000</u>	: 4	: 800,000	: 0	: 4	: 800,000
	: 2,945,850		: 8,913,800			: 6,870,450
Old U. S.	: 2,745,850		: 8,113,800			: 6,070,450
New U. S.	: <u>6,998,000</u>		: <u>19,394,000</u>			: <u>14,364,500</u>
Total U. S.	: 9,743,850		: 27,507,800			: 20,434,950
Total Mexico	: <u>820,000</u>		: <u>3,280,000</u>			: <u>3,280,000</u>
(new and old)						
Grand Total	: 10,563,850		: 30,787,800			: 23,714,950

After a discussion and comparison of the figures set forth in these tables with a view to water demand and available water supply, the various Commissioners expressed their opinions as to the possibility of reconciling on a twenty year basis (subject to revision at the termination of that period) their claims for new acres (see Table B) with the new acres which were estimated as irrigable by the Reclamation Service (see Table A). It was understood by the Commission that the records from 1899 to 1920 (See Appendix to Sixth Meeting "Summary of Average Annual Run-off at Principal Gaging Stations of U. S. Geological Survey in Colorado River Basin) showed an average annual run-off of 17,300,000 acre-feet of water at Yuma, which may be taken as about the amount available for (a) new irrigation in Wyoming, Colorado, Utah, New Mexico Nevada, Arizona and (b) new and old irrigation in California and Mexico. In considering the question of whether there is sufficient water to meet the demands of the different states it is necessary to include as "acres new" for California and Mexico in Table B both present irrigated and future irrigable lands as the gaging station at Yuma which records the available water supply is situated above the principal point at which water is now diverted for irrigation in California and Mexico.

(1) Mr. Emerson expressed his willingness to accept for Wyoming the new acres as estimated by the Reclamation Service in Table A provided the other states would also agree to do likewise, but was of the opinion that estimates of irrigable acreages at this

W.

time, in view of the limited information available, cannot be expected to be very accurate. He drew attention to the slight discrepancy between the Reclamation Service Estimates and Wyoming's claims in Table B.

(NOTE: The excess of Wyoming's claim over the Reclamation Service Estimate - 37,000 new acres.)

(2) Mr. Carpenter stated that the 310,000 new acres claimed by Colorado in Table B were outside the Colorado River Basin and would be reached by tunneling; that the 310,000 acre feet diversion would be total consumptive use for irrigation and power in the vicinity of Denver.

Mr. Carpenter also expressed the opinion that he could not agree to the reduction of new acres claimed by Colorado in Table B, as he considered that the figures were the result of a careful analysis.

(NOTE: The excess of Colorado's claim over the Reclamation Service Estimate - 807,000 new acres, including 310,000 acres outside the Basin, not estimated by the Reclamation Service.)

(3) Mr. Caldwell expressed the opinion that he could not agree to the reduction of new acres claimed by Utah in Table B without further examination as the records of his State were at present inadequate.

(NOTE: The excess of Utah's claims over Reclamation Service Estimate - 544,000 new acres.)

(4) Judge Davis expressed the opinion that the estimates of new acres claimed by New Mexico in Table B might prove too liberal and that after further investigation, he might be able to agree to a reduction of this claim from 1,400,000 to 1,000,000 acres.

(NOTE: The excess of New Mexico's claim over Reclamation Service Estimate - 917,000 new acres

Allowing for Judge Davis' tentative agreement to reduce - 517,000 new acres.)

(5) Colonel Scrugham requested that the new acres estimated by the Reclamation Service in Table A be increased from 2,000 to 82,000 acres as stated in Table B, on the ground that the Reclamation Service had not at the time of making its estimates been cognizant of certain proposed projects in Nevada.

(NOTE: The excess of Nevada's claim over the Reclamation Service Estimate - 80,000 new acres.)

(6) Mr. Norviel explained that the 1,172,000 new acres claimed by Arizona in Table B was made up as follows:

496,000 acres irrigable from the Gila River
140,000 acres irrigable from the Virgin and
Little Colorado Rivers and
536,000 acres irrigable from the main Colorado
River.

Mr. Norviel also stated that the Reclamation Service estimate for new acreage for Arizona, i.e., 676,000 acres, was satisfactory and would cover any acreage which Arizona might desire to irrigate from the Colorado River and tributaries, exclusive of the Gila River, though further investigations may determine a much larger acreage of land to be irrigated from the Colorado.

(NOTE: The excess of Arizona's claims over Reclamation Service estimate. - 496,000 new acres.)

W.

(7) Mr. McClure explained to the Commission that the 939,000 new acres, reported in Table B was in fact the total acreage in California irrigable from the Colorado River. This total acreage ^{he stated} ^{old} was/ made up as follows: 458,000 "cultivated acres";, i.e., acres irrigated at present and 481,000 new acres, i.e., acres susceptible of being irrigated - the figures for cultivated and new acres being in exact accord with the Reclamation Service Estimates in Table A.

Mr. McClure also expressed the opinion that the 694,000 "Cultivated acres old" credited California in Table C should, to make the records consistent, read 458,000.

(8) The Commission expressed the opinion that 620,000 new acres as estimated by the Reclamation Service in Table A was probably ample provision for Mexico.

As a result of the foregoing discussion Table B and C are revised to read as follows:

W.

TABLE C. (REVISED)

REPORT OF COMMITTEE ON WATER REQUIREMENT ON
CULTIVATED ACRES OF STATES IN COLORADO RIVER.

	: : Cultivated : acres old	: Acre : feet : duty	: : Acre feet : diversion	: Acre : feet : return	: Acre : feet : loss	: Acre feet. : consumptive : use
Wyoming	400,000	2 1/2	1,000,000	1	1 1/2	600,000
Colorado	850,000	2	1,700,000	0.7	1.3	1,105,000
Utah	188,000	3	564,000	1	2	376,000
Nevada	35,350	3	106,050	1	2	70,700
New Mexico	57,000	2 1/2	142,500	3/4	1 3/4	99,750
Arizona	521,500	3 1/2	1,825,250	1 1/2	2	1,043,000
California	458,000	4	1,832,000	0	4	1,832,000
U. S. Old	2,509,850		7,169,800			5,126,450
U. S. New	6,540,000		17,562,000			12,531,500
Total U. S.	9,049,850		24,731,800			17,657,950
Mexico, old	200,000	4	800,000	0	4	800,000
Mexico, new	620,000	4	2,480,000	0	4	2,480,000
GRAND TOTAL	9,869,850		28,011,800			20,937,950

Note:- In analyzing the foregoing "Revised Tables B and C" to determine if there is now sufficient surplus water to irrigate "New Acres" claimed by all the States and at the same time allow for any allocation that may be given to Mexico, it is necessary to include both "Cultivated Acres Old" (See Revised Table C' and "Acres New" for California and Mexico as "New Acres". This is due to the fact that the present diversion point for irrigation in California and Mexico is below the Gaging Station at Yuma, at which point the total flow of the Colorado River is recorded and an average annual run-off of 17,300,000 acre feet is shown.

	: Acres	: Acre	: Acre	: Acre	: Acre	: Acre feet
	: Acres	: Ft.	: Acre Ft.	: Feet	: feet	: Consumptive
	: Acres	: Duty	: Diversion	: Return	: Loss	: use
Total "New Acres," see Revised Table B	7,160,000		20,042,000			15,011,500
"Cultivated Acres Old", See Revised Table C,						
California	458,000	4	1,832,000	0	4	1,832,000
Mexico	200,000	4	800,000	0	4	800,000
	7,818,000		22,674,000			17,643,500

The foregoing table shows that the present available surplus of 17,300,000 acre feet average annual run-off will, on the claims of the various States and any allowance that may be accorded to Mexico, have to water 7,818,000 acres for which the diversion or duty will be 22,674,000 acre feet and the Consumptive Use will be 17,643,500 acre feet.

The discussion with reference to the foregoing tables also raised the question as to whether, in the light of the difference between new acreage as estimated by the Reclamation Service in Table A and as claimed by each State as irrigable in Table B, there would be sufficient water in the Colorado to meet the demands of the various states.

Judge Davis then submitted for the consideration of the Commission the following proposition as a basis for an agreement:

W.

"That no state nor any of the citizens thereof, shall obtain, nor shall any development on Colorado River in any of said states thereby create, a priority of rights, as to time or quantity of water by virtue of the earlier development and use of the waters of the Colorado River as against any other state, or the citizens thereof; and all priorities as between said states, with respect to the use of the waters of the Colorado River, are hereby specifically waived.

"The foregoing agreement is based upon the assumption, from information at present available, that the areas of land irrigable from the Colorado River in the several states are substantially as follows:

Wyoming	acres
Colorado	acres
Utah	acres
New Mexico	acres
Arizona	acres
Nevada	acres
California	acres

"There shall be created a permanent commission to be known as The Colorado River Commission.

(Here state the general purposes of the Commission)

"Whenever it shall be shown to the satisfaction of said Commission that there are lands within any state, in addition to the areas hereinbefore stated, which may be irrigated from the waters of the Colorado River without detriment to the proper irrigation of the areas hereinbefore stated for each State, the Commission shall have power to grant to such states the use of waters of said river for such additional acreage."

W.

Mr. McClure expressed a willingness to agree to this in principle provided it was not to become binding until storage should be provided for.

After a general discussion, it was found impossible to obtain the approval of all the States to the above proposal as a working basis: Arizona, California, Wyoming, Nevada and New Mexico assenting; Colorado and Utah dissenting.

The Chairman then submitted the following proposition for the consideration of the Commission:

"INASMUCH as these States claim equitable distribution and the Federal Government claims control of unappropriated water -

RESOLVED:

That a permanent Commission should be established to be called the Colorado River Commission;

That the Commission shall be vested with authority by the State and Federal Governments to:

- (a). Determine on equitable division.
- (b) To allot all unappropriated water.

That no division shall be determined until the construction of one of the major dams shall be assured."

After discussion, it was found impossible to obtain the unanimous approval of all the Commissioners to this proposition.

The meeting was adjourned at 12:00 noon; to reconvene at 2 P.M. the same day, Mr. Carpenter agreeing to present the Colorado view at that time.

Clarence C. Stetson.
Executive Secretary.

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
WASHINGTON

Office of the Director

January 30, 1922,

Mr. W. F. McClure,
Member Colorado River Board,
Department of Commerce.

Dear Mr. McClure:

In accordance with your conference with John C. Hoyt there has been prepared a summary of the average annual run-off at the principal gaging stations maintained by the U. S. Geological Survey in the Colorado River Basin. The attached map shows the location of the stations and the blue prints give the data available.

Very truly yours,

(signed) Geo. Otis Smith,

Director.

DUMMY SHEET FOR
U. S. GEOLOGICAL SURVEY
MAP OF COLORADO RIVER DRAINAGE BASIN
SHOWING LOCATION OF BASE GAGING STATIONS
NEEDED IN THE DEVELOPMENT AND UTILIZATION
OF THE RIVER AND PRINCIPAL PROPOSED
RESERVOIR SITES.

Flow in acre-feet at Gaging Stations in Colorado River drainage basin for climatological year ending September 30.

1.- GREEN RIVER AT GREEN RIVER, WYO.
Drainage area, 7,670 square miles.

Year	Acre-feet
1895-96	1,420,000
1896-97	1,650,000
1897-98	1,580,000
1898-99	2,500,000
1899-1900 Record 1 mo.	
1900-01	1,300,000
1901-02	1,040,000
1902-03	1,310,000
1903-04	1,870,000
1904-05	1,010,000
1905-06	1,490,000
1907-14 No record	
1914-15 Record 6 mos.	
1915-16	1,750,000
1916-17	2,080,000
1917-18 Records 8-1/2 mos.	
1918-19	685,000
1919-20 Records 8-1/2 mos.	
Average	1,510,000

2.- GREEN RIVER NEAR BRIDGEPORT, UTAH.
Drainage area, 15,700 square miles.

1911-12	2,080,000
1912-13	2,430,000
1913-14	2,580,000
1914-15	1,260,000
Average	2,090,000

- 2 -

Flow in acre-feet at Gaging Stations in Colorado River drainage
basin for climatological year ending September 30.

- - - - -

3.- YAMPA RIVER NEAR MAYBELL, COLO.
Drainage area, 3,670 square miles.

Year	Acre-feet
1904 (April to October)	817,000
1905 do	956,000
1912 do	1,500,000
1916 do	1,020,000
1917 do	1,960,000
1918 dp	1,170,000
1919 do	802,000
1920 do	1,490,000
Average	1,210,000

4.- DUCHESNE RIVER AT MYTON, UTAH.
Drainage area, 2,750 square miles.

1899-1900	467,000
1900-01	504,000
1901-02	467,000
1903-11 (records 4 to 9 mos. each year)	
1911-12	591,000
1912-13	500,000
1913-14	746,000
1914-15	441,000
1915-16	622,000
1916-17	886,000
1917-18	454,000
1918-19	403,000
1919-20	588,000
Average	556,000

5.- UINTA RIVER AT FORT DUCHESNE
Drainage area, 672 square miles.

1899-1900	139,000
1900-01	163,000
1901-02	143,000
1908-09	301,000
1909-10	136,000
Average	176,000

Flow in acre-feet at Gaging Stations in Colorado River drainage basin for climatological year ending September 30.

- - - - -

6.- GREEN RIVER AT GREEN RIVER, UTAH.
Drainage area, 41,000 square miles.

Year	Acre-feet
1894-95	4,500,000
1895-96	4,160,000
1896-97	5,980,000
1898-1904	(No record)
1904-05	(Records 7 mos.)
1905-06	6,360,000
1906-07	8,950,000
1907-08	4,290,000
1908-09	8,580,000
1909-10	4,710,000
1910-11	4,160,000
1911-12	6,160,000
1912-13	5,370,000
1913-14	7,080,000
1914-15	3,620,000
1915-16	5,740,000
1916-17	8,430,000
1917-18	5,110,000
1918-19	3,230,000
1919-20	5,950,000
Average	5,690,000

7.- SAN RAFAEL RIVER NEAR GREEN RIVER, UTAH.
Drainage area, 1,690 square miles.

1908-09	Records 5 mos.	
1909-10	" 9 mos.	
1910-11		157,000
1911-12		189,000
1912-13		192,000
1913-14		264,000
1914-15		101,000
1915-16		182,000
1916-17		318,000
1917-18		126,000
1918-19		
1919-20		
Average		191,000

- 4 -

Flow in acre-feet at Gaging Stations in Colorado River drainage basin for climatological year ending September 30.

- - - - -

- 8.- GRAND RIVER NEAR MOAB AND CISCO, UTAH.
Drainage area 23,800 sq. mi. at Dewey
ferry near Cisco; 24,300 at Moab station.

Records for 1913-14 at Moab station; other years
at Cisco station.

Year	Acre-feet
1913-14	8,530,000
1914-15	5,350,000
1915-16	7,500,000
1916-17	8,760,000
Average	7,540,000

- 9.- GRAND RIVER NEAR FRUITA, COLO.
Drainage area, 16,800 square miles.

1908-09	7,590,000
1909-10	5,330,000
1910-11	5,970,000
1911-12	7,990,000
1912-13	4,910,000
1913-14	7,780,000
1914-15 (Not full year)	
1915-16	6,530,000
1916-17	7,800,000
1917-18	6,060,000
1918-19	4,230,000
1919-20	7,740,000
Average	6,540,000

- 10.- SAN JUAN RIVER AT FARMINGTON, N. MEX.

1904-05	3,000,000
1912-13	1,600,000
1913-14	2,370,000
Average	2,320,000

- 11.- ANIMAS RIVER AT FARMINGTON, N. MEX.

1904-05	1,090,000
1912-13	544,000
1913-14	991,000
Average	875,000

- 5 -

Flow in acre-feet at Gaging Stations in Colorado River drainage
basin for climatological year ending September 30.

- - - - -

12.- SAN JUAN RIVER NEAR BLUFF, UTAH.
Drainage area, 24,000 square miles.

Year	Acre-feet
1914-15	2,700,000 (Nov., 1914-Sept.
1915-16	3,240,000 1915)
1916-17	3,340,000
Average	3,090,000

13.- LITTLE COLORADO RIVER AT HOLBROOK, ARIZ.
Drainage area, 17,600 square miles.

1905 (June-Sept.)	37,000
1905-06	183,000
1906-07 (Oct.-Apr.)	91,400
Average	162,000

14.- VIRGIN RIVER AT VIRGIN, UTAH.
Drainage area, 1,010 square miles.

1909-10	219,000
1910-11	320,000
1911-12	136,000
1912-13	158,000
1913-14	216,000
1914-15 (Feb.-Sept.)	160,000
1915-16	282,000
1916-17	160,000
1917-18	167,000
Average	207,000

15.- COLORADO RIVER NEAR TOPOCK, ARIZ.
Drainage area, 171,000 square miles.

1917 (Feb.-Sept.)	18,800,000
1917-18	15,500,000
1918-19	12,900,000

- 6 -

Flow in acre-feet at Gaging Stations in Colorado River drainage basin for climatological year ending September 30.

- - - - -

16... COLORADO RIVER AT YUMA, ARIZ.
Drainage area, 242,000 square miles.

Year	Acre-feet
1902 (Jan.-Sept.)	7,110,000
1902-03	11,100,000
1903-04	9,870,000
1904-05	18,900,000
1905-06	19,200,000
1906-07	26,000,000
1907-08	13,600,000
1908-09	26,100,000
1909-10	15,000,000
1910-11	16,200,000
1911-12	19,600,000
1912-13	12,000,000
1913-14	19,900,000
1914-15	15,800,000
1915-16	21,500,000
1916-17	22,100,000
1917-18	13,100,000
1918-19	10,700,000
1919-20	21,400,000
Average	17,300,000

17... GILA RIVER AT GUTHRIE, ARIZ.
Drainage area.

1911-12	149,000
1912-13	102,000
1913-14	227,000
1914-15	733,000
1915-16	336,000
1916-17	259,000
Average	301,000

18... SAN FRANCISCO RIVER AT CLIFTON, ARIZ.

1913-14	106,000
1914-15	681,000
1916-17	283,000
Average	357,000

- 7 -

Average Annual Run-Off at Principal Gaging Stations
in Colorado River Basin.

Gaging Station	Number on map	Drainage area Square miles	Number of complete years of records	Average annual run-off Acre-feet
Green River at Green River, Wyo.	1	7,670	13	1,510,000
Green River at Bridgeport, Utah	2	15,700	4	2,090,000
Yampa River near Maybell, Colo.	3	3,670	8 periods Apr. - Oct.	1,210,000
Duchesne River at Myton, Utah	4	2,750	12	556,000
Uinta River at Fort Duchesne, Utah	5	672	5	176,000
Green River at Green River and Little Valley, Utah	6	41,000	18	5,690,000
San Rafael River near Green River, Utah	7	1,690	8	191,000
Grand River near Moab and Cisco, Utah	8	23,800	4	7,540,000
Grand River near Fruita, Colo.	9	16,800	11	6,540,000
San Juan River at Farmington, N.Mex.	10		3	2,320,000
Animas River at Farmington, N.Mex.	11		3	875,000
San Juan River near Bluff, Utah	12	24,000	3	3,090,000
Little Colorado River at Holbrook, Ariz.	13	17,600	2	162,000
Virgin River at Virgin, Utah	14	1,010	8	207,000
Colorado River near Topock, Ariz.	15	171,000	2	14,200,000
Colorado River at Yuma, Ariz.	16	242,000	18	17,300,000
Gila River at Guthrie, Ariz.	17		6	301,000
San Francisco River at Clifton, Ariz.	18		3	357,000

- 0 -

MINUTES AND REPORT OF THE7TH MEETING

of the

COLORADO RIVER COMMISSION

The 7th meeting of the Colorado River Commission was held at the Department of Commerce, Washington, D. C., Monday afternoon, January 30, 1922, at 2:30 P. M. There were present at the opening of the meeting:

Herbert Hoover	representing the U. S.	Chairman
R. E. Caldwell	"	Utah
Stephen B. Davis	"	New Mexico
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.....		Executive Secretary

The following arrived shortly after the opening of the meeting:

Frank C. Emerson	representing Wyoming
Delph E. Carpenter	" Colorado

The meeting was called to order by the Chairman at 2:30 P.M.

The Chairman again presented for the further consideration of the members of the Commission the following tables, which had already been discussed at the Sixth Meeting:

- (1) Areas and Water Requirements. Prepared by the Reclamation Service of the U. S. Department of the Interior. See Table A. Minutes of Sixth Meeting.

W.

(2) Report of the Committee on Water Requirements on

(a) Total number new acres claimed irrigable for which water is asked by States in Colorado River Basin to be irrigated from Colorado and Tributaries. See Table B and Revised Table B., Minutes of Sixth Meeting.

(b) Cultivated acres of states in Colorado River. See Table C and Revised Table C., Minutes of Sixth Meeting.

M E E T I N G

The following discussion ensued:

MR. HOOVER: We have had many days discussion in an informal way and I believe the time has come when we should get the various views into record. Do you think it possible for us to secure any agreement on any mutual limitation of acreage - subject to expansion after some term of years as water supply proves itself. Mr. Caldwell, can you modify your demand of one million acres?

MR. CALDWELL: My feelings in that matter, Mr. Chairman, at the present time, are as follows: I do not favor getting together in any conclusive way here on the basis of acres. Personally, I believe that the acres that have been submitted here, called claims in various states, are in excess of what can actually be developed. As for that which is claimed for Utah, under existing circumstances, I would not care to submit that technically as Utah's claim. It is what I think may be possible to irrigate in Utah. I do not want to say that Utah may not at some time be prepared to agree to an allocation of the water of the river on the basis of irrigable acres that each State may have.

W.

MR. HOOVER: Therefore, you do not consider it possible to get any agreement upon an acreage basis at the present time?

MR. CALDWELL: As far as I'm concerned, it might be taken as a suggestive matter. I understand that we might consider getting together on the basis of the Reclamation figures as to the acreage in the various States. I think, for a matter to consider, it should be submitted to the Commission and not to conclude at this time on a working basis. Nothing that I have said is to be taken as any indication that I will for Utah, at any time, accept any acreage limitation, or that I consider it the proper basis on which to allocate the water of the Colorado River.

MR. HOOVER: Could we now specify a specific number of acres that would fall within the scope of the river, on the basis of which computations may be made.

MR. CALDWELL: The estimate of acreage by the Reclamation Service may be somewhere near right and may ultimately be all that any State will wish within 50 years to reclaim. I am not prepared to conclude on that basis.

(Mr. Emerson entered the room at this point and Mr. Hoover explained to him the brief previous discussion.)

MR. CALDWELL: I may explain, if you wish, that if we finally determine to put it on an acreage basis, I think it is my duty as a Commissioner from the State of Utah to determine to my own satisfaction the acreage in our State. Personally, I do not think it should ever be necessary to do it under the circumstances, but it may come to that.

W.

MR. McCLURE: The figures submitted by the Reclamation Service may be substantially correct. Can we from that arrive at statements from which to work?

MR. CALDWELL: I do not know what the statements could be, Mr. McClure.

MR. HOOVER: We were working this morning on the possibility of arriving at a possible maximum acreage for each state for the next twenty years, with a plan of giving additional rights at that time for any new acreage that may come into sight at that time, thus giving any new acreage the priority of the surplus water of the river. The summary of possible acreage of each state as given by the Reclamation Service is shown in Table A, minutes of 6th Meeting. The "claims" entered by the various Commissioners is shown in Table B minutes of 6th Meeting. This latter table is possibly in excess of the total water. The first table should furnish a basis of limitation for a period and give necessary assurances for development: protection to the construction of works; and if after 20 years further acreage was proved, they could be given priorities on the remaining water -- this could cover the next 100 years.

MR. CALDWELL: I think I have understood the situation for quite a while, Mr. Chairman.

MR. HOOVER: I think Mr. Carpenter said the other day that their estimate of over one million eight hundred thousand acres was subject to modification on their part.

W.

MR. CALDWELL: You previously said, Mr. McClure, that something I said sounded like a stall. I wonder if I understand what you mean?

MR. MCCLURE: I mean as far as making progress at this meeting is concerned.

MR. CALDWELL: I do not believe we are going to progress to a real basis at this meeting.

MR. HOOVER: While we wait for Mr. Carpenter, there is one matter that I believe we should give immediate attention. We ought not to let this meeting break up without bringing in a broad visioned constructive plan in general terms so as to advance the whole subject, at the same time not asking anyone to commit himself as to water division. I would like to submit the following:

Whereas, the full utilization of the Colorado River is dependent upon the construction of large control and storage works at some point in the Grand Canyon, and

Whereas, it is vital for flood control and irrigation as to the states below that point,

Whereas, the present situation in the Imperial Valley is one of great jeopardy and urgently demands the construction of these works in protection of life and property,

Whereas, the settlement of the respective water rights of all states in the Basin would be simplified by the construction of such flood control and storage.

W.

THEREFORE, it is agreed

1. That the construction of such works should be expedited at the earliest possible moment.

2. That in view of the indissolvable problems of irrigation, flood control and power, in which the first two must have entire priority, it is desirable that the construction of said dam itself shall be undertaken by the Federal Government.

3. That in failure to secure early action by the Federal Government in this particular, its construction through private enterprise or action of the states and municipalities, should be investigated to determine if public interest, priority of irrigation and control and distribution of power can be protected under such construction.

MR. McCLURE: I think that is a fine and broad setting of general statements.

MR. HOOVER: Do you think there will be any objection to that?

MR. CALDWELL: As far as I'm concerned, there are several things in there that I would not care to assent to or dissent from at this time. As a basis of something to work on, we should have something of that sort. We might work out of it some basis upon which we can all conclude.

MR. HOOVER: Do you mind stating what the objections are?

MR. CALDWELL: I am very anxious to have work done on the Colorado River at the earliest possible moment. As to the agency that undertakes it I am not thoroughly cognizant why the Government should undertake it and have no argument why it should not.

W.

I do not know why private interests should be barred from developing the Colorado River. I suggest that you put in there "at some point or points on the Colorado River."

MR. HOOVER: I put in "The Grand Canyon." Is that too narrow?

MR. CALDWELL: Yes.

MR. HOOVER: I would be willing to cut out the whole of the last two paragraphs, and say "The construction of such work should be expedited at the earliest possible moment under such conditions as will give priority to flood control and irrigation over questions of power." Thus removing all of your objections. It does seem to me that we can at least agree upon this obvious national necessity. The proposal will then read as follows:

Whereas, the full utilization of the Colorado River is dependent upon the construction of large control and storage works at some point or points on the Colorado River, and

Whereas, it is vital for flood control and irrigation as to the states below such point or points.

Whereas, the present situation in the Imperial Valley is one of great jeopardy and urgently demands the construction of these works in protection of life and property.

Whereas, the settlement of the respective water rights of all states in the Basin would be simplified by the construction of such flood control and storage.

THEREFORE, it is agreed

W.

1. That the construction of such works should be expedited at the earliest possible moment under such conditions as will give priority to flood control and irrigation over questions of power.

MR. EMERSON: Mr. Chairman, I can say that that is going a little further than we need to go at this time and to me it appears that it is really going too far, if we wish to go through the procedure of a public hearing so that the different parties interested can express themselves, because the deciding upon who shall build that reservoir would be more or less predicted upon the views of the various communities and parties in interest. To my mind this meeting should result, if possible, in a general plan of agreement as to water rights for irrigation. It seems to me that we are all convinced that a great reservoir upon the lower river is necessary. At least I am thoroughly convinced and that will act both as a protection for water rights below and for water rights above. Wyoming is at the head of this thing. The water runs from us to other States. Our position is the only one in which that is true altogether. All that Wyoming wants is this: That if a large reservoir is constructed upon the Colorado River, a priority of right is not obtained by the construction of that reservoir and use of water therefrom that will preclude or interfere with developments in Wyoming as same became economically feasible from time to time. We have got to put a limit on acreage I know absolutely that that was in the mind of Mr. Mondell that we must say or put some limit on acres of land in the use of various

W.

States. In the very wording of the Congressional Act, that inference is carried directly. I will continue to maintain my position that it is going to take a more or less uniform system of analysis, not so fine but what we can obtain same without any great amount of effort, say in the next six months. I would have seconded Mr. McClure's motion this morning if I had thought there was any possibility of passing the necessary approving legislation in the different States, when Colorado, Utah, New Mexico, and Nevada take such exception. So there is no use in passing a motion of that kind. I am convinced, however, that we can arrive at a fair amount of acreage. I want to say that I do not expect one thing to go over that would militate against Wyoming's interest. I feel that we should be able to get together. This Commission is missing a great opportunity if they don't get together but stick out too much on their own particular ideas on this thing: It is going to be a rough guess on acreage, no doubt, but whether we take Mr. Davis or Mr. Norviel's figures, the agreement will result in the same thing. It will be the open door policy. How can we think differently when we are convinced that there is water supply for all. I am firmly of the opinion that it is. Our development in the Upper States, no matter what they may be, will not interfere with the lower States so long as we have a great conservator of water in the form of a reservoir. The prime purpose of this meeting should be confined, if possible, to a basis to work from on an agreement as to the rights of the different States and the protection of these rights. If we find that a reservoir

W.

is necessary, we might say so and go that far. I might say no farther at this time as to the means of building that reservoir. That is a little ahead of us. As far as Wyoming is concerned, I can subscribe to an understanding upon an acreage basis.

MR. HOOVER: Here is a large community in Southern California in great jeopardy. I have to look at this matter from a more national point of view than some of you. This Commission has been set up after great effort and great hopes are centered upon it; that we may reach a solution of these conflicting rights and that we may give stimulus to immediate relief. It would seem a great misfortune if we dissolved the Commission without at least agreeing upon so primary a necessity as a control reservoir. This whole business is utterly fruitless if we cannot agree on a simple statement of an obvious fact. The construction of this work should be expedited at the earliest possible moment under such conditions as will give priority to flood control and irrigation over questions of power and its very construction eases the whole question of water rights.

MR. EMERSON: I may not have made myself clear. If it is the opinion of the different interests here and the different states represented that a reservoir is necessary upon that river to properly protect the water rights above and below, we should say so, and this meeting should at least find a basis to work from in that respect.

MR. HOOVER: Then we cannot come to an agreement unless we agree to the distribution of water rights?

MR. EMERSON: As far as Wyoming is concerned, we want no agreement that we are not entitled to. I would subscribe to no development on the lower river that would not be entirely reasonable for our protection. We have had examples of work going on in the lower river and then holding us up for fifteen years in Wyoming.

MR. HOOVER: You would not agree to this resolution then unless it was accompanied by a final agreement as to distribution of rights?

MR. EMERSON: We are not here to jump in a band-wagon with California. We in turn want the lower river to agree with us that our rights in Wyoming are entirely protected. My figures are very reasonable. If Wyoming is to make any commitment to development on the lower river we want at the same time a reasonable agreement as to the protection of our rights. It is just working the matter both ways.

MR. HOOVER: I agree that Wyoming's demand is reasonable and I do not think your estimate of acreage, checked as it is by the Reclamation Service, will be challenged by the lower States, but I do not see that this implies you cannot agree on a simple statement that a great control reservoir is necessary. I take it that you are not willing to assent to this resolution.

W.

MR. EMERSON: Not without a reciprocating feature. It looks in my mind that the basis of this Commission in getting these States together was not to expect that States will subscribe to a doctrine that is a benefit to one and not to another.

MR. HOOVER: How about agreeing to an agreement that may carry benefits to one but no injury to another?

MR. EMERSON: I will do damage to another. (Repeats North Platte River example where Wyoming lost 15 years.) We find now that there is enough water in the North Platte River whereby every acre of Wyoming land, susceptible of feasible irrigation, could be reached. Meanwhile we had an embargo on the river. Why should I agree to subscribing to an agreement that would threaten to stop all developments on the Green River? It would be suicide to subscribe to an agreement for the benefit of those States on the Lower River without reciprocating benefits.

MR. HOOVER: Mr. Davis, what have you to say?

MR. DAVIS: I rather prefer to have Mr. Carpenter here before saying what I want to say. My thought is something like this, Mr. Chairman. (Mr. Carpenter entered the meeting.) I think I can make a kind of resume of the situation as it presents itself to me. Now I start as a representative of one of the Upper States with this thought. We are not asking for anything. The lower States of the river as I understand the situation are saying to us that they want us to limit our future use of that water in such a way as not to interfere with them down below. My own situation in New Mexico is this: I have to ask nothing from anybody. My neighbors up North, and South in Arizona, are not in a position and certainly do not desire to do me any injury. We have therefore, nothing to ask from anyone.

We say we think we have such and such irrigable acres in these upper states but we are asked to cut down our ideas. We are to give up the right to irrigate certain acres up there. We get nothing in exchange. I see nothing that The Upper States are going to get out of this agreement except possibly in the way of power development and possible use of power in the dams of the lower River, so that it seems to me the attitude of the lower States ought to be one of extreme liberality towards the upper States, since they are the ones that are asking and we are not asking for anything. There should be unlimited development in the Upper States. As a representative of one of the Upper States I would like to have that very much. I have tried to look at this from the more or less practical viewpoint that we all want development and I think we are all agreed that the first development ought to be on the dams of the lower river. I am perfectly willing to agree to that. We do not want to do a thing that will in any way interfere with that development. I can see how, if we arrive here at an agreement that there would be absolutely unlimited development in the Upper States, we would be setting our names to a piece of paper that would be absolutely worthless, because in my judgment no development could actually ever be worked out on such a plan as that. What I mean is this: Those dams will cost 100 to 150 million dollars. Someone has got to put up that money. I do not care whether it is Congress, the States, the City, or some power company. The first thing that

W.

that individual wants to know is this: When are we going to get it back? That depends ultimately on the flow of the water in that stream. Mr. McClure says: "I want you to put up one hundred million dollars. There is plenty of water in that stream." Mr. Carpenter here says that it is impossible for the upper States to use the water. This man who is going to put up the money wants something more than that. He does not want to go through an interminable amount of engineering investigations. He wants a record of it. He says, those people up there are making these claims anyway and I am afraid of them. The man that is going to put up this money wants to know it with some definiteness. If we cannot agree on a limitation of acreage on these Upper States we might just as well quit right now. If the lower States were willing to enter into such a compact we would have an instrument that is perfectly worthless as far as we are concerned. The limitations have to be extremely liberal. We want to ascertain whether there can be any agreement between these States as to that limitation. We should not digress in any way until we find out what the situation is. If we can't agree on the limitation, then I think we fail!

MR. HOOVER: Mr. Carpenter has been preparing his proposition of a basis for a compact. Will you let us have your proposal?

MR. CARPENTER: Mr. Chairman, I offer the following suggestion:

W.

"It is suggested that this Commission proceed to the formulation of a compact upon the following general position:

That the topography and configuration of the mountainous states of origin are such, and the water supply thereof is so abundant, and the areas which may be irrigated and the consumption which may take place therein is so limited by nature, that the states of origin will never be able to beneficially use even an equitable part of the waters rising and flowing within the respective territory of each, and the major portion of such waters will flow from such states irrespective of the uses and development within the states of origin. Therefore, all the high contracting parties may with security agree generally in substance as follows:

That the construction of any and all reservoirs or other works upon the lower river shall in no manner arrest or interfere with the subsequent development of the territory of any of the upper states or the use of the water therein and said works upon the lower river shall not have, assert or claim any prior or preferred right or title to the use of the waters of said stream as against the upper states."

I might state at the outset that the proposition which I shall attempt to present in part and the views which I shall attempt to express, impromptu as they will be and not prepared as I had wished them to be, will deal primarily with this subject from a legal status.

W.

When I shall speak of a State, I wish to be understood as not speaking merely of any individual within that State, but of the State as a sovereignty, including collectively all the individuals and all the property of its citizens as one would speak of a nation. Our Federal Union was founded and has since continued, upon the fundamental principle that every attribute of absolute sovereignty, not by express language or necessary implication, surrendered to the Federal Government by the Constitution, remains in the State. In other words, the States are each still independent and sovereign in all respects, except for those powers surrendered to the central Government -- the United States of America.

All those states of our Federal Union, - Arizona, New Mexico and even Maine, - which have come into the Union after the adoption of the Constitution by the original thirteen, now stand and always have stood upon an exact equality with the original thirteen. No power or attribute of sovereignty retained by the original thirteen is to be denied to any of the newer states, whether that state be Maine, Vermont, Kentucky, or any of the Far Western states.

When I speak of a State, I speak of a State in the definition of one of the original thirteen States. As said in the case of *Coyle vs. Smith*, 121 U.S. 559, 579, the definition of a State of the Union is a definition of any one of the original thirteen.

W.

I have not addressed myself to that subject with the idea of annoying or irritating. I am moved to^{so}/speak because this is a compact commission created by seven States for the purpose of proceeding with the future disposition of the waters of the Colorado River, in mass, between the states as sovereignties.

Strange as it may seem to some, under our form of Government, when consent of Congress was given the seven States to enter into an agreement respecting the Colorado River, they were in that respect restored to their full inherent sovereignty as independent states (12 Peters 725). So that, whatever theories some may have or those representing various departments may entertain, as to what the law is or ought to be, I maintain that, in this discussion, we are meeting as representatives of sovereignties, the legal attributes and powers of which are those defined by the Constitution and the construction of that instrument by the Supreme Court of the United States. A discussion of these authorities will be found appended to the official report of my statement of June 4, 1921 made before the House Judiciary Committee in re House Resolution 6821, (serial 6), and need not here be further continued.

The states, except for regulation of interstate commerce and international obligations, have always been declared and construed to have control over the navigable and non-navigable waters within their borders.

W.

At the outset, it is the physical fact that from 60% to 70% of the waters that pass Yuma, Arizona, originate in the mountains of the State of Colorado. If it were true that the State of Colorado were an independent nation, the State would have the inherent right of absolute dominion over that entire water supply, except as voluntarily limited by agreement or treaty with other nations. Probably no better definition of the right of a nation to the exclusive enjoyment of the waters within its borders, notwithstanding prior appropriations in lower nations, may be found than in Judson Harmon's opinion in "Twenty-one Opinions of the Attorney-General - 274, 280-3." In other words, under the international theory, if it were possible for Colorado to make beneficial use of the waters of that river which rise within her territory and to wholly consume the same, if need be, it could legally deprive the lower river of that water with impunity, except only as to such part thereof as it might voluntarily yield. But fortunately, nature has here decreed that no such condition may ever arise.

In various cases decided by the Supreme Court of the United States it has been laid down as a general rule that while technically the State, (as with a nation), might assert its full right of the necessary use of an interstate stream within its borders to the damage of the lower State, nevertheless there might come a time when the use of all the water by the Upper State might amount to an unreasonable exercise of its sovereignty and thereby become a trespass upon the lower State, and thereby/ ^{become} subject to restraint by the Supreme Court.

With more than 60% of the water of this river rising within our territory, (Colorado), we are put into this position: Can we, in fact, use all this water upon our own territory? The answer is negative. The major part will always flow out to other States. It is unnecessary to consider the limits to which that State might go for^{or} her to insist that every drop of her territorial water shall be used exclusively within her domain to the possible detriment of other States.

There is a natural apportionment of benefits.

The Upper States or the States of origin have the inherent right to the use of that portion of the water rising and flowing within their territory, necessary for their self-preservation and development, at least to the extent that they shall not unreasonably injure their neighbors below. When I speak of the states of origin, I speak primarily of those states in which the water has its rise. There is an overlapping in a considerable part, between these states. That is, the characteristics of origin, and beneficiaries overlap to some degree. Colorado might be taken as the nearest example of a State of origin, California that of an extremely beneficiary State. Intermediately would be those States which both contribute and receive.

With states of origin, no matter what the cause, if water is compelled to flow down from their mountains and out upon other territory, it is forever lost to them. There can be no recovery.

W.

If the right to make them yield that flow becomes of such a nature that they cannot avoid it, that right becomes an involuntary extra-territorial servitude upon their domain and amounts to a taking away of their property, insofar as it reaches out and takes from them that part of the natural supplies which rise within their borders. Such servitudes are frowned upon by international or interstate law.

On the other hand, I realize that if the use in the Upper States were said to be wasteful or wanton, it might be said to unjustly interfere with the lower States unless wasteful conditions likewise there obtained upon the Colorado River.

At this point I will mention the case of Kansas versus Colorado. In that case, the United States contended that within the Western States the rule of prior appropriations regardless of State lines governs the division of water under national control. The State of Colorado contended for the rule of absolute dominion and exclusive use of all water within its domain. The State of Kansas contended for the rule of continuous uninterrupted flow. The decision denied the right of the United States to interfere with the distribution of water supply within the States and denied the rule of priority regardless of State lines. It denied the extreme exercise of the right of absolute dominion by Colorado and the claims of Kansas. While it was proven that certain prior irrigation projects had been destroyed in Kansas, the Court held nevertheless that, in view of her necessities, Colorado had not

unreasonably exercised her sovereignty and the Court refused the injunction because Colorado had not exceeded her authority as a State.

In other words, were natural conditions different in the Upper States of the Colorado, we might be called upon to determine what part of the water supply rising in Wyoming, Utah and Colorado they should use and what part should go down the river. Fortunately, notwithstanding the observation made by the Commissioner for New Mexico, we are saved that unfortunate position. I have in my hand a map of the State of Colorado prepared by Engineer Meeker of Colorado after a considerable investigation extending largely over two seasons. The small green areas represent the irrigated lands, the yellow the possibilities, the blue the possible reservoir sites, the dark, of course, the rivers, and the heavy dark line, the Continental Divide. Certain blotches appearing along this line indicate the so-called diversions out of the watershed or wholly consumptive uses as regards the waters of this river.

The deeper color in the brown represents existing inter-watershed diversions. Upon this map will be found the following legend:

Annual stream-flow produced	12,100,000	acre-feet
Annual consumption 850,000 acres	1,100,000	" "
Annual unused flow to Colo. River	11,000,000	" "
Future maximum annual requirements		
of Colorado Lands,	4,000,000	" "
Ultimate annual surplus available		
to lower Colorado River,	8,000,000	" "

In other words, of all water rising in that State, we cannot take or use an equitable part. We cannot use the amount of water to which we would be reasonable entitled were the physical conditions different within our territory. The same is true, in a large measure of Wyoming, Utah and New Mexico. In other words, the four

"That the topography and configuration of the mountainous states of origin are such, and the water supply thereof is so abundant, and the areas which may be irrigated and the consumption which may take place therein is so limited by nature, that the states of origin will never be able to beneficially use even an equitable part of the waters rising and flowing within the respective territory of each, and the major portion of such waters will flow from such states of origin for the benefit of the territory of the lower states irrespective of the uses and development within the states of origin."

In view of the fact that no one of the States of origin will ever be able to consume the water within her borders, to now fix any harsher limitation upon her than nature has imposed, is to be looked upon with disfavor. To a state which produces and yields within and from her territory a resource so bounteous that she may not only develop all her own available lands, in course of time, but may also furnish the greater part of the supply with which to develop the lower states and make them prosperous, no other rightful position may be taken than that she be limited only by those bounds which nature has fixed, because the lands which she may reach are so isolated, so cut up by mountains, so scattered and limited in areas, that for her to attempt to fix a safe limitation upon her acreage, she would be compelled to far exceed in her forecast the acreage which will ever be actually reclaimed, in order that she might amply protect herself against future adverse assertions. Her claim would have to be far in excess of anything that has already been considered, in order that sufficient security might be given the future development within her territory, although the amount actually later developed might fall far below any figures already considered. Otherwise, her limitation of area would

be so out of proportion to her water supply that we could expect no other than an unfavorable view by her legislature and ultimate defeat of the present objective. I have, therefore, prepared the suggestion offered at the outset of my remarks. That in the main embodies my idea and I will discuss the subject more fully at a later date.

MR. HOOVER: You seemed also in the early part of your statement to claim complete state's right to every drop of water upon your state; you subsequently admit that this right has been much limited by the Supreme Court decisions. May I get one or two points clear? I take it that you necessarily deny the whole theory of priority of utilization as between states.

MR. CARPENTER: Emphatically.

MR. HOOVER: In this case, of contented complete states rights and discard of priority of utilization, what interests have the states of origin in any dams or works that could be built down below?

MR. CARPENTER: We have no more legal interest in a reservoir in Arizona than they have in a reservoir in Colorado.

MR. HOOVER: I gather then that if there is no established right by priority of utilization as between states they can build all the dams they like in the canyon without interference from you?

MR. CARPENTER: Yes. They, of course, would build these reservoirs below subject to our right of future development above.

MR. HOOVER: Aren't you asking them that they will never raise that right? In other words you are asking that right of priority of utilization should never be brought into action?

MR. CARPENTER: Litigation between States may be easily provoked by a continuation of construction of these gigantic works, especially upon the lower river, with the resultant confusion of titles. The damage to all parties resulting from litigation, extending as it would over a long period of years, would be very detrimental to all the States. Again, if the reservoirs were constructed upon the lower river, we would be confronted with this proposition, that while the Supreme Court of the United States denied the right to a lower State to claim preferred use by prior appropriation, nevertheless since that time the Federal Reclamation Service has assumed, notably on the North Platte River, to exercise almost absolute dominion over the entire territory upon that stream above Pathfinder reservoir, and to effectually prevent further development above that structure in Colorado and Wyoming, to as great a degree as though she had obtained a court injunction. While that illustration is but one that might be cited, the thought was that the Colorado River is still young and in the process of early development, and conflicts should be prevented.

W.

it is recognized that it requires a general co-ordination and co-operation of all the Western States to bring about the greater development upon this river. The thought is that the Upper States have no disposition to retard the earlier development below, providing they have assurances that after they have co-operated in bringing about that development, they will not be thereafter penalized, as they have been on other rivers. In that respect, it would be a protective clause for us. Unless some such protection clause is adopted, we are put in a position of constant exposure to attacks from below, whether they are justified or not. Most of those inter-state attacks have been prompted by political motives and very unfortunate in their effects upon the States involved.

MR. HOOVER: I was going to ask this. We have the declaration of the Supreme Court requiring an equitable division of the water. This is a distinct limitation of states rights. If we were to find that there was insufficient water in the Colorado River with which to meet the uses of the State of Colorado and all the States below, would not Colorado be limited under the decision of the Supreme Court?

MR. CARPENTER: If it were true that Colorado did in fact intend to utilize and consume that water wholly within her borders, then the Court might say: You must yield some for the lower country. Furthermore, even if by her action she were to consume more than a reasonable portion of her water supply of that river

W.

to the great detriment of lower territory, she might be willing to voluntarily yield or the court might compel her to yield.

But, on the other hand, to say that a lower country, that furnishes no part of the supply and in which no part of the supply has its origin, may come up and compel us to turn down water wherewith to irrigate all her acreage, would be with far less justification than to say that Colorado might wholly consume the stream within her borders. If there must be any yielding, at most it must be all along the line. The greater yielding would naturally fall upon that territory which receives all the benefits and furnishes no part or a smaller part of the resource.

MR. HOOVER: Does not your proposal reach to the end that an equitable division of water is for you to perpetually take all the water you want. I am not disputing the matter; I am merely trying to get the various contentions clear. If we are to get equitable division there are perhaps two bases upon which it could be approached. First on the relativity of the land which should be made use of, and second, the relative percentage of the water. Your latter contention appears to be based on a percentage of water without regard to the question of relativity of land.

MR. CARPENTER: Then my question is narrowed to a greater degree than I intended. I think that the acreage is a factor that might enter into the discussion. But along with the acreage would come other factors. With the factor of acreage would also run the factor of origin which runs through all international law, that the nation of origin has naturally an inherent privilege to benefits that might be denied the lower nation. Acreage and volume

alone would not control. Acreage, volume and other factors and conditions that would have a bearing upon interstate justice should enter into the application of the rule of equitable apportionment. I might say that no two rivers would call for the same treatment. What would be a reasonable exercise in one case might be unreasonable in another. For instance, if one State wantonly destroyed and put her water to useless waste, that might be considered an unreasonable exercise of sovereignty. But to supply the water necessary for her inhabitants is her first right and her first duty as a state. I might say more: the lower state has full notice of the ultimate rights of the upper, and, if enormous diversions were permitted by a state on the lower river, without a due consideration of the conditions that would later obtain in the upper State, that lower river state should not later come in and claim that, because she had built her works, she had thereby put herself in a position to lay hold of the territorial waters of the upper irrespective of the present or future necessities of the upper state and her people.

MR. HOOVER: In other words, she would claim the priority of utilization? Then it comes to this: The Upper States want to be declared immune by the other States from litigation.

MR. CARPENTER: We do not feel, speaking for my own State, that we are asking quite that much. We take this position, as stated in my memorandum, that by reason of the fact that we furnish the

W.

greater part of the water that flows for the benefit of all of us and can never use even an equitable part of the water within our territory, we are entitled to freedom from attack from below. That has been the assurance thus far given us. I might call the attention of the Commission to the fact that at a recent discussion which took place at Riverside and later at San Diego, California, Director Davis of the Reclamation Service stated it to be substantially his position that he had considered that works to be constructed on the lower river should be constructed upon the principle of non-interference with the Upper Territory and that he would urge that a clause be written in legislation by Congress guaranteeing that construction of lower river works should never interfere with the freedom of subsequent development within the upper states. At the same times and places, the power interests came forward with a similar statement, which I have with me. It was made in writing and handed to me.

READS EXTRACT FROM STATEMENT MADE BY R. H. BALLARD AT HEARING BEFORE SECRETARY FALL, SAN DIEGO, DECEMBER 12, AS FOLLOWS:

"Our investigations indicate, in agreement with those of Director Davis, that there is water enough in the river, if it is properly conserved, to supply all possible demands for irrigation and domestic use and still have an abundance for power, and that there is power enough to meet the need of all the States tributary to the river."

W.

MR. HOOVER: That statement of Director Davis is based on his conclusions as to the area of irrigable lands. Yet we have before us estimates of the three Upper States which exceed Director Davis' estimate by roughly 3,200,000 acres. I doubt whether he would form that declaration again on the basis of such a claimed acreage as that.

MR. CARPENTER: The Southern California Edison Company representative made this statement:

"Our investigations indicate, in agreement with those of Director Davis, that there is water enough in the river, if it is properly conserved, to supply all possible demands for irrigation and domestic use and still leave an abundance for power, and that there is power enough to meet the need of all the States tributary to the river."

The Southern California Edison Company representative also said:

"We are willing that any license or permit granted us by the United States Government or the States, shall contain a provision that the existence and operation of our power structures in the river at points below the Utah-Arizona line shall not operate to confer any preferred right to the waters of the river as against full potential uses for irrigation and other beneficial purposes in the upper basin. We acquiesce furthermore in principle that the States within which power is developed have first right to its use."

MR. HOOVER: They might give some reconsideration to that statement when they find that the estimates of the Reclamation Service are exceeded by over three million acres---in fact practically doubled.

W.

MR. CARPENTER: Your tendency is to go upon the acreage only and to reason that if the lower States have not enough, the Upper States must yield enough to make up the deficiency.

MR. HOOVER: I think we have Mr. Carpenter's views clearly. In order that we might have some progress, we will now hear Mr. Norviel.

MR. NORVIEL: This is somewhat similar to the second proposition I made, as restated by Mr. Davis.

MR. HOOVER: Before you proceed I would like to get an expression from the other members whether they are prepared to adhere to Mr. Carpenter's view or not?

MR. CARPENTER: I might further state before we get their expression that I am in this position, that I represent a State whose people, by reason of successive defensive litigation of various suits, in none of which the adverse parties have as yet been successful, whose people have become keenly sensitive to not only their rights but some of them entertain views of the most extreme character and are very insistent that those most extreme views be adhered to. I am, therefore, put in this position, of saying frankly to the Commission that anything that is here done will be viewed with an unusual scrutiny and that the hazard of taking any position other than that which will meet with the common approval of the people is liable to ultimately meet in defeat, no matter how hard the rest of us try to prevent it. I do not mean that at all in the nature of a threat. I simply mean

W.

that those people are keenly sensitive to the fact that this enormous river and all its ramifications shown on this map is a resource rising and flowing within Colorado, which they feel they have a just right to use to the extent of their necessities, knowing as they do the natural conditions that force a limitation upon them that is more effective than all the compacts we could enter into -- that is, the limitations brought by nature herself. Their tendency would be to look with a great deal of suspicion upon any other limitation.

MR. HOOVER: Our one desire is to find something that is just between all. I would like to know what Mr. Norviel's opinion is as to Mr. Carpenter's proposal.

MR. NORVIEL: It is the same proposal that he has made all the way along, that they do not propose to be limited by anything except nature and at the same time they are undertaking to go beyond that. He comes back always to the same point -- we cannot be limited by anything but the natural limitation that the Maker of the World has given us. That is about all I have to say. I do not think my people would agree at least to taking any water out of the basin if we must give up to the full limitations of nature. They certainly would not allow going beyond nature in that part of the country. I hope we can get along without that, but it seems to be insistent.

W.

MR. HOOVER: What are your views, Mr. McClure?

MR. McCLURE: I must be dull of comprehension, Mr. Chairman, Mr. Carpenter seems to me to take the position that Colorado must be protected to an extent which would make her absolutely safe, regardless of other interests. California stands clearly upon the matter of beneficial use, not that California desires to or would set up a claim which would injure her neighbors. Happily, we are encouraged to believe that there shall be no damage to any State because of as generous use as California may choose to exercise. When I return to California, I dislike very much to have to report that the States have not been able to come to any conclusion among themselves that gives us any clearance. I had hoped that we might take action which would give that clearance, because that is what we need and need as speedily as possible. I am frank to confess that I do not grasp as fully as I wish the exact attitude of Colorado, notwithstanding Mr. Carpenter's statement. I would like to know what character of assurance he would demand from the lower States.

MR. CARPENTER: That the construction of any works shall in no manner interfere with the development of the territory of any of the Upper States, or the use of water therein, and said works shall not have any preferred right of title to the use of water of said stream as against Upper States.

W.

MR. HOOVER: Mr. Emerson, what would your views be on this proposal?

MR. EMERSON: Why, it would be agreeable to me, as an Upper State, provided the lower States could subscribe to it, but I hope to see a plan evolve that all seven States can subscribe to.

MR. HOOVER: Mr. Scrugham?

MR. SCRUGHAM: The fundamental objection is that projects on the lower river can not be successfully financed unless Mr. Carpenter's proposal is materially modified. If this Commission fails to come to an understanding, it will be a serious reflection upon the personnel of our organization. It will mean the holding up of construction work and serious delay in the financing of future projects. Unless Mr. Carpenter can modify his statements, I do not believe that this Commission can come to any agreement.

MR. CALDWELL: I do not quite take the view of Colonel Scrugham. I believe that if Mr. Carpenter's idea prevails, as I understand it, it would still be possible to finance the Boulder Canyon Dam and the other developments on the river, as is evidenced by the statement that is being submitted by private interests and as evidenced by statement of Director Davis to which I can refer. I feel that Director Davis is willing, notwithstanding the viewpoint of Mr. Carpenter, to recommend that the Government build a Boulder Canyon Dam, so we have a case of private interests and Government interests, each of them willing to go into the development of the Colorado River. Personally, I do not think that the attitude would be a bar to the development of the Colorado River.

W.

MR. HOOVER: In other words, you think Mr. Carpenter's view ought to be accepted by the other States?

MR. CALDWELL: Mr. Chairman, I have tried to remain open-minded in these matters. I confess very frankly that my leaning is toward the idea advanced by Mr. Carpenter. I do not want to be in the position of throwing the commission into a dead-lock on the proposition at this time. We should search for some common ground that we can get on and have this for a basis. I am not prepared at this time to suggest that ground. Director Davis has made a statement "There is plenty of water for all" and I am sure he never meant to qualify that statement in any way, for instance by saying "I made this statement on the basis of so many acres for Utah, so many for Colorado, etc." I believe he will stay to/^{his} statement, unqualifiedly.

MR. CARPENTER: I might say that this whole matter, of course, came rather impromptu. I neglected to state /^{in my} earlier statement that while nature has fixed certain barriers in the form of a continental divide down through the territory of Colorado, there are some existing diversions that are wholly consumptive, taking the water through the drainage. We would be perfectly willing to enter into a reasonable limitation upon that wholly consumptive use, not feeling that we should be more penalized than anyone else, so as to keep it more within bounds. I might say, furthermore, that we wish it distinctly understood that our position in this particular case should not constitute a precedent at all on any other drainage in Colorado that might not be directly affected.

MR. HOOVER: Mr. Davis, what are your views?

MR. DAVIS: I think what I said before: -- I am still of the opinion that an agreement of that kind would be futile; nevertheless, such an agreement would amply protect the interests of New Mexico, and if it is satisfactory to the Commissioners of the lower States, it is satisfactory to New Mexico.

MR. McCLURE: May I ask Mr. Carpenter one question? Would you not be willing to take a statement or declaration of this Commission, being expressed at the bottom of your page as you have presented it somewhat in this manner:

"That the construction of one reservoir upon the lower river shall in no manner arrest or interfere with the subsequent development of the territory of any of the upper states or the use of the water therein and said works upon the lower river shall not have, assert or claim any prior or preferred right or title to the use of the waters of said stream as against the upper states."

We are asking that a start may be made in a development which could injure no one.

MR. EMERSON: It could injure someone.

MR. McCLURE: How?

MR. CARPENTER: If you wish to limit yourself to one reservoir, we have no objection. We, with proper protection to us, do not care how many reservoirs you build. We want you to get the maximum benefits from every quarter. I do not mean by my resolution to limit your construction of the lower river. My thought is to give you absolute free unbridled rights, all objections withdrawn on our part, in return for your declaration of non-interference.

W.

with the development over the next 50 or 100 years of the upper territory. If it is thought wise and more prudent that some kind of limitation be put upon this, not in the short period of 10, 15, or 20 years, but a proper time, the life of states considered, I will be very glad to enter into discussion. My thought is this, to bring about an adjustment in line with that which has heretofore been thought could be obtained, that is to say a full development of the lower river as rapidly as possible with a full declaration of protection against adverse claims on behalf of that construction against the upper states in the years to follow, because we realize that the development on the lower river is imminent and to a degree are willing to forego demands that we might justly make in order to bring that about. When we have thus aided wherever we can to bring that about, our past experience has taught us to bear well in mind that before we enter upon any such an undertaking we must be assured that we will not be penalized. It has been forced upon us by a department of Government naturally administered by human beings. Through errors of judgment on their part, we have been brought into that defensive position.

MR. SCRUGHAM: Would you accept a change in your proposal as follows: "That the construction of any and all reservoirs or other works in any State upon the stream system shall in no manner arrest or interfere with the subsequent development of the territory of any of the other States or the use of the water therein for a period of twenty years. At the expiration of the time as agreed upon, and if the demands for water from the stream system render it necessary

or desirable, then, a definite allocation of water rights may be negotiated."

MR. CARPENTER: I would not care to agree to that for such a short time. Twenty years is a mighty brief span in view of the probabilities of the speed of our development. Those of us in the upper area are firmly convinced that it will occupy practically half of a century.

MR. SCRUGHAM: If the limit is made for fifty years, it would be a serious bar to financing. I even question the wisdom of a twenty year time allowance.

MR. CARPENTER: I will be glad to consider it further but not at this time would I like to render my opinion.

MR. NORVIEL: I have a new proposal as follows:

"It is agreed that no state nor any of the citizens thereof, shall obtain, nor shall any development on Colorado River in any of said states thereby create, a priority of right as to time or quantity of water by virtue of the earlier development and use of the waters of Colorado River as against any other state, or the citizens thereof; and all priorities as between said states, with respect to the use of the waters of Colorado River, are hereby specifically waived.

Provided, however, that each state shall be free to develop by reclamation -- new lands up to the following acreages from Colorado River waters, excepting the Gila River:

W.

Wyoming	543,000 acres
Colorado	1,018,000 "
Utah	456,000 "
New Mexico	483,000 "
Nevada	82,000 "
Arizona	676,000 "
California	481,000 "

Provided that adequate storage be created at one of the major dam sites in the Grand Canyon -

Provided also that a permanent commission shall be created, which shall, whenever it be shown to the satisfaction of said commission that there are lands within any state, in addition to the areas hereinabove, stated, that may be irrigated from the waters of the Colorado River without detriment to the proper irrigation of other areas hereinabove stated for each state, have power to grant to such state the use of waters of said river for such additional acreage.

MR. DAVIS: I would like to have it distinctly understood that the paper I prepared and submitted is not a proposition. It simply represented an idea that was then in my mind and I am not in the least committed to it and I would like to modify it in one or two respects.

MR. HOOVER: Mr. Norviel's idea here involves a limitation of acreage on some basis; as I assume he does not rigidly adhere to the acreage mentioned. It then becomes a question of a sort of deferred determination of the allocation of the water above a certain maximum upon a basis of actual priority of development.

W.

MR. CARPENTER: I am willing to agree that every state shall be entitled to 50% of the water in her domain. I am willing to yield that Colorado shall yield water in excess of 50%. The States of Arizona, etc., should be limited to the use of 50% of the water within their territory.

MR. HOOVER: In your preliminary statement you only suggested one-third yourself.

MR. DAVIS: Probably Colorado is the only State that would agree to that.

MR. HOOVER: Mr. Norviel's proposition raises the broad question as to whether or not it is feasible to proceed on some such idea that he has placed before us and try to find some kind of acreage limitation with the door open to a subsequent allocation when need is proved. I would like to find out whether there is any hope of coming to an agreement on that line.

MR. DAVIS: New Mexico agrees to the general plan but not to the acreage allotted to that State in these figures.

MR. HOOVER: How would that strike Wyoming?

MR. EMERSON: I believe I would agree to it in about the same way as I agreed to Mr. Carpenter's proposal. It would be satisfactory on the whole to Wyoming but I would feel the impossibility of getting it by the legislators of some of the states on the basis of the figures suggested. I would concur with Mr. Davis in that regard.

W.

MR. HOOVER: In other words, you favor the idea, subject to an adjustment of acreage. Mr. McClure, what would be your re-action?

MR. McCLURE: I have put the caption on that sheet tentatively as "Arizona and California." I respond favorably.

MR. HOOVER: Would you go further and respond to it on a basis of further adjustment of the acreage?

MR. McCLURE: I would not at this time say "no."

MR. HOOVER: Mr. Caldwell, is there any possibility of arriving at any plan subject to the adjustment of the acreage?

MR. CALDWELL: I do not look with favor on that at this time. Possibly I may come to it. I think I have made myself clear before on the matter.

MR. HOOVER: If we were able to expand the acreage?

MR. CALDWELL: I am opposed to the whole acreage idea, because I believe it is a harder proposition than it would be to adhere to the water idea.

MR. HOOVER: Mr. Carpenter, would there be any hope of agreeing on this line subject to an adjustment of acreage?

MR. CARPENTER: I have my serious doubts of our legislature looking with favor upon an acreage limitation. Personally, I might entertain more liberal views in that respect than others in my State might. If it be true, however, that we should finally agree upon that, then the acreage here specified must be amplified, because there are two factors left out of these figures (Cites as one example the City of Denver.) The entire water supply for the

City of Denver is included in that figure (1,825,000) The development of small enterprises should be included in those figures. We feel frankly that we are inclined to insist that it be very liberal in view of the fact that we feel that the water supply feature is entitled to consideration from our end of it. Of all the States that furnish much and get little, we are that State. You take our neighboring States -- the consummation of water within their domain is entirely out of proportion to Colorado. I am put to a rather embarrassing position on some of these matters of limitation.

MR. NORVIEL: I do not think the Commissioners ought to take it that this is an ultimate limitation but that it is trying to strike a balance. We have taken Director Davis' figures as the possible acreage irrigable in the States and have not attempted to limit the States, but that when this acreage has been reached, a larger acreage might be allocated. It seems to me that this is something we might agree^{all}/on with equanimity.

MR. CARPENTER: I would most certainly object to a condition "Provided that adequate storage be created at one of the major dam sites in the Grand Canyon." If you are going to put that in, it will be hopeless to get approval from my country, unless you put in a provision for construction of dams elsewhere. I think the construction of those lower dams is primarily the concern of the lower area. It is their responsibility and their profit. I mean by that that the benefits to run from their construction should run primarily to the States in which they are located.

There are reservoirs in Colorado and Utah that will have to be constructed ultimately. That is a matter for our territory to bring about because the benefits will run primarily to our country.

MR. NORVIEL: It is not intended, of course, to assume that any other State is particularly interested in this, but as you have expressed yourself that the lower states are practically at their full development, further reclamation development is arrested now.

MR. McCLURE: Do you mean Mr. Carpenter that this will put a stop to construction elsewhere?

MR. CARPENTER: It prevents allocation until that reservoir is constructed.

MR. NORVIEL: We might add without objection a word "may" which would lake the clause read: "Provided that adequate storage may be created at one of the major dam sites in the Grand Canyon."

MR. CARPENTER: Your major dam site -- it would require a year and a half running constantly without any withdrawal to fill that reservoir. Whether there are one or a dozen reservoirs, the effect would be the same.

MR. HOOVER: We revolve round and round this point. Is there interstate priority of utilization or is there not?

MR. CARPENTER: I thought this statement covered that:

"That the construction of any and all reservoirs or other works upon the lower river shall in no manner arrest or interfere with the subsequent development of the territory of any of the upper states or the use of the water therein and said works upon the lower river shall not have, assert or claim any prior or preferred right or title to the use of the waters of said stream as against the upper states."

W.

That is a distinct limitation of the construction of dams below.

MR. HOOVER: In other words, suppose this clause in your suggestion were introduced there with the alteration that "except as above, the acreage which we do not at present possess", then you have no objection?

MR. HOOVER: Before I go on, Colonel Scrugham, have you considered Mr. Norviel's suggestion?

NOTE: (See Page 50)

MR. SCRUGHAM: We are willing to accept it.

MR. NORVIEL: I have added after the word "one" the words "or more" so that the proviso now reads: "Provided that adequate storage may be created at one or more of the major dam sites in the Grand Canyon. I move the adoption, by the Commission, of this proposition.

MR. HOOVER: Does someone second the motion?

MR. McCLURE: I second the motion. (Motion as follows:)

MR. HOOVER: It has been moved and seconded that this proposal as written down by Mr. Norviel should be accepted by the Commission. All those in favor say "aya".

The following answered "Aye";

Mr. McClure
Mr. Norviel
Col. Scrugham

Those opposed "No"; The following were opposed:

Mr. Caldwell
Mr. Carpenter
Mr. Davis
Mr. Emerson

THE MOTION IS LOST

W.

MR. HOOVER: Would this proposal be accepted as a basis of discussion with such altered acreages as may be agreed? The proposition would then read as follows:

It is agreed that no state nor any of the citizens thereof, shall obtain, nor shall any development on Colorado River in any of said states thereby create, a priority of right as to time or quantity of water by virtue of the earlier development and use of the waters of Colorado River as against any other state, or the citizens thereof; and all priorities as between said states, with respect to the use of the waters of Colorado River, are hereby specifically waived.

"Provided, however, that each state shall be free to develop by reclamation--new lands up to the following acreages from Colorado River waters, excepting the Gila River:

Wyoming	acres
Colorado	acres
Utah	acres
New Mexico	acres
Nevada	acres
Arizona	acres
California	acres

"Provided that adequate storage may be created at one or more of the major dam sites in the Grand Canyon-

"Provided also that a permanent commission shall be created, which shall, whenever it be shown to the satisfaction of said commission that there are lands within any state, in addition to the acres hereinbefore stated, that may be irrigated from the

W.

waters of the Colorado River without detriment to the proper irrigation of other areas hereinbefore stated for each state, have power to grant to such state the use of waters of said river for such additional acreage.

MR. DAVIS: Yes.

MR. EMERSON: May I interject again? Here is a matter I have been trying to get before the Commission. I want it to go in as showing a basis that Wyoming thinks will be reasonable to work on.

(Reads following Statement):

January 30, 1922.

First. that the construction of a great reservoir at some point upon the Colorado River below the mouth of the San Juan River is necessary in order to secure proper flood control and to provide adequate storage of water for irrigation and that same should be undertaken with all expedition.

Second. that the provision of such a reservoir should serve to protect water rights and the use of water both present and future above and below such a reservoir, and therefore an agreement should be entered into by and between the seven states represented on this Commission whereby the use of the waters of the Colorado River and its tributaries should be enjoyed by each State without interference from any other state.

Third. that while it is the general opinion that the water supply of the Colorado River is ample and sufficient for all

W.

practical development out of the river and its tributaries practical considerations of finance and politics make it seem advisable to set a maximum limit of use by each state of the waters of the river and its tributaries, by agreement to extend over a period of years at which time any necessary readjustment may be considered, and that a permanent Commission should be created which shall undertake such re-adjustments at such period of time. That last provision is acceptable to me if there is a continuing Commission. I might say, whereby the need of any State that might find that they could irrigate acreage in excess of that allotted to /it, could be considered by the Commission. Now in support of that I might say that Wyoming realizes that this is a matter of co-operation, that our viewpoints differ. We think we have a lesson in point upon the construction of a reservoir upon the lower river and the investment of certain rights there. When such a reservoir is established an embargo is placed upon the Upper River. That is a thing we wish to keep away from. Wyoming, therefore, cannot be expected to subscribe to any program that only proposes a development of the lower river without returning to us a reasonable agreement as to the protection of our rights. It seems to me that in consideration of the practical phases of the matter, we must place some limit for the development before we can expect proper action by the several legislatures to ratify any agreement or compact that may be proposed by this Commission.

W.

It seems to me the construction of one great reservoir at a proper point is necessary for proper irrigation both above and below the reservoir. At the present time there are certain states that will not concur with the figures of Director Davis. At the same time if we take the larger figures we are deviating from the hypothesis upon which we are basing our structure. To arrive at the figures that this Commission should adopt may well be a matter to be continued for some little time. The general plan of limitation of acreage may be accepted as something to work from at this time. It is a basic principle without getting down to definite figures. It is a question as to whether we shall or shall not limit the acreage, which is a very material question before this Commission at present.

MR. MCCLURE: This meeting can make no agreement but such an agreement may be made hereafter.

MR. EMERSON: Exactly. Within the year.

MR. HOOVER: You can perhaps amplify that a little.

MR. EMERSON: Certain of the states will not accept Mr. Davis' figures, and on the other hand, our very hypothesis is attacked -- an ample water supply is the basis of the solution of this question. If there is water enough, there is nothing to quarrel about.

MR. HOOVER: What is your impression on Mr. Emerson's proposal, Mr. Carpenter?

W.

MR. CARPENTER: My impression is on the line made in the last statement by Mr. Emerson. The whole problem rests on the amount of water supply. If there is truth in the statement that there is ample water supply, there is no need of any acreage limitation. On the other hand, if we contend that there be ample water supply coming in a particular State and that State's acreage is small compared with the water supply of other states, that be amplified in proportion of acreage to water supplied. That might result in profitable discussion. Just to stand purely on acreage without the question of water supply frankly does not appeal to me. The objection to acreage limitation in Colorado is that the acreage limitation is hopelessly out of proportion to the water supply that flows out of the State to other people and amounts to a self-denial on the part of Colorado.

MR. HOOVER: In other words, you don't accept any basis of compact founded on a limitation of acreage.

MR. CARPENTER: I am not in a position at this time to accept any such basis.

MR. HOOVER: So you do not accept Mr. Emerson's resolution?

MR. CARPENTER: I could not.

MR. DAVIS: I take the position that I will take a limitation provided I can have a fair distribution. I will not take it, however, on the basis of Mr. Davis' figures.

W.

MR. HOOVER: Mr. Caldwell, would you be willing to enter upon a compact based on any acreage, at all?

MR. CALDWELL: I think I have answered that question as well as I can. As I have said before, I am not prepared at this time to say that I would not accept an acreage basis at this time.

MR. HOOVER: At what sort of interval of time, then?

MR. CALDWELL: I think we should at least go over to another meeting of this Commission. I have said that I do not consider it the proper basis on which to get any justice to all the interests represented.

MR. NORVIEL: What basis do you suggest?

MR. CALDWELL: Water. Water enough for all.

MR. EMERSON: If there is water enough for all, we have the open door policy.

MR. CALDWELL: I think the objections to it have developed right here in this Commission.

MR. CARPENTER: I ask any man here if the general declarations up to this date have not been in harmony with the last paragraph of my statement.

MR. NORVIEL: I will be frank to confess that I was basing my judgment of these things on Director Davis' report of 1921 but I am now faced with three or four times the possible irrigated acreages in those statements. I assumed that this report contained a fairly accurate statement of the new acreages that might be brought under irrigation, but if the claim made here by the Com-

missioners, (and I have no reason to contend against it) are comparatively true, of course that would necessarily change the whole situation.

MR. HOOVER: I take it that on Mr. Emerson's proposal, we have a favorable acceptance from Mr. Norviel, Mr. McClure, Emerson, Judge Davis and Colonel Scrugham. Mr. Caldwell and Mr. Carpenter are against it.

MR. DAVIS: I would like to ask one question. When would Mr. Caldwell be ready to give a definite answer to the question previously asked: When would you be willing to enter upon a compact based on acreage?

MR. CALDWELL: When I have consulted my home government.

MR. DAVIS: Then it means we cannot get together on this point at this meeting.

MR. EMERSON: If we enter into a reasonable agreement along the lines I suggested, it can be put over in Wyoming.

MR. CARPENTER: If our acreage was not so absolutely out of proportion to the water supply, I would feel a much lighter mental attitude. I can't feel like accepting it at this time.

MR. CALDWELL: May I ask why you prepared this elaborate setting of acreages in Colorado?

MR. CARPENTER: To prove that the assertions we made were true, that with all probable future uses, there would be ample water going below. It was the object of proving to our satisfaction that we could not as a state use even an equitable part of the water of the river rising in our territory.

MR. HOOVER: We have not been able to get to any agreement on a general single idea for a compact. Therefore, this session has no result except to define differences. The question arises, is it worth while to have another session? Or shall we make the declaration now that we are so hopelessly far apart that there is no use in proceeding? Do the Commissioners think there is any basis of arriving at an agreement?

MR. NORVIEL: I do not think we should foreclose our meetings that at this time. I think/we should hold the matter open and be subject to a call of the Chairman; if after further investigation and study, after we get home and think over the subject, we think we can do better at another session, then we will notify you and another session should be called.

either
MR. SCRUGHAM: We will/ make or not make effective, the intent of Congress and the State Legislatures in creating this Commission, within the next few months. I believe that we have made a failure thus far. If we cannot get harmonious action, we might as well quit. I believe that we are wasting our time if we cannot come to some substantial agreement at an early date.

not
MR. CALDWELL: I would like to dissent from that view. It may/ be near so hopeless as you think. In fact, I never felt qualified to come to an agreement on this important matter at this time, and I have so expressed myself before this Commission. If this Commission, however, all excepting myself, feels that it is a waste of time to continue further, I do not think I should impose my objection on this Commission. I do think it would be a very serious

reflection on us should we adjourn now after these conferences, with the acknowledgment that we do not care to discuss it more. I confess that it has been with some difficulty that I have been able to get clear in my mind the views of many of the members of this Commission and as they have talked, talked, and talked, their ideas have cleared quite a good deal. I should like to have further opportunity of getting clarified, by further meetings. I think that the Chairman, if I remember correctly, deplored the fact in the early stages of this meeting that we had so limited data. We came here totally open-minded, I believe, without any program, and all that we have done we have done since we got here. All that we thought, all that we tried to systematize, has been done since we are here. It is only the part of wisdom to adjourn this meeting subject to another call and try again. We could not in any event get past the legislatures until they meet the next time. The Colorado River has been running down in its present course for many a generation. I believe that we should use the time that we have now and the time that we may have to conclude on this thing in an attempt to agree on a policy on the Colorado River. There has been one statement that has been persistently made by the best informed people and by the best thinkers in the Colorado River matters and on the matter of its developments; that statement is that it should be developed according to some unified comprehensive plan. I do

W.

believe that the rights on the river, if we had such a plan in hand
would be/^{much} more easily allocated, and simplified, if we had that plan.

I find myself lacking clearness even in this problem, because I am unable to propose a definite plan of development of the Colorado River. That matter has not been discussed here as to the advisability of this Commission looking into a complete and harmonious plan for the development of the Colorado River. I know there are engineers besides those connected with the Reclamation Service who have made comprehensive studies of the Colorado River, and who do have very definite ideas as to the proper development of that river. I think it is due the Commission that they hear those engineers, get those facts; I do not interpret further-more the temper of the people of California, from what contact I had with them, just as I have felt that the interpretation has been given here. I believe/^{it} that is very clearly in the minds of the people of Southern California that there is water enough in the river easily to supply all the irrigation needs on the river and that after that comes the matter of power and so on. Down in San Diego, the one thing that nearly every speaker from California referred to, announced and reiterated, was that they were very anxious and willing that the right of developments on the Upper States should be protected. I believe that is the spirit and the attitude of the people of California. I shall not be satisfied to believe otherwise until I have had further evidence. I do not believe that

W.

our people would feel satisfied if we met here and agreed to disagree on the small amount of evidence that we have had presented at this time.

MR. HOOVER: Might I just clear that point. I assume that your idea is that Mr. Carpenter's suggestion should be submitted to Mr. McClure's associates and get their re-action. That is, to determine whether they do or do not agree to the unlimited uses of the water in the upper states.

MR. CALDWELL: I certainly would like to suggest that Mr. Norviel and Mr. McClure do not take home to their States the idea that they met here commissioners unwilling to be generous and helpful.

MR. MCCLURE: That is exactly the attitude we are getting.

MR. HOOVER: Perhaps you can put it in the way that it would be desirable to consider this proposal of Mr. Carpenter's and get the views of your own people.

MR. CALDWELL: One of the first things I heard when I got here was that the case was to be discussed on the data prepared by the Reclamation Service. I believe that the upper states have met pretty thoroughly that proposition. We are all uncertain as to the way in which the acreage was arrive at, etc. Mr. Davis has himself pretty thoroughly canvassed the situation in California. Mr. Davis stands high in the estimation of the people of California. I believe Mr. Davis could get before the people of California and advise them that they have nothing to fear as to their irrigation interests in the lower parts of the river from permitting

unrestricted irrigation developments on the river above. If Mr. Davis will do that, I believe we can get by on a treaty easily.

MR. HOOVER: Would it not be desirable for every delegate to take all these various proposals and to discuss them with their own people. I would also suggest that we address Mr. Davis of the Reclamation Service, a specific letter, asking whether he still adheres to his original assurance of ample water upon the basis of these enlarged demands.

MR. CALDWELL: Mr. Chairman, I do not believe I have made myself clear about all I have said about water enough for all. We do not submit that as a claim because I do not know whether that is right. I do not think that it is foolish or, under the circumstances,^{an} extravagant thing to present. If we must get together on an acreage basis, Utah must investigate herself the acreage before she accepts the estimates set down by the Reclamation Service. I believe, Mr. Davis said that the Green River investigation shrunk from 250,000 to 15,000 acres. Maybe the other projects will shrink in the same way. Director Davis may recommend that in his opinion that is the case, and that notwithstanding all the alleged claims of the State, there is still enough water to irrigate all the lands in the Upper River. I cannot but regret that the matter of such claims have been given such prominence in this Commission, because they are undoubtedly inaccurate in nearly every respect.

MR. CARPENTER: May I suggest, Mr. Chairman, If you will recall in a private conversation, I stated at that time I hoped that the states of origin could make out a policy within sixty days. Unfortunately, I was unable to confer with the Upper State delegates.

Next, I came in here, not prepared to present the matter with a full statement, giving it as my own viewpoint from my own State. I feel frankly that this is a matter requiring very prudent and thoughtful treatment. Hasty treatment would be unwarranted. We are here with a pretty sacred trust and it should not be treated lightly. I really believe that in the months and weeks to come many small matters of difference can be argued out. I would say frankly that I would be open to severe censure if I should go home saying that I signed anything without the fullest and most frank understanding with the officials and the government of my State.

MR. HOOVER: I am only groping around here for a useful subject for further consideration at the next meeting. In the meantime I assume that Nevada, California, Wyoming, and New Mexico, have a sufficiency of data on which they are prepared to act but that Utah, Colorado and Arizona have not sufficient data. That will require certain periods of time. I do not assume that we could do all those things in even sixty days. How much time do you think will be required, Mr. Caldwell, on your part?

MR. CALDWELL: How long did it take Colorado?

MR. CARPENTER: It took us the better part of two seasons to gather that data in the thoroughness with which it is gathered.

MR. HOOVER: The home consideration of these proposals will probably require a month, but I do not know how many years the collection of further engineering data will take.

MR. DAVIS: I want to withdraw in the meantime from the record that New Mexico would accept any acreage less than the full amount that is claimed. It does not seem to me that what we have split

on here is a question that can be solved by any investigation that can be made within the next few months.. We have split on the underlying and fundamental principles as to whether there will be any limitations stated in this compact. In all frankness, I can't see how investigations in the field, in the limited extent they can be made within the next few months, are going to help the Commissioners to make up their minds and so state. I feel that if we can't agree now, we can't agree at all, and it seems to me useless to have a further meeting until either the two representatives of the lower state yield somewhat from their position or Utah and Colorado yield from their position.

MR. SCRUGHAM: I wish to register a protest against the idea that the function of this Commission is to work up the details of the technical data required by this investigation. We are here to formulate a broad constructive policy for development which necessitates breadth of view and team work in action. I am opposed to the policy of spending several months time in getting information on small details.

MR. NORVIEL: In reply to Judge Davis' last statement (it seems that that was directed towards Arizona) I will state that Arizona is remaining steadfast in a position that is apparently unattainable. I struck a middle ground in the beginning and maintain that ground. I am willing to concede both ways, either way, in order that we may come to some sort of an agreement, but I do not want to limit ourselves to the ultimate uses of the above under the present circumstances and to leave us with what

may remain. If Mr. Caldwell has full faith and credit in what he says, that there is water enough for all and if Mr. Carpenter is of the same opinion, then I see no reason why this Commission should not now at this time lay out a broad general plan of the whole Colorado River basin as one unit without any State lines interfering and let priorities prevail. If there is water enough for all, in the matter of irrigation they cannot be hurt. If we develop our lands first, and yet if there is water enough for all, they cannot be hurt.

MR. EMERSON: They can be hurt. We have been hurt on the North Platte River, and we do not want it repeated on the Colorado.

MR. NORVIEL: I am speaking of absolute beneficial use of water necessary for irrigation in the United States, if there is water enough for all, the lower States' earlier development cannot injure the upper States. They say to us, "go on and make your developments, build your homes and your farms, but do it at your peril", but they come back to the same principle that there is enough water for all. If there is enough water for all, then the earlier development on the lower river should have the priority of right in the basin as a whole without objection from the upper states.

MR. EMERSON: When five states are willing to subscribe to a basis along my lines and both other states have said that they do not want to subscribe, now, but they leave the door open, we may be able to get together before the year is out.

W.

MR. NORVIEL: Then why can't we agree on a middle ground temporarily for a number of years and then readjust matters?

MR. EMERSON: The year is yet young.

MR. CALDWELL: I have held back nothing, Mr. Chairman, I have spoken very frankly, everything I have to say. I have just taken the stand that it has occurred to me to take. I think it is a part of wisdom that we should defer conclusion on this matter to a future time. We should have another meeting and see if something does not develop. My conscience is perfectly clear as to the attitude I take. I assure you there is no occasion for suspicion on my part and my ambition is to do something constructive for the development of the Colorado River.

MR. HOOVER: What time do you suggest?

MR. CALDWELL: I do believe that a lot of information on this matter would help these Commissioners. It is proposed now that we take a trip down over the Boulder Canyon dam site. Why?

MR. SCRUGHAM: I issued an invitation, you don't need to accept it Mr. Caldwell.

MR. CALDWELL: I am not looking for a pleasure-trip out of this proposition. I would like to propose that we not only visit the Boulder Canyon dam sites but that we visit other dam sites and that we inform ourselves. It does have a bearing on the rights relating to the river.

W.

MR. CARPENTER: I know that to some members of this Commission it seems to have been a fruitless conference. To some of us who are somewhat experienced in conferences of anywhere from three upward, I am free to say that this to me has been a very profitable conference and there is more nearly an approach to a common accord here than I have expected when I arrived in Washington. Here are seven divergent interests. We should have the adjournment late enough so as to have the maturity and the benefits of consultation at the next conference.

MR. HOOVER: How much time would you suggest?

MR. CARPENTER: Ninety days.

MR. HOOVER: Would it look well in the eyes of the people who delegated this job if we adjourn for ninety days?

MR. CARPENTER: I am free to say that I have not taken that into consideration.

MR. SCRUGHAM: Don't you think it is unfair to all interests to adjourn now?

MR. CARPENTER: I think it would be the height of crime to the people who sent us here to adjourn permanently now. I am unwilling personally to abide with the wishes of the whole Commission.

MR. EMERSON: I can conceive that meetings hereafter may iron out the opinions here expressed. We have five states accepting it and two that can't decide right now, but leave the door open. I would suggest a later meeting.

MR. CARPENTER: Is there not a Mr. La Rue who made a thorough study of this proposition?

MR. CALDWELL: He is at Pasadena, California. I wrote Mr. La Rue to outline to me a trip down the river that I might take, so as to be acquainted with the river. He outlined a very interesting trip in a letter to me, which I intended to bring with me, but I forgot it, and did not bring it along. He suggested while making the trip, "Why not have the Colorado River Commission make the trip", and especially included Mr. Hoover in the invitation. I believe we should think over making such a trip.

MR. HOOVER: I do not have a feeling that it is going to advance these particular questions. I hesitate to say that we have delayed this question for even sixty days.

MR. EMERSON: There would be no ratification of this matter anyway until the legislatures meet. If we could have at this meeting agreed ^{upon} some kind of basis it would have been mighty good.

(It was suggested by Mr. Hoover that the next meeting take place in the Southwest.)

MR. EMERSON: That would be very agreeable to me. If we terminate here now, I would have felt that I have thrown away several weeks. I am willing to submit to what would meet the convenience of the rest.

W.

MR. CARPENTER: Each of us should have time to consult our own Government. My own observation has been that the opportunity of personally exchanging views has been very profitable. I would expect the same freedom of thought from others to my proposition that I expect to give to theirs, and that can be brought about to the exchange of views.

MR. HOOVER: Then we leave it on this basis. It is moved that the Commission should adjourn to the earliest practicable date, say about March 15, somewhere in the southwest, possibly Phoenix, at which time an opportunity will be given for public hearings. Are we agreed?

THE MOTION WAS UNANIMOUSLY CARRIED

The Chairman read the Minutes of the Third, Fourth, and Fifth Meetings of the Commission which on motion duly made and seconded were approved.

The Chairman then submitted various letters applying for the position of Secretary to the Commission and for the position of Engineer to the Commission. Mr. Stetson was instructed to inform the writers of these letters that for the moment, there was no positions open with the Commission.

Thereupon, the meeting adjourned at 6:10 P.M., subject to the call of the Chairman.

Clarence C. Stetson
Executive Secretary

MINUTES OF THE

8TH MEETING

COLORADO RIVER COMMISSION

The Eighth meeting of the Colorado River Commission was held at the Federal Building, Phoenix, Arizona, Wednesday morning, March 15th, 1922 at 11:30 A.M. There were present:

Herbert Hoover	Representing the U. S.....	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis, Jr.	"	New Mexico
Frank C. Emerson	"	Wyoming
W. F. McClure	"	California
W. S. Norviel	"	Arizona
James G. Scrugham	"	Nevada
Clarence C. Stetson.	Executive Secretary

The meeting was called to order by the Chairman at 11:30 A. M.

The following program for hearings before the Colorado River Commission was on motion duly made and seconded unanimously adopted.

Program for Hearings

Before

COLORADO RIVER COMMISSION

Wednesday, March 15th: Phoenix, Arizona

2:00 P. M. - Public Hearing

Thursday, March 16th:

11:00 A. M. - Public Hearing

2:00 P. M. - Public Hearing

8th-P.

Friday, March 17th:

10:00 A.M. Public Hearing
Leave for Las Vegas, Nevada in afternoon

Saturday, March 18th:

Las Vegas, Nevada

Day to be spent in inspection trip
to Boulder Canyon
10:00 P.M. - Leave for Imperial Valley.

Sunday, March 19th: Imperial Valley, Calif.

Day to be spent in inspection trip
of the Valley.
Leave for Los Angeles in the evening.

Monday, March 20th: Los Angeles, Calif.

Arrive at Los Angeles.

Tuesday, March 21st:

Afternoon - Public Hearing

Wednesday, March 22nd:

Morning - Public Hearing
Afternoon - Public Hearing

The Chairman submitted for the consideration of the Commission the following letter from Mr. O. C. Merrill, Executive Secretary of the Federal Power Commission, relative to the granting of a preliminary license to James B. Girand for the construction of a dam at Diamond Creek.

8th - P.

Federal Power Commission
Washington

E
Projects, Ariz. (No. 121).
Girand, James B.

March 3, 1922.

Dear Mr. Secretary:

On June 16, 1921, the Federal Power Commission issued a preliminary permit to James B. Girand, for power development in Colorado River, near Diamond Creek.

Several years ago Mr. Girand had secured a permit from the Interior Department under the Act of 1891, and claims to have expended about \$100,000 in collecting data and making preparations to take out a final permit, under the Interior Department. The Federal Water Power Act was passed before Mr. Girand was able to secure a final permit from the Interior Department, and he was, therefore, forced to proceed under the Federal Water Power Act.

The Federal Power Commission, in recognition of the equities in Mr. Girand's case and of the fact that his proposed project appeared desirable in the public interest issued him a preliminary permit. He has fully complied with the terms of the preliminary permit, and, as provided therein, has now made application for a license to construct his project.

The project proposed consists of a dam approximately 450 feet high, which will develop the full head available between Diamond Creek and the lower boundary of the Grand Canyon National Park. The dam will create a pool approximately 65 miles long, with a total capacity of about one million acre-feet. It is proposed to operate the project with a draw-down of about 40 feet, which makes available storage for approximately two hundred thousand acre-feet. This will not be sufficient to affect materially the flood flow of the river, but will increase, to some extent, the minimum low-water flow.

It is believed that Mr. Girand's project will fit in to any general scheme of development of Colorado River, and that there can be no objection to issuing the license and permitting him to proceed, provided proper conditions are introduced into the license, - first, to prevent his acquiring water rights that would interfere with future irrigation development above, and, second, to require him to pass a certain minimum flow of water at all times to take care of the irrigation interests below.

8th - P.

The copper interests of the State of Arizona are behind this project, and express themselves as exceedingly anxious to have it put through with the least delay practicable, as they fear a shortage of power in Arizona, on account of diminishing fuel-oil supplies. It is estimated that construction of the project will require at least 5 years.

Information is requested as to whether the commission, of which you are Chairman, objects to the issuance of a license to Mr. Girand at this time and what conditions, if any, it considers necessary to have inserted in the license to protect the general interests along Colorado River.

Very truly yours,

Signed O. C. Merrill
Executive Secretary.

1 Inclosure--9124, viz:
Extra Carbon

The Honorable,
The Secretary of Commerce.

No definite decision was reached in regard thereto.

The meeting adjourned at 12:00 Noon.

The above minutes were approved
at the 27th meeting of the Commission
held at Bishop's Lodge, Santa Fe,
New Mexico, Friday afternoon November
27th, 1922.

Clarence C. Stetson,
Executive Secretary.

8th - P.

MINUTES OF THE

9th MEETING

COLORADO RIVER COMMISSION

The ninth meeting of the Colorado River Commission was held at Brown's Palace Hotel, Denver, Colorado on Saturday morning, April 1st, 1922 at 9:00 A.M.

There were present:-

Herbert Hoover	representing the United States
	Chairman
R. E. Caldwell,	" Utah
Delph E. Carpenter	" Colorado
Stephen B. Davis, Jr.,	" New Mexico
Frank C. Emerson,	" Wyoming
W. F. McClure,	" California
W. S. Norviel,	" Arizona
James G. Scrugham,	" Nevada
Clarence C. Stetson.....	Executive Secretary

The following were also present:-

Governor Emmet D. Boyle of Nevada
Governor Charles R. Mabey of Utah
Governor Merritt C. Mechem of New Mexico
Governor Oliver H. Shoup of Colorado

After a general discussion and on motion duly made and seconded the following resolutions were unanimously adopted:

- (a) That the next meeting of the Commission shall be held, on the call of the Chair, at some point in the Southwest, sixty days after the draft of the transcript of the records of the following hearings before the Commission are completed:

Hearings at Phoenix, Arizona, March 15 & 16, 1922
" " Los Angeles, Calif., March 21, 1922
" " Salt Lake City, Utah, March 27 & 28, 1922
" " Grand Junction, Colo., March 29, 1922
" " Denver, Colo., March 31 and April 1, 1922
" " Cheyenne, Wyoming, April 2, 1922

- (b) That at or before the time of said meeting, the various Commissioners shall submit to the Secretary of the Commission

suggested forms of compact for the disposition and the apportionment of the waters of the Colorado River and its tributaries.

(a) That the minutes and records of the First, Second, Sixth, and Seventh meetings of the Commission be and hereby are approved and adopted.

The letter addressed to the Chairman by Mr. O. C. Merrill, Executive Secretary of the Federal Power Commission under date of March 3, 1922, relative to the granting of a preliminary license to James B. Girand, for the construction of a dam at Diamond Creek, which letter was submitted at the Eighth meeting of the Commission, was further discussed and it was decided to defer definite action until the next meeting of the Commission, referred to in resolution (a) above.

The meeting adjourned at 9:30 A. M. for the purpose of continuing at the Capitol the hearings before the Commission.

Clarence C. Stetson

Executive Secretary

The above minutes were approved at the 27th meeting of the Commission held at Bishop's Lodge, Santa Fe, New Mexico, Friday afternoon, November 27th, 1922

9th - D

1

MINUTES OF THE

10TH MEETING

COLORADO RIVER COMMISSION

- - - - -

The tenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Thursday morning, November 9, 1922, at 10:00 A. M.

There were present:

Herbert Hoover	representing the U. S.	Chairman
R. E. Caldwell	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis, Jr.	"	New Mexico
W. S. Norviel	"	Arizona

In addition, there were present:

Governor Thomas E. Campbell of Arizona
Governor Merritt C. Mechem of New Mexico
Arthur P. Davis, Director, U. S. Reclamation Service
Ottamar Hamele, U. S. Reclamation Service

On motion duly made and seconded the following resolutions were adopted:

(1) That the Commission should recess further formal meetings subject to call of the Chair until such time as the Commissioners from California, Nevada and Wyoming should arrive.

(2) That the Governors should be invited to attend the executive sessions of the Commission.

(3) That each commissioner should be entitled to bring with him to the executive meetings of the Commission a legal or an engineering adviser, or both, as he may desire.

10th-S.F.

1

7

(4) That Director Davis and Mr. Hamele should be present at the executive sessions of the Commission.

(5) That each Commissioner should canvass the delegation from his state to ascertain if they desire to submit any written statements or make any verbal statements to the Commission before its formal executive sessions were called to order by the Chair.

(6) That this meeting of the Commission should adjourn until 2:00 P. M. today, at which time the statements referred to in resolution (5) should be submitted to or heard by the members of the Commission now present at Bishop's Lodge.

The meeting adjourned at 12 noon, executive sessions to be resumed at call of the Chair.

Clarence C. Stetson,

Executive Secretary

The above minutes were approved
at the 11th meeting of the Commission
held at Santa Fe, New Mexico, Saturday
morning, November 11th, 1922.

10th-S.F.

2

MINUTES OF THE

11TH MEETING

COLORADO RIVER COMMISSION

The eleventh meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Saturday morning, November 11th, 1922, at 10:00 A.M.

There were present:

Herbert Hoover, representing the U. S.,	Chairman
R. E. Caldwell,	" Utah
Delph E. Carpenter,	" Colorado
Stephen B. Davis, Jr.,	" New Mexico
Frank C. Emerson,	" Wyoming
W. F. McClure,	" California
W. S. Norviel,	" Arizona
James G. Scrugham,	" Nevada
Clarence C. Stetson,	Executive Secretary

In addition, there were present:

Governor Thomas E. Campbell of Arizona
Governor Merritt C. Mechem of New Mexico

Edward W. Clark, Joint Commissioner and Advisor for Nevada.
Arthur P. Davis, Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottamar Hamele, Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
George L. Hoodenpyl, City Attorney, Long Beach, California
C. C. Lewis, Assistant State Water Commissioner and Advisor for Arizona.
Richard E. Sloan, Legal Advisor for Arizona.
Charles P. Squires, Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsce, Advisor for Utah.

The meeting was called to order by Mr. Hoover.

The minutes of the tenth meeting were read by the Secretary.

11th-S.F.

MR. HOOVER: If there is no objection the minutes will be accepted as read.

(The minutes were thereupon unanimously approved.)

The first matter we need to consider is the method of procedure; that is the manner of making the most expeditious progress. I understand that two or three Commissioners have formulated suggested pacts as a basis of discussion and I am wondering whether the other delegates that have arrived have themselves formulated any ideas. Have you (addressing Mr. Scrugham) given any more thought to it?

MR. SCRUGHAM: No, I have not.

MR. McCLURE: At your request, Mr. Hoodenpyl of Long Beach, California, has outlined something which he will be pleased to present.

MR. HOOVER: Have you got it now?

MR. McCLURE: No. He said he would like, if agreeable, to present it if he could have ten or fifteen minutes.

MR. HOOVER: (Addressing Mr. Emerson) Did you formulate some project?

MR. EMERSON: Nothing in written form. I have some ideas.

MR. HOOVER: We can proceed in a great number of ways. We can enter upon a general discussion as to principles, or take up the forms of compact that have been prepared. I would like to hear what your views are as to how we shall proceed.

MR. SCRUGHAM: I suggest we take up the states alphabetically and let the representative of each state present, - or whoever he desires to present it for him, - such proposals as he may have to offer. We could commence with

Arizona.

MR. HOOVER: Is that agreeable to the others?

MR. S. P. DAVIS: I think it is a very wise suggestion.

MR. HOOVER: I should be glad to hear from Arizona.

MR. NORVIEL: Mr. Chairman, we have a suggested form of pact. I might say that we have the dotted lines on it. (Handing copies to members of the Commission) This draft is similar to the one that was sent to the Commissioners some weeks ago. A few little changes have been made in it which we think are clarifying, both in the language and, perhaps, in conformity to more nearly accord to law and I ask the consideration of this writing at the proper time.

We have discussed questions in general at our various meetings heretofore so that I do not think an introductory statement will be necessary or worth while at this time. I ask the consideration of this form and, when the time comes, that it be taken up for discussion.

MR. HOOVER: Don't you think it will be desirable that we go through it in detail so as to fully understand it?

MR. NORVIEL: Perhaps it would be better to read it at this time. Someone, - the Secretary, - might read it so that we will be sure that all of us have at least heard it before it is discussed.

MR. HOOVER: I think it might be helpful if it was read. We can give a moments consideration to a determination of what are the underlying principles in the proposal.

In all suggestions made there are certain simple underlying principles. Our problem at the start may well be a discussion of principles. The actual form of documentation or reduction of those principles is secondary and can be got at fairly easily. I suggest that Mr. Stetson read it.

(Thereupon Mr. Stetson read the form of compact presented by Mr. Norviel)

MR. STETSON: (reading)

"COMPACT PROVIDING FOR THE EQUITABLE DISTRIBUTION OF
THE WATERS OF COLORADO RIVER AND ITS TRIBUTARIES.

"The United States of America and the States of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming, being desirous of providing for the equitable distribution of the waters of Colorado River and its tributaries among the said States, and of protecting the interests of the United States therein; of removing all causes of controversy between said states appertaining to said river and its waters, and being moved by considerations of interstate comity, have resolved to conclude a compact for these purposes, and

"WHEREAS, There is urgent necessity for the immediate control of the floods of the Colorado River in such manner as to remove permanently the menace of overflow and the consequent loss of life and destruction of property and to conserve for beneficial uses the unused waters of the river, and to that end there should be constructed at the earliest possible date a large dam or dams at some suitable point or points on the lower river of sufficient size to form a reservoir with capacity to store at least the average annual flow of the river; and

"WHEREAS, by authority of the Congress of the United States and of the Legislatures of each of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, a commission composed of a representative of the United States of America and of each of said states has been duly appointed to negotiate and enter into a Compact respecting the future utilization and disposition of the waters of the Colorado River and its tributaries to the end that the rights of the United States and of each of said States inter sese with respect to said waters may be definitely fixed and determined and the proper and full development of the region included within the Colorado River Basin be advanced thereby: and

11th-S.F.

4

"WHEREAS, subject to ratification and approval by the Congress and by the Legislatures of said States the terms of such Compact have been agreed upon by said Commission as follows:

ARTICLE 1.

"The States of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming mutually agree among themselves and with each other and with the United States of America that with respect to the use, distribution and utilization of the waters of the Colorado River and its tributaries, where such use and distribution within any state may affect the use and distribution made within another state, the following general principles shall be recognized and enforced as controlling in all interstate controversies or disputes relating thereto, any law or custom of any state to the contrary notwithstanding.

"First For the purpose of this compact, the Colorado River Basin is to be regarded as embracing the entire watershed of the Colorado River within the United States and also the Imperial and Coachella Valleys, and is to be considered as one economic unit; and

"For the purposes of this compact and when used herein Colorado River shall be understood to include main stream and all tributaries of that river; and

"The application of water for agriculture as used herein shall mean the application of water upon the land for any purpose, where the water is applied to promote the growth of vegetation; and

"Power, as used herein, is understood to mean both water power directly applied and hydro-electric power.

"Second. The following definitions are agreed upon:

"(a) By the word "appropriation" as herein used is meant a diversion of water from its natural channel, including diversions from storage reservoirs, and its application to a beneficial use and the creation thereby of legal rights to such diversion and use, as recognized and enforced generally in states where irrigation is practised and where the common law doctrine of riparian rights is not in force:

11th-S.F.

5

"(b) By the phrase "priority of appropriation" as herein used is meant that an earlier appropriation is in right of diversion and use superior to a later appropriation.

"Third. The common law doctrine of riparian rights shall not apply or be enforced within the basin.

"Fourth. Existing rights of appropriation within the basin are to remain unaffected by this compact.

"Fifth. Appropriations of water hereafter made shall be restricted to beneficial uses. The beneficial uses herein recognized are river control, municipal and domestic, agriculture, and power.

"Sixth. An appropriation of the waters of the Colorado River may be made for agriculture only when the application of water to such use at the place of use shall be economically feasible, and when the application of water to such use may yield only a meager and unprofitable return it shall be deemed a waste and be prohibited.

"Seventh. The proprietary right that may be acquired by an appropriator of water from the Colorado River for a beneficial use shall be limited to the usufruct. The quantity of water to which an appropriator shall be entitled under his appropriation shall be the amount reasonably needed for the particular use for which the appropriation is made when the same is applied without unnecessary waste. Beneficial use shall be the basis, measure and limit of the right of appropriation, and any use that may not be justified as such beneficial use shall be prohibited.

"Eighth. During the period of _____ years from the date of the ratification of this compact, appropriations from the waters of the Colorado River shall be made subject to the following limitations:

"1. Appropriations made for each of the several uses recognized in this compact shall as a class have preference in right of use in the following order:

First: River control.

Second: Municipal and domestic.

Third: Agriculture.

Fourth: Power.

"2. As between appropriations made for the same general use priority of appropriation shall prevail.

11th-S.F.

6

"3. The law of each state shall govern appropriations made therein only insofar as the same shall not be inconsistent with any of the provisions of this compact.

"Ninth. Appropriations made from the Colorado River after the expiration of said period of time, or if said period of time be extended by agreement of the parties hereto, then after the termination of such extension, shall be made in accordance with the limitations of Section Eight hereof, except that any and all such appropriations without regard to the particular use for which they may be made, shall be inferior in right and servient to any and all appropriations made prior to and during said period of time and any extension thereof agreed to as hereinbefore provided.

"Tenth. In times of scarcity due to prolonged or unusual drought within the basin each state shall be entitled, as a matter of right, to have an equitable apportionment made of the available waters based on appropriations as herein defined, to the end that appropriators within said state shall receive a fair, just and equitable proportion of said waters in accordance with the limitations and provisions of this compact.

"In any suit for the enforcement of the foregoing provision the court shall have power to grant such relief and adopt such remedy as may in its discretion be deemed necessary or proper.

"Eleventh. Whenever any dam and other incidental works shall be constructed on the Colorado River in whole or in part within any state for the generation of hydro-electric power, by virtue of ownership being vested in the United States, shall be exempt from taxation, said state shall be entitled to an allocation or allotment of free power generated or made possible by such works, of commercial value equal to and in lieu of the revenue such state would receive if such dam and incidental works were taxable by the state.

"Twelfth. Whenever in any state any dam and incidental works for the generation of hydro-electric power, primarily or as a by-product, are constructed under license, permit or franchise granted by such state said state may reserve in any such license, permit or franchise, and whether such reservation be made or not the State shall have the right to take over, maintain and operate any such dam and incidental works as may be provided in said license, permit or franchise, upon the condition that it shall pay to the licensee, permittee, or holder of said franchise the fair value of the property taken, and if all the property constructed or created under such license, permit or franchise be not taken, such property being dependent on the license, permit or franchise for its value, then it shall pay

11th-S.F.

7

also the reasonable damages such licensee, permittee or holder of such franchise may suffer, caused by the severance of the property taken from the property not taken. Such right to take shall not be exercised until the expiration of the license, permit or term period of the franchise provided in the laws of the state under which such license, permit or franchise is granted. Provided that such right shall be exercised subject to any paramount right the United States may possess.

"Thirteenth. No water shall be diverted from the Colorado River Basin for use outside of the Basin as herein specified, except it is now agreed that within the State of Colorado there may be so diverted not to exceed _____ acre feet per annum; and within the State of Utah there may be so diverted not to exceed _____ acre feet per annum. Provided, however, it is agreed that this paragraph is not intended to and does not establish a legal right of intermountain diversion of water from the Colorado River Basin, nor a precedent therefor.

"Fourteenth. Where it is more advantageous or economical to divert water from the Colorado River in one state for use in another state, which may also include the storage of water in one state for use in another, such storage and diversion shall be permitted.

"Fifteenth. All actions, suits or proceedings that may be brought to enforce any of the provisions of this compact shall be deemed to be controversies between states.

ARTICLE 11.

"First. The Congress of the United States shall provide a continuing commission to be called the Colorado River Commission to consist of three persons, residents of the states within the Basin, to be appointed by the President. Said Commission shall be empowered and directed to make a study of all subjects that relate to the conservation and utilization of the waters of the Colorado River for beneficial uses; to investigate the use and disposition of such waters that shall be made in each of said states; to make reports from time to time as to the results of such study and of such investigations, and to make recommendations to the United States and to the several states based thereon.

"Second. In any action, suit or proceeding brought to enforce any of the provisions of this compact, the reports made by said Commission shall be admitted as proof of the facts recited therein.

11th-S.F.

8

ARTICLE 111

"This compact shall take effect upon its ratification and approval by the Congress of the United States and by the Legislatures of the States of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming.

"In testimony whereof, we, the undersigned, representative of the United States, and representatives of each of the States of Arizona, California, Colorado, New Mexico, Nevada, Utah and Wyoming, by the authority in us vested, have each signed our names hereunto, at the City of Santa Fe, New Mexico, on the _____ day of November, in the year of our Lord, One Thousand Nine Hundred and Twenty Two:

Chairman
Representative of the United States

Commissioner
Representative of Arizona

Commissioner
Representative of California

Commissioner
Representative of Colorado

Commissioner
Representative of New Mexico

Commissioner
Representative of Nevada

Commissioner
Representative of Utah

Commissioner
Representative of Wyoming"

MR. HOOVER: For a better understanding of this proposal, we could reduce it to certain contained principles so that we should not take time with discussion of phraseology or minor questions. I just made a note as I went along, rather to illustrate what I had in mind, of the fundamental principles as I understand the pact: The Colorado River Basin to be regarded as the entire watershed including the Imperial and Coachella Valleys; that the principle of prior utilization throughout the basin should rule, with a limitation of time during which that rule would operate. Is that correct?

MR. NORVIEL: Yes, sir, that is correct. The vital principle of the whole thing is to stay as nearly with the law as is possible. We have fixed a period, or we have allowed a period to be fixed. It is flexible at this time. The Commission shall fix the period of time for which this shall operate. We have segregated the classes, or they really segregate themselves. First, river control, which is hardly a use of water but we recognize that the first thing in the river, perhaps, to be done is to control the river, to control the flood. The next use is municipal or domestic. The next is agriculture and the last is power. Each of these in their use takes precedence over those that follow. For instance, agriculture is servient to municipal and domestic uses all through. Power is servient to both municipal and domestic and agriculture uses, - for this period of time at least.

There being, as we understand it, a desire on the part of the whole of the inhabitants of the Valley, or of the Basin, that

at least no prior appropriation right shall attach to power, if at all, at least for a long time, so the time is left open for the Commission to fix.

MR. HOOVER: It would seem that the first principle is definition of the basin including the California Valleys. Second, the rule of prior utilization to operate throughout the basin for a definite period.

MR. NORVIEL: Yes.

MR. HOOVER: Third, that there should be priorities of beneficial use as between river control, agriculture, power and so on; fourth, there is a limitation of water to beneficial use by its economic purpose in agriculture.

MR. NORVIEL: Yes, that is it.

MR. HOOVER: Fifth, that the electric power plants/^{built}by the government or any public body should thereby furnish power in lieu of taxes and the right of states to acquire private plants should be provided.

MR. NORVIEL: Yes, private plants or any plants.

MR. HOOVER: And sixth, the limitation of diversion of water outside of the basin, and seventh, a continuing commission for determination and study,-

MR. NORVIEL: For continual study of the needs in the basin.

MR. HOOVER: I am not sure whether it is your wish to discuss this now, or whether the rule should obtain that all the different proposals should be before us. I think we would probably get further if we have all the proposals first.

MR. McCLURE: I suggest that we have the others read and I think your suggestion that a skeleton of each be prepared is apropos.

MR. HOOVER: Perhaps we might designate one of our legal members just to skeletonize the principles that underlie each pact.

MR. S. B. DAVIS: It seems to me from the statement of the Chairman as made we all understand what the underlying principles of Mr. Norviel's suggestion are anyhow. I doubt very much if it would add very much if we,--

MR. NORVIEL: There is no intention of making anything complex in it. It appears to me one or two readings of it through would clarify the whole thing.

MR. HOOVER: I think California is next in line. Would you (Addressing Mr. McClure) like to offer any proposal?

MR. McCLURE: No, sir, not at this time.

MR. HOOVER: Then we come to Colorado.

MR. CARPENTER: On behalf of Colorado I have prepared a draft of compact along the basis of the fifty-fifty division of the entire flow of the river. The members have all received copies of this compact and they have so reduced my stock that I only have a copy at hand that is really the first draft. I will have extra copies prepared and submitted, however, during the recess. I think everybody, about all of them here, have copies. Colonel Scrugham, did I give you a copy?

MR. SCRUGHAM: No. Have you an extra one?

11th-S.F.
12

MR. CARPENTER: You may use that one. (Handing paper to Mr. Scrugham) Is it the desire that the compact be read?

MR. HOOVER: I think it would be very useful.

MR. CARPENTER: I might say there have been various minor changes, constructive suggestions as to minor changes, in this pact but all of those look to the matter of phraseology and for our purposes the first draft that I sent out will probably cover the situation.

(Thereupon Mr. Stetson read the form of compact offered by Mr. Carpenter)

MR. STETSON: (Reading)

"COMPACT OR AGREEMENT FOR THE EQUITABLE APPORTIONMENT
OF THE WATER SUPPLY OF THE COLORADO RIVER AND OF THE STREAMS
TRIBUTARY THERETO.

"The United States of America and the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, being desirous of providing for the equitable distribution and apportionment of the waters of the Colorado River and its tributaries among said States and of protecting the interests of the United States therein and of removing all causes of present and future controversy between them in respect thereto, and being moved by consideration of interstate comity, pursuant to the Acts of the Congress of the United States and of the Legislatures of the said States respectively, have resolved to conclude a Convention for these purposes and have named as their Representative and Commissioners:

The President of the United States of America,
Herbert Hoover, Secretary of Commerce of the
United States, Representative of the United States;

The Governor of the State of Arizona, W. S. Norviel,
Commissioner for the State of Arizona;

The Governor of the State of California, W. F. McClure,
Commissioner for the State of California;

The Governor of the State of Colorado,
Delph E. Carpenter, Commissioner for the State of
Colorado;

The Governor of the State of Nevada,
J. G. Scrugham, Commissioner for the State of Nevada;

The Governor of the State of New Mexico,
Stephen B. Davis, Jr., Commissioner for the State of
New Mexico;

The Governor of the State of Utah;
R. E. Caldwell, Commissioner for the State of Utah; and

The Governor of the State of Wyoming,
Frank C. Emerson, Commissioner for the State of Wyoming.

Who, after having communicated to one another their respective powers, found to be in good and due form, have agreed upon the following articles:

ARTICLE 1.

"The territory included within the drainage area of the Colorado River and its tributaries and all lands now and hereafter watered from said stream, within the United States of America, for the purposes of the equitable apportionment and distribution of the uses and benefits of the waters of said river, shall hereafter be considered to consist of two divisions which are hereby designated as The Upper Division and the Lower Division respectively.

"The long established crossing of the Colorado River above the great canyon thereof and situate about one mile below the mouth of the Paria River and at the point indicated as 'Lee Ferry' on the topographic sheet for Echo Cliffs Quadrangle (Arizona), edition of 1891, reprint of 1913, published by the United States Geological Survey, and as 'Lee's Ferry' on the map of the State of Arizona published by the Department of the Interior, General Land Office, in the year 1912 and compiled and drawn by Daniel O'Hare, is hereby designated as the point of demarcation between the two divisions of said streams, and said crossing and point of demarcation shall be indicated and designated in this compact by the use of the words 'Lee's Ferry'.

"The Upper Division shall comprise those parts of the territory of the States of Arizona, Colorado, New Mexico, Utah, and Wyoming within and from which waters naturally drain and flow into the Colorado River and its tributaries above Lee's Ferry and also of all lands within said States now or hereafter served with waters diverted from said stream and its tributaries above Lee's Ferry.

"The Lower Division shall comprise those parts of the territory of the States of Arizona, California, Nevada, New Mexico, and Utah within and from which waters naturally drain and flow into the Colorado River and its tributaries below Lee's Ferry and also of all lands within said States now or hereafter served by waters diverted from said stream below Lee's

Ferry and from all tributaries which enter said stream below said point.

ARTICLE II.

"The waters of the Colorado River and of all the streams contributing thereto within the United States of America, shall be equitably divided and apportioned among the States of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming and between those portions of the territory of each of said States included within the Upper and Lower Divisions of said river, as defined by Article 1, hereof, in the following manner:

"1. The flow of the Colorado River shall be divided between the territory included within the two divisions of said river upon the basis of an equal division of the mean or average annual established natural flow of said river as heretofore ascertained and recorded at Yuma, Arizona, and for such purpose it is hereby found, determined and agreed that the mean or average annual flow of the Colorado River at Yuma, Arizona, from the year 1902 to the year 1921, both inclusive, has been seventeen million four hundred thousand (17,400,000) acre-feet and that of said mean or average annual flow eighty-six per cent (86%) or fourteen million nine hundred and sixty-four thousand (14,964,000) acre-feet thereof has flowed in said river at Lee's Ferry and that fourteen per cent (14%) or two million four hundred and thirty-six thousand (2,436,000) acre-feet thereof has entered said stream through streams contributing to the flow of said river between Lee's Ferry and Yuma, Arizona.

"2. The States of Colorado, New Mexico, Utah and Wyoming jointly and severally agree with the remainder of the High Contracting Parties that the diversions from the Colorado River and its tributaries and the uses and consumption of water within the Upper Division shall never reduce the mean or average annual flow of the Colorado River at Lee's Ferry over any period of ten (10) consecutive years, below a flow equivalent to thirty-six per cent (36%) of the agreed established average annual flow of the river at Yuma, Arizona, as defined in paragraph one (1) of this Article, to wit, below a flow of six million two hundred and sixty-four thousand (6,264,000) acre-feet, and that not less than said minimum mean or average annual flow shall hereafter pass Lee's Ferry for the use and benefit of the territory included within the Lower Division of said river; and the aforementioned States do further jointly and severally agree that they will cause to flow annually in said river past Lee's Ferry, in addition to the aforesaid minimum average annual flow, an amount of water equivalent to one-half the annual requirement for delivery to the Republic of Mexico as provided in Article III. of this compact.

11th-S.F.

15

ARTICLE 111.

"The High Contracting Parties agree that the duty and burden of supplying any waters from the flow of the Colorado River within the United States of America to the Republic of Mexico or to any part of the territory of said nation, in fulfillment of any obligation or obligations which may be determined to exist or which hereafter may be fixed, by treaty between the two nations, shall be equally apportioned between and equally borne by the Upper Division and the Lower Division of the Colorado River within the United States of America; that the annual delivery at Lee's Ferry, by the States of the Upper Division, of a quantity of water equivalent to one-half the annual amount required to satisfy any such international obligations shall be a complete fulfillment of the provisions of this Article by said States; and that the States of the Lower Division shall contribute annually a like amount of water from those waters of the river annually to pass Lee's Ferry for the Lower Division, as provided by Paragraph two (2) of Article 11. of this compact, and from the flow of tributaries entering the river below Lee's Ferry, and further, shall cause the water contributed by both divisions to be delivered to the Republic of Mexico in conformity with any such treaty obligations.

ARTICLE IV

"A continuing joint Commission is hereby designated which shall consist of ex officio, the State Water Commissioner of the State of Arizona and the State Engineers of the States of California, Colorado, Nevada, New Mexico, Utah, and Wyoming, or of the officials of said several States upon whom may hereafter devolve the duties of ascertaining the flow of streams now performed by the named State officials, and of a person to be designated by the Director of the United States Geological Survey or by the official of the United States of America upon whom may hereafter devolve the duties of ascertaining the flow of streams now performed by said named official; and it shall be the duty of said joint commission to make provision for ascertaining, determining, and publishing the annual flows of water in the Colorado River at Lee's Ferry and, if hereafter one or more Reservoirs are created at or in the vicinity of Lee's Ferry by the erection of a dam or dams across the channel of the Colorado River at any point or points between the mouth of the San Juan River and a point ten (10) miles below Lee's Ferry, to make provision for ascertaining, determining, and publishing the flow of water which would have annually passed Lee's Ferry had no such dam or dams been constructed.

ARTICLE V.

"The High Contracting Parties agree that compliance with paragraph two (2) of Article II of this Compact by the States of Colorado, New Mexico, Utah, and Wyoming shall wholly relieve and exempt the States whose territory is in part in-

11th-S.F.

cluded within the Upper Division and users of water within said Division from causing any additional amount or amounts of water to flow past Lee's Ferry for the benefit of the territory included within the Lower Division, and from any and every other or additional claim or assertion of right to or servitude upon the waters of the river within the Upper Division for the benefit of the Lower Division or of any users of water therein; and that no claim of prior, preferred or superior right to the use and benefit of any part of the waters of the Colorado River or of any of the tributaries thereof, within the Upper Division, other than the amounts agreed to be caused to flow past Lee's Ferry by said paragraph two (2) of Article II, shall be made, asserted or recognized on behalf or for the benefit of the territory included within the lower Division; and, further, that subject only to the fulfillment of the obligations expressed by said paragraph two (2) of Article II and to the third paragraph of this Article, each of the States whose territory is in part included within the Upper Division shall have, possess, and enjoy the free and unrestricted uses and benefits of the waters of said river and of its tributaries as the same may flow within its territory of the Upper Division, according to the constitution and laws of each said State.

"And further agree that all rights, claims, and privileges with respect to the use and administration of any reservoir or reservoirs hereafter constructed within the Upper Division for flood control or other benefit of the territory included within the Lower Division, shall be and remain inferior, subordinated, and subservient to the superior and preferred rights of diversion, use, and consumption of the waters of the Colorado River by the States and for the benefit of the territory included within the Upper Division, expressed in paragraph one (1) of this Article; and that all waters which may be discharged from any such reservoir or reservoirs for carriage in said river to the Lower Division and all waters stored in any reservoir created by the erection of a dam across the channel of the river at any place between the mouth of the San Juan River and a point ten (10) miles below Lee's Ferry, shall constitute and be considered as a part of the waters which it is agreed shall pass Lee's Ferry from the Upper Division by paragraph two (2) of Article II of this compact.

"The States of the Upper Division, towit, the States of Arizona, Colorado, New Mexico, Utah, and Wyoming do jointly and severally agree that any and all claims which now or hereafter may exist or arise between any of them with respect to the uses and benefits of the waters of the Colorado River and of any of its several tributaries within the Upper Division or with respect to any claimed, contemplated, or desired servitude or servitudes by or for any one or more of them and upon the streams or territory of any one or more of the others

thereof, are specifically reserved for separate consideration, settlement or consent by those of said States so involved, and the signing and ratification of this compact shall not be construed or interpreted as a recognition of or consent to any claim, privilege or servitude upon the streams within any State of the Upper Division except to the extent necessary to fulfill the express provisions of this compact and not otherwise.

ARTICLE VI.

"The High Contracting Parties agree that, subject at all times to the rights to the diversion, use, and consumption of the waters of the Colorado River and of its tributaries for the benefit of the territory included within the Upper Division but within the limitations defined by this compact, and subject to the fulfillment of the obligations expressed in Article III, and further subject to the provisions of the second paragraph of this Article, each of the States whose territory is in part included within the Lower Division shall have, possess, and enjoy under the constitution and laws of each said State, and within its territory, the free and unrestricted uses and benefits of the waters of those tributaries which enter the Colorado River below Lee's Ferry and of all waters of said river which may pass said point from the Upper Division in conformity with paragraph two (2) of Article II and with Article III of this compact.

"The States of the Lower Division, to wit, the States of Arizona, California, Nevada, New Mexico, and Utah do jointly and severally agree that any and all claims which now or hereafter may exist or arise between any of them with respect to the uses and benefits of the waters of the Colorado River and of the several tributaries within the Lower Division, including any allocation of the burdens incident to a fulfillment of Article III, or with respect to any claimed, contemplated or desired servitude or servitudes by or for any one or more of them upon the streams or territory of any one or more of the others thereof, are specifically reserved for separate consideration, settlement or consent by those of said States so involved, and the signing and ratification of this compact shall not be construed or interpreted as a recognition of or consent to any claim, privilege or servitude by any State of the Lower Division upon the streams which enter the Colorado River below Lee's Ferry or upon said river or that part of the waters thereof by this compact agreed to be delivered from the Upper Division, except to the extent necessary to fulfill the express provisions of the compact and not otherwise.

ARTICLE VII.

"The High Contracting Parties agree that the uses of the water of the Colorado River within the United States of America for purposes of navigation shall be and remain inferior,

11th-S.F.

subservient, and subordinated to the diversions, uses, and the necessary consumption of the waters of the stream and its tributaries for domestic, municipal, agricultural, power, manufacturing, and other similar purposes and shall not prevent or interfere with the construction, maintenance, and operation of such works or means or diversion and storage as may be necessary or essential to effectuate such preferred and superior beneficial uses.

ARTICLE VIII.

"The High Contracting Parties agree with respect to the States of each Division of the Colorado River inter sese, that all rights to the use of any of the waters of said stream and of its tributaries within the Division for purposes of generating power or of manufacture, hereafter shall vest and be exercised in all respects as inferior, subservient, and subordinated to all present and future uses and necessary consumption, of the waters within the Division for domestic, municipal, agricultural, and other similar purposes and shall not hinder, interfere with or prevent the construction, maintenance, and operation of such works or means of diversion and storage within the Division as may be necessary or essential to effectuate such preferred and superior beneficial uses, provided, however, that the provisions of this Article shall not apply to or interfere with the intrastate regulation and control of the appropriation, uses or distribution of waters within any State according to its constitution, laws and the decisions of its courts.

ARTICLE IX.

"The High Contracting Parties agree that the division, apportionment, and distribution of the waters of the Colorado River provided by this Compact and the methods adopted and the principles applied, are based entirely upon the physical and other conditions peculiar to the stream and to the territory drained or to be served and that none of the High Contracting Parties in any way concede the establishment of any general principle or precedent by the concluding of this compact and particularly with respect to the equitable apportionment of or the rights of the States to the waters of other rivers or with respect to the disposition inter sese, of the waters of streams tributary to the Colorado River and common to two or more States whose territory is included within either Division; and the concluding of this compact shall not be construed as a recognition of an acknowledgment by any of the contracting States of any principle or precedent by virtue of which any State may lay claim to or establish any servitude for its use or benefit upon the territory or the streams flowing within any other State or States.

ARTICLE X.

"This compact or agreement shall become operative when ratified and approved by the legislatures of each of the signatory States and by the Congress of the United States, and notice of the ratification and approval by the legislature of each State shall be given by the Governor of such State to the Governors of the remaining States and to the President of the United States, and notice of the approval by the Congress of the United States shall be given by the President of the United States to the Governors of all the signatory States, as soon as may be convenient after said respective ratifications, and upon such ratification and approval this Convention shall become operative and in full force and effect as of the date of the approval thereof by the Congress of the United States.

"IN WITNESS WHEREOF, the respective Representative and Commissioners have signed this compact or agreement, in a single original, which shall be deposited in the archives of the Government 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, State of New Mexico, this _____ day of October One Thousand nine hundred twenty-two.

For the United States of America:

For the State of Arizona:

For the State of California:

For the State of Colorado:

For the State of Nevada:

For the State of New Mexico:

For the State of Utah:

For the State of Wyoming:

11th-S.F.

20

MR. HOOVER: Just to get my own mind clear I made this note as to principles and no doubt Mr. Carpenter can check it. I, the Colorado River basin is to include the entire drainage together with the Imperial and Coachella Valley, - -

MR. CARPENTER: And all lands served.

MR. HOOVER: Outside of the basin as well?

MR. CARPENTER: Yes, sir.

MR. HOOVER: 2, that the rule of equitable apportionment shall be applied to the basin; 3, that the basin be divided into the upper division and lower division, the point of demarkation being Lee's Ferry below the mouth of Paria River; 4, that the lower division shall be apportioned 36% of the average flow during ten years at Lee's Ferry.

MR. CARPENTER: An amount equivalent to 36% of the Yuma flow. Not 36% of Lee's Ferry flow. An amount equivalent to 36% of the established flow of Yuma.

MR. HOOVER: I was wondering, just for a short consideration, what does that work back to at Lee's Ferry? Under this plan it works back to some automatic figures, doesn't it?

MR. CARPENTER: I don't remember now, I am not prepared to say just how that proportion runs to Lee's Ferry. The average annual flow through a period of ten years at Lee's Ferry should be equivalent to 36% of the established average annual flow at Yuma.

MR. CALDWELL: During the same years?

MR. CARPENTER: No, we have already established the annual at Yuma over a 20 year period.

MR. HOOVER: Then a correct statement should be the lower division should be apportioned a percent of average flow during ten years equal to 36% of the flow at Yuma ?

MR. CARPENTER: Yes.

MR. HOOVER: Then you contemplate here a transfer of that determination to Lee's Ferry, don't you ?

MR. CARPENTER: Yes, we take into account the inflows above Yuma and below Lee's Ferry. They are to be deducted from the one-half supply due to the lower basin and the resultant net figure will be given to pass Lee's Ferry.

MR. HOOVER: Well, the principle is that the determination is to be transferred as provided at Lee's Ferry.

MR. CARPENTER: Yes.

MR. HOOVER: 5, Mexico is to be provided by equal deductions from the upper and lower divisions; 6, a permanent Commission to determine flow at Lee's Ferry.

MR. CARPENTER: And limited solely to that purpose, simply to establish the fact.

MR. HOOVER: 7, use within state boundaries to be based on state laws, subject only to apportionment between the upper and lower division.

MR. CALDWELL: Pardon me, Mr. Chairman, I thought I noticed another idea of Mr. Carpenter's at that point. State laws were to govern except as between divisions. It is also provided that they should at a later date agree among themselves as to how they should distribute between themselves.

(NOTE: Top half of this page omitted from photostatic copy)

MR. CALDWELL: In each division?

MR. CARPENTER: Of course the provision respecting the navigation overlaps both divisions.

MR. HOOVER: This would be a correct statement. Use within state boundaries to be based on state laws subsequent to a state agreement as to the apportionment among states within each division; 8, priorities in each division as to agricultural, domestic and municipal. That turns those around. You had them turned around the other way, - power and navigation. In other words, you started in by giving the purpose which had least priority first; I just inverted it. Those are the main principles, aren't they?

MR. CARPENTER: Yes, all of it proceeding upon equal apportionment of waters as recorded at Yuma between the two divisions of the territory served and drained.

MR. HOOVER: In the main it consists of the rule of actual equitable apportionment, in which this pact shall establish the first step as between the upper and lower division.

MR. CARPENTER: Yes, sir, leaving the states in each of the two divisions to work out their local problems as the facts may justify, the facts in each case being more or less at variance with the facts that might obtain in another case within the division.

MR. HOOVER: New Mexico?

11th-S.F.

23

MR. S. B. DAVIS: We have nothing at this time.

MR. HOOVER: Nevada has nothing?

MR. SCRUGHAM: No, sir.

MR. HOOVER: Mr. Caldwell, I believe you have some suggestion of a pact.

MR. CALDWELL: Mr. Chairman, it is well known to the members of this Commission, I think, what my idea was originally with respect to the development of the Colorado River and the principles on which a pact could be based.

Briefly stated, I thought in the beginning that we had a brand new river here, practically, with a good opportunity to strike rights out boldly and scientifically develop the river. In view of the fact that it is pretty well established that there was water enough for all in case such a thing were attempted, it would be the surest way to make the river yield everything that was necessary for it to yield for the benefit of the inhabitants of the states.

The states who happen to be situated on the lower portions of the river were very much concerned because, as they put it as I understood it, they could not fasten upon any water right surely and say that it belonged to them and therefore capital would be frightened away from any venture which they might propose.

In Salt Lake City at the Hotel Utah, Chairman Hoover, asked if it might not be possible to, - inasmuch as we had not been able to arrive at a satisfactory basis for the partition of the water of the Colorado River on a basis of land available

11th-S.F.

24

to be irrigated in each state, whether or not it would not be possible to partition the water. With this thought in my mind I wrote out, in as brief a fashion as possible, what I thought might be done along this line. I do not consider the suggestion as exactly scientific, but it may be the very best thing to do, everything considered.

I am offering this proposition here as being tentative. I am not committed to it in any definite, absolute sense, but I should say to the Commission that I am seriously in earnest and I have no mental reservations with respect to it whatever. Of course I expected it would be criticised and added to, but I should be very much chagrined if anything is taken away from it because I thought I had got it down to an irreducible minimum.

I may state that the compact provides for partition of the water between the basins very much as outlined by Mr. Carpenter's draft here, and that it deals particularly with the unappropriated water of the Colorado River.

Now I think, Mr. Chairman, with those remarks, in conformity with your procedure and as you have outlined, that this may be read.

Perhaps I should apologize for not having copies here for every member of the Commission. I was not sure that members of the Commission would care to see it, so I didn't supply the copies.

(Thereupon Mr. Stetson read the form of compact offered by Mr. Caldwell)

MR. STETSON: (Reading)

11th-S.F.
25

" A COMPACT AGREEMENT ENTERED INTO, BY CONSENT OF THE UNITED STATES OF AMERICA JOINTLY AND SEVERALLY BETWEEN AND AMONG THE STATES OF WYOMING, COLORADO, UTAH, NEW MEXICO, NEVADA, ARIZONA, AND CALIFORNIA PERTAINING TO THE APPORTIONMENT, FOR BENEFICIAL USE, AMONG THE STATES NAMED OF THE UN- APPROPRIATED WATER OF THE COLORADO RIVER AND ITS TRIBUTARIES.

- - -
PREAMBLE

"Pursuant to certain appropriate concurrent legislation by the States of Wyoming, Colorado, Utah, New Mexico, Nevada, Arizona and California, by the respective legislatures thereof, and the United States of America, by its Congress, whereby it is provided that, with the consent of the United States of America, the above named States may enter into a compact agreement among themselves providing for an equitable apportionment of the waters of the Colorado River among said states for their use and benefit; and providing that for the purpose of drafting such a compact agreement the organization of a commission, consisting of a representative from each of the said States to be appointed by the respective governors thereof, should be organized; and whereas said commission has been duly organized and has deliberated upon the question involved, it does hereby and now agree upon the following articles:

ARTICLE 1.

"For the purpose of easy reference herein, the interested States of Wyoming, Utah, Colorado, New Mexico, Arizona, Nevada and California shall be termed the BASIN STATES: The Colorado River drainage area in Wyoming, Colorado and Utah and the portions of Arizona and New Mexico now naturally drained into the main Colorado River at or above the point described in Article 111 hereof shall be termed UPPER BASIN: and the territory of the Basin States in the Colorado River drainage area not included in Upper Basin, shall be termed LOWER BASIN.

ARTICLE 11.

"The beneficial uses to which the water may be applied in the order of preferential rights is as follows:

1. Irrigation including river control.
2. Domestic and culinary.
3. Power, manufacturing and mining.
4. Sundry purposes involving the consumption of water.
5. Navigation.

ARTICLE 111.

"For the purpose of partitioning and apportioning the
11th S.F.-26

rights to the use of water from, or of the Colorado River System between and among the Basin States, the Colorado River System is divided geographically into Upper Portion and Lower Portion at a point on the main Colorado River, near or at Lee's Ferry in the State of Arizona and near the south boundary of the State of Utah and more particularly described as follows:

ARTICLE IV.

"Upper Portion shall include the main Colorado River with all water tributary thereto, above the point described in Article III.

"Lower Portion shall include the main Colorado River with all water tributary thereto, below the point described in Article III.

ARTICLE V.

"In partitioning and apportioning the waters of the Colorado River System between the Upper Basin and the Lower Basin, the unit of measurement used in such partitioning shall be the acre foot.

ARTICLE VI.

"Subject to the provisions of Article II hereof, and as between and among the Basin States, rights to the use and control of water of or from the Colorado River System, shall take priority of right from the date of appropriation provided that:

"1. The total and aggregate of all priorities of rights running to the Lower Basin from, or at the point described in Article III hereof, shall never be in excess of 6,000,000 acre feet per annum.

"2. The Upper Basin shall be permitted unrestricted use within its boundaries of tributaries arising within its territory and flowing into the Lower Basin.

"3. Reserve storage shall be provided in an amount of not less than 6,000,000 acre feet at a location on the Colorado River lying above the point described in Article III, to protect the Upper Basin against periodical dry years and annual waste to the gulf of California through and past the Lower Basin.

"4. Beneficial use shall be the basis, the measure and the limit of all rights to the use of water in the Basin States.

"5. Storage of any water of the Colorado River System shall not initiate a right to the use of water as between the Upper Basin and the Lower Basin.

ARTICLE VII.

"This compact is subject to modification:

"1. By unanimous request and consent of the Basin States, and

"2. To meet the just requirements of any international agreement that may hereafter be made and entered into by and between the United States of America and the United States of Mexico affecting Colorado River water rights determined by this compact.

MR. CALDWELL: May I just say, Mr. Chairman, the principal idea I had in writing this draft was to stick more particularly to the idea of something that would be in the nature of a basis on which we could build outside of the compact, rather than make the compact cumbersome with details.

MR. HOOVER: Well, reduced somewhat the same way, the pact would come somewhat to this: 1, The basin to include the drainage area of the Colorado and the Imperial and Coachella Valleys. I gather, rather by indirection, that you cover the whole area on which water could be utilized rather than on a strictly drainage basin.

MR. CALDWELL: You have read Coachella and Imperial Valleys into it.

MR. HOOVER: I was trying to get a conception of it. I didn't want to put anything into your mouth. 2, the rule of prior utilization shall be applied within the basin; 3, the basin to be divided into two divisions, below and above Lee's

Ferry; 4, Priorities of utilization in Lower division as against upper division should never exceed six million acre-feet per annum; 5, storage shall be provided with a minimum of six million acre-feet above Lee's Ferry; 6, priorities in use to irrigation and so on as I had them set down, and 7, I rather gather by inference than a direct statement, that the interstate relation within each division to proceed on the rule of prior utilization. Is that right ?

MR. CALDWELL: Yes, sir.

MR. HOOVER: Has Wyoming prepared a proposal ?

MR. EMERSON: I haven't any draft of a compact, but in my mind there are very definite basic principles that must be established to form a basis for a compact and I believe the Commission has got to decide upon certain basic principles to work from if we are going to get any place at this meeting, and I am willing to just rehearse those verbally as they appeal to me.

MR. HOOVER: Should we first consider the principle of what we include in the basin?

MR. EMERSON: No, not necessarily. Still, that is a secondary question.

MR. HOOVER: Oh yes.

MR. EMERSON: It is something we can easily agree upon, I believe, and the question is whether or not we shouldn't consider, first, primary basic principles to determine whether or not we can agree upon those. For instance, I think first and

is
foremost the question of whether or not there can be a definite allocation of water as between the several states, or as between certain divisions that have been suggested. Now there is something basic, to my mind. As far as I have studied the position in Wyoming there must be a definite allocation at this time if we subscribe to a compact so the question of allocation might be taken as one of the basic questions we must decide. Allied with that is whether or not,-

MR. CALDWELL: May I ask a question there?

MR. EMERSON: Yes.

MR. CALDWELL: Do I understand that allocation would reach to the allocation between the states as well as between the basins?

MR. EMERSON: Not necessarily. Not necessarily, no. As far as I have thought, for instance, this question of the theory of allocation between an upper and lower division is rather appealing, leaving the settlement between the states in the two divisions to be worked out later between the states affected themselves.

MR. SCRUGHAM: I see no reason why we should not agree upon some reasonable allocation between the upper and lower division.

MR. NORVIEL: By allocation you mean quantity of water?

MR. EMERSON: It might mean quantity of water or an acreage. The way I see it now, the only practical way is upon quantity of water,--volumes of water.

Then I would say another vital question that we need to consider is to what extent federal control should be

applied to this river. We have a representative of the United States and we have an Enabling Act of Congress so I presume that is a thing we would be entitled to pass upon, and it is a very important question, in my mind.

The third question would be that of preference rights. That has all been treated in these compacts.

MR. SCRUGHAM: Do you mean as between irrigation, power and so on?

MR. EMERSON: Yes. For instance, in each case domestic and municipal use has been given preference over irrigation. I can't conceive that there should be any preference of those rights over irrigation, except as acquired by condemnation of irrigation rights.

Another question that should be considered is whether or not judgment should be passed upon economic feasibility of any development, or whether that should be left to the economic law.

To my mind those are main basic questions that must be decided, upon which the determination can be made as to whether or not we can agree.

MR. CARPENTER: Mr. Chairman, in the draft which I submitted I make navigation subservient to all other uses, and power subservient to the remaining uses and leave the matter of preference between domestic and irrigation unsettled for the reason that all domestic rights are negligible in quantity and are largely, if not altogether, controlled by the local law of the states so I went no further, in my definition of preferences, than to say navigation should be subservient

to other uses and then in turn that the power for manufacturing should be subservient to the remaining uses. It was my thought that it is unnecessary to proceed further because, as I say, of the negligible effect of domestic uses.

The word " municipal " I included. The more I have thought of it the more I was inclined to think it should be eliminated. It is too broad a phrase. The thought at that time was this; that there have arisen questions as to whether or not a diversion by a city for use in sprinkling streets, for illustration, is domestic use and my idea of the using the word "municipal " was to include such uses as followed as incidental to municipal development. It has been called to my attention that the word "municipal " might be taken to include power development by a municipality which was not my intent and inasmuch as I do not differentiate it in defining the preferences as between agriculture and domestic, leaving them to take care of themselves, the word " municipal" might just as well be eliminated.

MR. CALDWELL: On that line, Mr. Chairman, I call attention to the fact that in the draft that I submitted I think I said domestic and culinary for much the same reasons Mr. Carpenter has pointed out.

MR. HOOVER: Isn't the broad principal here something of this order; that there should be a division of the water between the states in the upper and the lower groups. Then comes the question as to what rule shall dominate the inter-relations in each group. In other words, each group

may adopt priority of utilization or equitable division, as it may see fit. As Mr. Emerson points out, the first question is whether we can agree to a division of the states into two groups with an equitable apportionment of water between the groups.

MR. S. B. DAVIS: After, all, that amounts, to some extent, only to avoiding a certain amount of difficulty. Finally and lastly there must be a definite allocation as among the individual states rather than among the groups. All that I see in the group idea is that we shove off to the future that much responsibility. For my own part I would much rather, if it is possible to do it, make a definite allocation of water to each one of the states and only if that becomes impossible would I say that it was wise to start in on a group basis.

MR. EMERSON: I agree with Judge Davis on that. You get your fundamental consideration of whether or not allocation is possible, take it either, as you may, definitely for each state or between the two groups. Of course, if all seven states and the United States can agree at this time and each can be assured that his state had proper protection, it would be very desirable to get it right down to the state, individual states; but the question is, can it come that far? As I understand it Mr. Norviel's form of pact proposes no definite allocation at this time. I can't conceive, from the Wyoming standpoint, of any form based upon that as a premise that we can sign.

MR. NORVIEL: I started out with that view and I worked hard and studied for a long time and the more I worked at it the more difficult it seemed to be and the more impossible of administration in the future and the more I became convinced that it would be impossible even after the allocation was made to administer the water on any kind of a basis other than an acreage basis,- and that apparently was not acceptable, - so I have taken in lieu the principle that seems to me to be the most just, legal, accurate and correct principle that evolved can be in a matter of this kind.

MR. EMERSON: In some of my letters to you I discussed the difficulty as to working out an allocation in practice. To my mind and from my experience in administering water supplies, it seems to me that a plan could be worked out that would be fairly simple and entirely practical.

MR. NORVIEL: I think that is the exact tenure of our compact. We have adopted the most simple, practical, feasible proposition that has been proposed.

MR. EMERSON: That is in your own estimation.

MR. NORVIEL: And as to the division of the basin into two division, it isn't, as I conceive it, what we were appointed for. It doesn't arrive at any conclusion, and, as it is stated, it leaves the two divisions to work out their own salvation on whatever plan they may choose in the future and as Colorado and all of the states have asserted that they are "Simon Pure" appropriation states, no doubt they will follow that principle hereafter as before and the southern states,

so-called in the division, are also "Simon Pure" appropriation states, except in California, and I think insofar as the Colorado River Basin is concerned they renounce all riparian rights and accept absolutely the law of appropriation. Therefore it leaves the two divisions of the basin to work out their own salvation which does not mean anything.

MR. EMERSON: Mr. Norviel, it seems to me it means practically the whole thing to solve the problem we have in hand now. You look at this thing in a big way; it is a conflict between the states of the lower river and the states in the upper river. If you can solve that conflict why that is the biggest thing we can do.

MR. NORVIEL: I think that is what I have indicated here. If you will read carefully the suggestion I make, I think you will find there is a solution there as clear as a clear sky.

MR. HOOVER: Your principle, as I understand it, is prior utilization throughout the basin up to a certain point and thereafter an apportionment at some period.

MR. S. B. DAVIS: I understand his proposition is this; that there is a straight race as to development for a certain unnamed period, at the end of that period there is priority for whatever water has been put to beneficial use, and there is nothing whatever said as to what should be done after that period.

MR. NORVIEL: The period of time may be extended, or leave it to the next generation,--

MR. S. B. DAVIS: (Interrupting) But this pact says nothing as to anything after that period.

MR. NORVIEL: I think it does.

MR. S. B. DAVIS: It says you can make a new pact, but you could do that anyway.

MR. NORVIEL: I differ with you again. If you will read the ninth section I think you will find it different.

MR. S. B. DAVIS: I may have misunderstood it, but I didn't gather there was anything definite with regard to the period after expiration of the first time.

MR. NORVIEL: If you will read section nine you will find it is taken care of. Of course this period may be extended, and after that, or after the extension, it is all taken care of. If you read section nine I think you will agree.

MR. EMERSON: It is just the thing that would happen if we didn't have any compact.

MR. NORVIEL: Suppose we don't enter into a compact. I think the law is clear.

MR. EMERSON: If you don't enter into a compact we haven't got the team work and co-operation of the seven states we should have.

MR. NORVIEL: That is just the reason why I have drawn the compact.

MR. CALDWELL: Wherein the compact doesn't touch a matter, I presume we are governed by the state and federal laws with respect to water rights, and under the draft that I have proposed the only difference between Mr. Norviel's and mine in
11th-S.F.

that respect is that I propose a partition of the waters, while he doesn't propose any. But, as in the division, there would remain the priorities, based on appropriation, just as he has it.

MR. CARPENTER: Mr. Chairman, I want it understood right at the start, the suggestion I made was purely in conformity with a request. I have no pride of expression or opinion. The legislation by Congress under which we are functioning, which gave us consent, specifically gives us permission to equitably apportion the waters of this river. Under the decisions of the Supreme Court laid down years ago when that consent is given we have full power to deal with the subject matter. The State of Colorado could not look with favor upon any plan which would degenerate into a mere contest of speed whereby an unfortunate, an unnatural growth would be forced in one section in order to keep pace with what might be a natural development in another section. Neither can we look with favor upon a permanent control by a super-government. Priority is worthless fiction unless administered. It is a useless expression unless enforced and in order to enforce it, it will require the intermeddling of a super-power, created, if you please, by surrender of local power. Secondly, when you proceed to reduce the adjustment to one of a definite fixing of quantities, or limitations of use as to each state, you have to proceed to a degree of refinement that is hazardous and at this time calls for a knowledge which no man possesses.

We do not have and cannot obtain, except by long years of study hereafter, basic data upon which to work. Between states in either of these great divisions very different principles should be applied on each different and distinct river, and may have to be applied. The facts are different. For illustration, some of the rivers rise in the mountains to wither away on the plains before they reach the lower states within a division. Others are increasing rivers as they flow out from their original source. The territory is new, the conditions will develop and if allowed to develop naturally will call for the ultimate solution between the interested states as respects any particular river.

In preparing the draft which I have submitted, I first proceeded upon the theory of the individual allocation. My advisors and I myself found ourselves in the position of saying that, as respects a virgin territory, we would be called upon to fix an artificial limitation that might work great injustice later. The river is new, the territory is new, and, thereby, after studying stream after stream that flowed out from the mouth it became evident that it would be unwise and imprudent to attempt to deal definitely with each detailed river, - each individual tributary stream.

Proceeding upon that hypothesis, or proceeding upon that conclusion, it became then a problem of seeing if it could not be worked out on a divisional basis, that divisional basis largely having been fixed by nature. We have a great catchment basin like the receptacle basin of a funnel; we have the funnel neck, the canyon, and below the territory that receives

the water through this funnel neck with certain additional supplies arising and flowing in that territory, so, in order to attempt to work the problem out and avoid the conflict, that would be invariably provoked in this counsel, if you were to attempt to go into detail with respect to each state, it was thought by us more prudent to strike at the root of the whole problem on a divisional allocation of the waters of the river.

The upper states cannot, - should not, - economically be compelled to develop, as development will proceed with a proper flood regulation. As an incident to that flood regulation there will naturally occur many developments in irrigation, growth of cities, development of power in the lower territory, - and it should so develop; it is right that it should. On the other hand, it would be a far cry to say that the upper states must be penalized if they do not keep pace, or court disaster, - if they attempt to keep pace, hence the divisional idea.

As far as I am personally concerned, I have no copyright upon the idea. It is a composite expression of various members of this Commission and learned men.

It was advanced before this Commission by Director Davis; not in the exact form that I have suggested, but division below the mouth of the San Juan was suggested by him. The point below the mouth of the San Juan is one of nature's divisions of this area. It separates the area, not only in division of water as the water flows, but climatic conditions. The natural conditions of the country are segre-

gated; hence, if I may return to basic principle, we do not feel that it would be wise or prudent or just to encourage on unnatural contest, or rivalry for development, on the whole river, but that the very future of our states, as well as of our Nation, depends upon leaving that development to follow its natural course as economic and human conditions warrant, and none of the people in our upper states could feel comfortable and or look with favor on the control of the river by a super-agency, which would not only control every diversion we would make, when we bring it down to a close analysis, but would even go so far as to say that the meadow lands of the high regions of Wyoming must bow down to the desert lands of California or Arizona in the matter of reclamation and that we must bow to the will of any agency that would so determine.

Thus I have tried to briefly state a few of the obstacles that confront us and if it be left entirely to the legal basis, that basis is simply the method that the court might or might not adopt when forced to the extremity in trying to arrive at some adjustment of conditions after the causes have come into being. We are now proceeding before those causes arise with the very object of avoiding the conflict and I believe that our jurisdiction is broad and our powers are full to proceed irrespective of the technical, legal feature.

I might make the one further statement that any simple solution that will permit us to help the lower territory

11th-S.F.

40

develop and at the same time protect us from paying a penalty for having extended that aid, and will allow our people to develop their institutions as the future conditions may warrant, will be entirely acceptable to my state and that so far as the proposal I have made is concerned, it may be offered by any other member, it may be sponsored by any one or more members, it may be torn to bits and reconstructed. I have no pride of expression or opinion in the matter. It is simply offered as a suggestion for a compact along the lines of basic principles there contained. I see many faults in phraseology that will have to be corrected. I would not care to subscribe/ ^{to} it in its present form, because it is not a finished document. It may be rejected or taken apart or subsequently incorporated and made a part of the draft made by another with perfect freedom.

MR. EMERSON: Mr. Chairman, doesn't this discussion all continue to show that whether or not there can be a definite allocation of some kind at this time is possibly the primary point upon which we will agree or disagree? It seems to me it is. That is the first,- it seems to me that is the first thing that the Commission should attempt to decide, as to whether or not we can get together upon the question of allocation.

MR. HOOVER: Isn't there a wide difference between allocation as between each individual state and,-

11th-S.F.

41

MR. EMERSON: (Interrupting) Yes, it sub-divides itself into different questions.

MR. CALDWELL: As I understand it, that is exactly the question we are discussing, as to whether or not we can arrive at a partition of the waters between the basin, -

MR. HOOVER: Between each state, or between the two divisions?

MR. CALDWELL: Upper and lower basin.

MR. HOOVER: I understood Mr. Emerson's discussion to go back to a division as between the states.

MR. EMERSON: No, it is immaterial for the present whether or not between states or whether between divisions. It is just a question of whether we can get together on an allocation on some basis.

As I look at it now, the allocation as just between these two great divisions is practical and no doubt the simplest solution and it will be proper if it goes far enough. Judge Davis would like to see the matter go further, to the individual states. When we do that we are getting into more refinement and,-

MR. SCRUGHAM: (Interrupting) More danger of failure to secure approval of the pact by the interested states.

MR. EMERSON: Considerable controversy and, yes, more danger, I am inclined to agree with that, but I would like to repeat, Take this problem as a whole and it is a question of conflict of interests between the lower division of this river and the upper and if we can solve that, whether we go any further or not, we have accomplished the main purpose.

11th-S.F.

MR. CARPENTER: If I may exercise one further thought in the record, Insofar as the upper basin is concerned, my state becomes a guarantor in large measure for the delivery of this water because of the fact that the major part of the water of the river flows from its territory and we, after careful thought and study of the matter, are prepared to say that we are willing to undertake that, to the degree; expressed in the suggested draft, we believe the sum total of our uses will always so leave the stream that nature will itself take care of that underwriting.

MR. CALDWELL: I just wanted to get straight myself so I will know how to think on this proposition. Mr. Chairman, it seems to me that we could well confine our discussion for the present exactly to the point, and precisely to the point, as to whether or not we may be able to agree to a partition of the water as between the upper basin and the lower basin at or near some point as described in the drafts.

MR. SCRUGHAM: I suggest you call each representative of each state, yes or no, on the principle or partition of water between the upper and lower basins.

MR. NORVILL: Let's first find out whether that is what we are here for.

MR. HOOVER: Is not this a question Mr. Norvill of whether we go back to our previous elaborate discussions on apportionment to each state? I think we most of us more or less mentally abandoned the notion that we could ever agree upon an apportionment to each state.

MR. NORVIEL: I can conceive of no way to administer it.

MR. HOOVER: Let's take that subsidiary issue before we go to the main issue between basins.

MR. CALDWELL: I was perhaps thinking backwards in this thing, Mr. Chairman, but on the presentation of Mr. Norviel here it appeared, unless there is some change in his point of view, that we may never get a partition even between the basins. If that were settled we might, it is true, strike some snag in partitioning among the states, but we would have one point settled and that is the point that comes squarely up to us now. That is the difference as between these two drafts.

MR. NORVIEL: You wouldn't believe we could succeed on a partition between each individual state?

MR. CALDWELL: Not in the artificial way which I think you may have in mind. I think we could not.

MR. HOOVER: What is your impression, Mr. McClure?

MR. MCCLURE: Mr. Chairman, two weeks ago I spent a full day attempting to outline some definite allocation to the states, going back to the minutes of our sixth meeting in Washington and looking all through the tables, A. B. and C, and I gave it up in despair; as desirable as it may be to allocate definite amounts to the different states, I think it quite an impossible task at this time.

MR. HOOVER: Mr. Carpenter, what is your view on that particular point?

MR. CARPENTER: Without going into detail, I am convinced by two months consideration of the subject, that it is out of the question.

MR. HOOVER: Judge Davis ?

MR. S. B. DAVIS: I still think it is what ultimately must be done and it was contemplated by the law under which we are constituted.

MR. HOOVER: I judge, Mr. Emerson, you think it is still feasible to consider that ?

MR. EMERSON: I think it is possible. I haven't heard anything from Mr. Norviel that would assure me we could do that. It seems to me the first thing to do is to see whether they would consider any allocation, whether it is between states or between divisions.

MR. HOOVER: I thought perhaps if we could get some of the brush-wood cut away we could settle down to consider the question of division between groups. I gather you don't think it is practical at the present time to make a compact on the basis of apportionment to each state. Now as between the upper and lower basin.

MR. CARPENTER: You mean actual allocation.

MR. NORVIEL: It could be done on an acreage basis, and only on an acreage basis. You can't administer,--

MR. CALDWELL: (Interrupting) Let's have Mr. Emerson's views.

MR. EMERSON: I recognize it would be much more difficult to secure an allocation as between the two divisions on an acreage basis rather than on quantities of water.

MR. HOOVER: Are you prepared to abandon that discussion now, the apportionment to each state ?

MR. EMERSON: Yes, sir.

MR. HOOVER: Then I suggest, Mr. Norviel, that unless you have changed your mind from your original remark, that we abandon the discussion of apportionment as between states.

MR. NORVIEL: Apportionment of water,--division of water?

MR. HOOVER: Yes, on an acreage or any other basis of division to each state.

MR. NORVIEL: I have gotten away from that.

MR. HOOVER: Then we come to the consideration as to whether it is possible to make a division between groups of states.

MR. NORVIEL: The same question comes up as to the administration, of the water.

MR. HOOVER: In what sense do you think it has to be administered if we just confine it to a division at Lee's Ferry.

MR. NORVIEL: Well, under Mr. Carpenter's plan, as he suggests an average of ten years, this year there might be an abundance of water and he might send thirty million acre-feet. That then would satisfy for the next five or six years and he wouldn't have to send down any but how it would be administered I can hardly understand. It would leave a river in a flashy,--contemplates a flashy condition of the river; contemplates in dry seasons when everybody needs water holding back all, or they could hold back all of it and then supply at some future period within the future, within the ten year period, the amount that they had held back they would have to make up.

11th-S.F.

46

That, it seems to me, would be a very bad method and impossible of administration and of course would not be satisfactory to the lower states.

MR. S. B. DAVIS: Isn't that an objection in detail, Mr. Norviel, rather than an objection to the general principle? The general principle involved?

MR. NORVIEL: The principle is founded, as I take it, or perhaps borrowed, from that prepared by the Geological Survey in connection with the Reclamation Service. They made an exceedingly careful study of the supply of water and the acres to be cultivated, - now cultivated and to be cultivated, - and divided the basin in two divisions and they arrived at the conclusion that the water could be divided, 35% above and 65% below at that point, not considering, as I take it, any of the inflow in the lower basin. Now this reverses, - takes the principle in the main, but reverses the quantity of water and not only reverses the quantity of water, but fixes a ten year period within which they may take all and make it up in another year, or, in cases of large floods in the early part of the ten year period, they could send down large floods and then take all during dry periods after that.

MR. S. B. DAVIS: What I was trying to get at, Mr. Norviel, was this; without discussing the percentage division, whether fifty-fifty, sixty-forty, or what ever it may be, will you discuss the principle.

MR. NORVIEL: We are willing to discuss any principle that comes within the purview of the business on which we are engaged.

MR. S. B. DAVIS: In other words, the general principle would be satisfactory to you if the details worked out.

MR. NORVIEL: I don't know as I would say that now.

MR. S. B. DAVIS: That is what I was trying to get at now.

MR. NORVIEL: I am willing to discuss it, whether it is satisfactory or not.

MR. HOOVER: Well, on the detail or secondary question of the ten year revolution of the cycle, Mr. Norviel avoided that difficulty at once by giving a positive minimum. That is the fact, is it not Mr. Norviel?

MR. NORVIEL: Yes, sir.

MR. SCRUGHAM: Mr. Norviel, doesn't Mr. Caldwell's suggestion answer your objection, fixed on a positive, definite minimum?

MR. NORVIEL: That in effect,--

MR. SCRUGHAM: Based on the stream flow in past years?

MR. NORVIEL: That, of course, would have to be one of the considerations.

MR. SCRUGHAM: Doesn't that answer your objection?

MR. NORVIEL: Answer the whole objection? No, no.

MR. SCRUGHAM: What is your other objection?

MR. NORVIEL: I don't believe, Governor, we are ready to go into all of those things right at this time.

MR. SCRUGHAM: I mean your objection to the allocation of water between the upper and lower basins ?

MR. NORVIEL: It leaves the work undone. Now that would leave us in Arizona to go into the upper basin and, I suppose, have to sit in their discussions and help them arrange the distribution of their water, and it leaves Arizona also in the lower basin to assist in the distribution of the water between the states in the lower basin.

MR. EMERSON: I do think there is a great advantage in deciding the questions now in the mind of everybody as to the conflict of interests between the big lower group and the big upper group.

MR. NORVIEL: I think it would be much easier to fix that in some other way.

MR. EMERSON: Your compact doesn't fix anything except to go ahead as though we didn't have any compact. What advantage is there in your compact to the upper states. Will you tell me that ?

MR. NORVIEL: To the upper states ?

MR. EMERSON: Yes.

MR. NORVIEL: I have meant to have no advantage to any of the states in the pact. That is just what I have avoided, and the reason why we have written it is that there may be no advantage to any state and I think that is what we ought to do.

MR. CALDWELL: That is a pretty good definition of no compact or agreement, Mr. Norviel.

MR. EMERSON: Your compact just means this;-

MR. NORWELL: (Interrupting) If we are here to get advantage, to work out some advantage for ourselves, why then I think, --

MR. EMERSON: (Interrupting) We are here to work out advantage to the whole seven states.

MR. NORWELL: Yes, that was the plan I worked on.

MR. EMERSON: Your form of compact gives the whole advantage to the lower states.

MR. CARPENTER: Mr. Norwell, may I bother you? What is uppermost in the thought of all your people is the proposition of immediate large construction, isn't it? The sooner you can get it the better, - both Arizona and California.

MR. NORWELL: Of course, I imagine Colorado has the same hope and wish.

MR. CARPENTER: I say very frankly to you we have no desire to dash into construction.

MR. NORWELL: We are not in that position.

MR. CARPENTER: I used that word thoughtlessly. We have no desire to rush with our construction, knowing that so to do would cause unfortunate reaction.

MR. NORWELL: I don't think there is any such notion in Arizona.

MR. CARPENTER: You have large structures you wish to put in for protection of your territory, as well as for development of that territory.

MR. NORVIEL: We expect to develop our territory too, necessarily slow. I can't anticipate of our development being much faster than yours.

MR. HOOVER: Perhaps you could answer Mr. Norviel's criticism on the matter of administration. My understanding of your pact is that the upper states should guarantee the lower states. I am wondering whether or not he fully understood that.

MR. CARPENTER: Yes, the upper,- Mr. Norviel's interpretation is technically and theoretically, but not practically sound. In the first place, we in my draft assure them an average annual flow over a ten year period. That naturally will come up and down with the flow of the river. His objection presumes that we would be able physically to withhold all the water during a lean year and, in truth, the lower country is always dry and the drought affects the upper country primarily, with the resultant effect that it diminishes the diversions in the upper country where it is possible to divert, and the waters lower down pass on down anyway and a physical study of the problem will reveal that we could not take all the water of the river if we might so wish, and nature has so shaped that country that while there are bound to be the low and high years and hence the rule of averages, nevertheless we will never be able to wholly deplete the river and flood control automatically will solve that up and down phase of the river by the storage facilities which will be imperative to protect the Imperial Valley.

MR. HOOVER: I thought Mr. Norviel considered that your

pact implied the necessity of some super-administration and I was wondering if you could satisfy him on that point?

MR. CARPENTER: No, it doesn't. The thought in my pact was this; that I suggested there a Commission, - any other instrumentality will be equally satisfactory, by which the quantity flowing in one year will be definitely ascertained, and that is as far as it goes. The rest will take care of itself automatically. I felt it unnecessary to enter any further into administration simply because of the natural and physical conditions obtaining. There is a psychology to be met. The allocation must not be out of proportion, and while the outside maximum that we may divert depletes, or in other words the minimum to flow across the interstate line may be expressed in apparently a lower figure, the physical fact remains that we probably could never reach that point, but in order to meet the human element in the upper territory the figure adopted must be fair and just. The pact simply provides that in a ten year period the average annual delivery shall never fall below a certain amount.

MR. HOOVER: Disregarding any detail as to method of apportionment between different divisions, that is, quantity of apportionment, as to whether by percentage, minimum acre feet, or what not, and assuming that the upper states failed to deliver that quantity to the lower states, I assume the lower states would have a right in action against all users in the upper states. Is that in your mind?

MR. CARPENTER: It is. In such instances they would have a perfect right to enforce the pact and the sole question then would be to compel us to turn down the water.

MR. HOOVER: What is arising in Mr. Norviel's mind is that it would be necessary/ ^{to have} some super-organization as legal action would be too late.

MR. CARPENTER: If that time should arrive and we should so deplete the river, that would be the only instance that I know of whereby courts might be called upon to act, and in that event the only question then left for the court will be, did we or did we not deliver the water and, if not, the courts would then compel us to deliver the water and that would be the sole question for determination. The facts would have been determined by the agency, the Commission or whatever it might be, and there would be nothing to dispute about except the question of whether we had or had not delivered the water and if we had not then we could be forced to do it. I believe that as between the divisions, that is the only thing that is left open for the courts' intervention. I have tried to avoid the principle of multiplicity of suits and actions between divisions, simplifying it down to one fact which is to be fixed and determined and declared by our own agency; and to the question of whether or not we have lived up to that obligation, and if not, then the Supreme Court of the United States could force us to do it, because, when this compact is adopted it becomes the law of the land.

MR. NORVIEL: If the quantity of water suggested in the compact is to remain --

MR. CARPENTER: (Interrupting) The quantity of water,-- let me interrupt, I took as simply expressive of principle. As to the figures, I would wish those figures to be corrected to state the truth, the facts, whatever they may be.

MR. NORVIEL: But holding to the fifty percent ?

MR. CARPENTER: Fifty percent of the whole flow of the river as between the two divisions.

MR. NORVIEL: As to that sort of division all that Mr. Carpenter has said would be true because that much water, I conceive, will always go down the river. I don't think there is any possibility of their ever using the excess over that much water in the basin. With all the intermountain diversions they can perhaps in the future make up whatever the future may bring forth in the way of assistance towards such diversions and still there would be an abundance of water to leave the State of Colorado. In other words, Colorado is now putting herself, or fixing herself with an absolute unrestricted use of the water for all time with a very large abundance over and above the amount that she, --

MR. EMERSON: (Interrupting) How do you feel it is unrestricted.

MR. NORVIEL: It is unrestricted, in this; that this amount of water will go down the river and Colorado will have perhaps that much more than she can ever use in the state,

taking her engineers' figures as a basis.

MR. EMERSON: I thought we started out with the general idea that there is water enough for all.

MR. NORVIEL: If there is water enough for all then why this division and this restriction on the amount of water flow ?

MR. CARPENTER: Because when that question came up objection was immediately raised from below that there was no point at which we would be compelled to stop and there was no guarantee or protection. I have fixed a minimum beyond which we dare not go and you will have the surplus. Of course, it goes to you and you may use it and enjoy it.

MR. NORVIEL: It remains an unrestricted right above and a restricted right below.

(Hereupon Mr. George L. Hoodenpyl, of Long Beach, California was brought into the meeting by Mr. McClure.)

MR. HOOVER: Mr. McClure thought it might be desirable to have Mr. Hoodenpyl's suggestion before us while considering the others.

MR. G. L. HOODENPYL: Mr. Secretary, at the Phoenix meeting the Chairman requested me to embody the suggestions I offered at that time in the form of a compact. I told you at that time I hesitated doing anything like that, still in compliance with his request I have done that the best way I could, and I want to say that it is my own proposition, not representing any particular section, not representing California, but simply my suggestion as to what might be done in the matter.

With your permission I will read what I have drafted.

(Whereupon Mr. Hoddenpyl presented the following paper as a form of suggestion for compact.)

" COLORADO RIVER COMPACT

"In order to provide for unity of control and promote the speedy development of the Colorado River and its tributaries, the states of Arizona, California, Colorado, Nevada, New Mexico, Utah and Wyoming, thru whose territories the water of these rivers flow, do hereby cede to the United States of America full and complete control of the disposition and use of the waters of the Colorado River and its tributaries; and the right to impound or divert, or otherwise dispose of or use the waters of any of these streams shall not be acquired or exercised, except by the United States of America, without the written permission of the United States of America, issued with such restrictions and upon such terms and conditions as shall insure the beneficial use of such waters; expressly reserving, however, to the appropriators thereof, and to their successors in interests, all waters already appropriated to beneficial use so long as the same shall be beneficially used; and provided that the disposition and use of the waters of these streams, including appropriations already made, shall be so regulated that one-half of the normal flow of the water in the Colorado River at Lee's Ferry shall be always available for disposition and use in the states of Colorado, New Mexico, Utah and Wyoming and one-half thereof shall be always available for disposition and use in the states of Arizona, California, and Nevada, and in the Republic of Mexico.

"The United States of America does hereby accept the foregoing cession upon the terms and conditions therein mentioned and for the purposes therein expressed."

"(End of Paper)"

MR. HOODENPYL: I would simply say this in regard to the matter: It occurs to me that the only way this can be handled is by one single head,- one single authority, and the only authority we have that can efficiently handle the matter is the Federal Government, and the fewer strings placed upon the Federal Government in the operation, development and use of these waters, the better for all concerned.

11th-S.F.

56

It was suggested at one time that the matter be placed in the hands of a commission. It occurs to me that the Department of the Interior is thoroughly able to handle and take care of this proposition, if it should come under that Department ; or, if the Federal Government desires a Commission, the Federal Government should handle it by the appointment of such a commission.

I suggest a division of the waters, and not being an engineer I am not at all fixed on that division, - it may be that the division is improper and should be made at some other point, or perhaps it should be on some other pro rata than that which is submitted, but I simply present this outline on this kind of a scheme. The rights already accrued should be respected, so long as they continue to be used in a beneficial way,- that is, the waters now appropriated. When that ceases the Federal Government can withdraw the privilege of the use of those waters and turn them to beneficial uses. Then the Government, having a great deal of data in regard to this river, could control it from time to time. And I urge also particularly that the division of the waters should be based upon the normal flow,- not upon the average flow as one defines the average flow, saying that territory north or south shall have one-half of the average flow. It might not be sufficient in lean years, whereas, the use of the normal flow,- and by normal flow I think is clearly meant all the waters flowing past the given point at a given time, plus all diversions above such point, would insure a continuous dependable flow.

And it occurs to me that in the development of this river, it might be necessary for the Government to have absolute actual control at all times, so that in lean years the waters could be apportioned at the time, and not based upon any period of time, as it is possible that the average would not fit some particular year. So that all persons who desire to develop the river could go into this country and be protected right from the beginning.

I believe a scheme worked out somewhat along this line would result in the most efficient and economical development of the river, and I think we ought to be willing to turn this matter over to the Federal Government, because the Federal Government is the only agency representing all parties in interest, and would have no cause or desire, so far as I can see, to do anything except that which would be for the general good.

MR. HOOVER: Thank you very much. (Thereupon Mr. Hoodenpyl withdrew from the meeting.) This problem of the division between the upper and lower divisions of the Colorado River, would it be entirely infeasible, in your mind, dis- regarding the matter of the division in quantity, -assuming that the quantity, - or that by some method that ample water for the southern division could be arrived at, - do you think the principle involved is infeasible ?

MR. NORVIEL: No, I wouldn't say that.

MR. HOOVER: If we were to go on with that consideration, isn't it largely the finding of a principle which is feasible ?

11th-S.F.

58

If we could get a proper method of division and a method of enforcement ?

MR. NORVIEL: Yes sir, that would be alright, but of course, in the quantity of water now suggested there would be none. The water will always run down, and I think that much water will always go by that place, but that amount of water would not take care of the needs below.

MR. CARPENTER: Aren't you figuring the whole burden of the Mexican lands?

MR. NORVIEL: No, I am not. As you suggested, in dealing out one-half of the requirements of the Mexican lands,-- but having deducted from the fifty per cent the amount of water carried by the Gila and the Williams Rivers, and these are very flashy streams and only run occasionally and not places where the water could be held, and in the past years they have been of but little value and they have done no one very much good, not even California, because they go down in floods, and as a rule California can only take a small portion of the floods, which means they will continue to go on to the sea until they can be controlled.

MR. CARPENTER: In order to avail yourselves of the use of that water you must control it.

MR. NORVIEL: Yes. I understand.

MR. SCRUGHAM: Is your objection solely one of amount, or one of the principle of the proposal ?

MR. HOOVER: Is the percentage too small, is that the objection ?

MR. NORVIEL: Well, that is one of the objections.

MR. HOOVER: Just one ?

MR. NORVIEL: Yes.

MR. HOOVER: What are the other objections ?

MR. NORVIEL: There will be time for them when we arrive at the point of adjusting the percentage.

MR. HOOVER: Then you think the idea is infeasible ?

MR. NORVIEL: And another would be the time,-- the period. Of course we want to be in a position where we would not necessarily be dried up for five years and flooded for the next five years.

MR. EMERSON: The normal minimum flow suggested will take care of that.

MR. CARPENTER: Yes, we will fix the minimum flow to take care of that.

MR. NORVIEL: We are working on the flow of the rivers, we have not anything definite, but we will have in the next few months I hope.

MR. HOOVER: I think we have Mr. Davis' figures, for the present use it amounts to what ?

MR. A. P. DAVIS: About five hundred and eight thousand acres in the division, requiring about three million four hundred and fifteen thousand acre feet for its irrigation.

MR. HOOVER: That includes the present use ?

MR. A. P. DAVIS: The present development. The total present and future development according to the assumed duty of water, seven million four hundred and fifty thousand acre feet, including a half supply for eight hundred thousand acres
llth-S.F.

in Mexico.

MR. HOOVER: About seven million two hundred thousand, including Mexico?

MR. A. P. DAVIS: Yes sir.

MR. NORVIEL: And how much in the upper states ?

MR. A. P. DAVIS: The present development in the upper basin is about one million five hundred and thirty thousand acres.

MR. HOOVER: That one million five hundred and thirty thousand acres you have already deducted ?

MR. A. P. DAVIS: That one million five hundred and thirty thousand acres, in addition to two and a half million acres possible, which would require, we think, about three and three-quarters million acre feet of additional water.

MR. HOOVER: Above ?

MR. A. P. DAVIS: Above, for consumptive use.

MR. HOOVER: Have you yourself interpreted this thing back to Lee's Ferry ?

MR. A. P. DAVIS: About one million acre feet less than at Yuma, so that would be about sixteen and a half million acre feet at Lee's Ferry, of which, on the present contemplation four million acre feet is needed in the upper basin and seven million two hundred thousand in the lower basin.

MR. CARPENTER: Including Mexico ?

MR. A. P. DAVIS: Including Mexico, yes, a half supply for 800,000 acres.

MR. HOOVER: If you are translating it back to Lee's Ferry that would eliminate the Gila.

11th-S.F.

61

MR. CARPENTER: Yes sir, when you go back to Lee's Ferry that would eliminate the Gila, the Little Colorado, and all those streams flowing into the river between Yuma and Lee's Ferry.

Adjourned until eight o'clock Sunday evening.

Clarence C. Stetson,

Executive Secretary.

The above minutes were approved at the 27th meeting of the Commission, held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

11th-S.F.

62

MINUTES OF THE

12th Meeting

COLORADO RIVER COMMISSION

The twelfth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Sunday evening, November 12th, 1922, at 8:00 P.M.

There were present:

Herbert Hoover,	representing the U.S.---Chairman
R. E. Caldwell,	" Utah
Delph E. Carpenter,	" Colorado
Stephen B. Davis, Jr.,	" New Mexico
Frank C. Emerson,	" Wyoming
W. F. McClure,	" California
W. S. Norviel,	" Arizona
James G. Scrugham,	" Nevada
Clarence C. Stetson,	Executive Secretary

In addition, there were present:

Thomas E. Campbell,	Governor of Arizona.
Arthur P. Davis,	Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottoman Hamele,	Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
C. C. Lewis,	Assistant State Water Commissioner and Advisor for Arizona.
R. T. McKisick,	Deputy Attorney General and Advisor for California.
R. I. Meeker,	Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan,	Legal Advisor for Arizona.
Dr. John A. Widtsoe,	Advisor for Utah.

The meeting was called to order by Mr. Hoover.

12th-S.F.

1

MR. HOOVER: When we left off yesterday, we were discussing the division of the waters between the upper and the lower groups. I think we might go on with that discussion.

MR. NORVIEL: Mr. Secretary, inasmuch as I did not receive a copy of either of these proposed compacts or drafts until Thursday evening, and Friday morning, I haven't had sufficient time to go into the analysis of the language. I have a few questions I would like to ask to clarify some of the points raised in these compacts. I don't feel like entering into any discussion of the proposed compacts until these matters may be clarified by answer, and I would like to have the answers either in writing or transcribed so that I may study them. Then we will take up the general discussion, if it is the will of the Commission, on these proposed drafts. Until then I do not feel like entering into a general discussion of the main question.

MR. HOOVER: What are the questions? We might as well get to it.

MR. NORVIEL: The first question I desire to ask is this: Is the fifty-fifty proposition an arbitrary division of the waters or is it based on facts and conditions?

MR. CARPENTER: You mean based on facts. The fifty-fifty division plan proceeds as it appears in the tentative draft offered by me, upon the basis of the twenty-year record at Yuma. Working out from that twenty-year record, the object has been and is to ascertain how much more water must flow past Lee's

12th-S.F.

2

Ferry in order that the amount when added to what comes in below, will give the lower division fifty per cent of the Yuma flow. It was my thought that the twenty-year record that we had will not be improved much by more records at that point. And the hydrographers and experts advise me that a twenty-year record on a river is adequate in its completeness and includes enough years to warrant an assumption that the average there deduced would be the average flow of the river in the future. With that in view, I took that record as a basis and worked from that premise. Does that answer your question?

MR. NORVIEL: No it doesn't touch the question at all. I will read the question again: Is the fifty-fifty proposition an arbitrary division of the waters or based upon facts and conditions? In other words, is it based on any calculation, or arbitrarily - hit or miss?

MR. CARPENTER: It is not a hit or miss. It is arbitrary in that it is proposed to divide the flow of the river equally between two divisions.

MR. HOOVER: Doesn't it proceed, Mr. Carpenter, upon the assumption that the amount of actual irrigable area is indeterminate and that it is just a broad compromise of the issues between two groups.

MR. CARPENTER: To quite a degree, yes. The data we have comports pretty well with the fifty-fifty plan of division.

MR. NORVIEL: Well then, would you say that it is arbitrary or based on facts?

MR. CARPENTER: Both. Partly on facts and partly arbitrary.

MR. HOOVER: Perhaps another answer would be that it is an attempt to compromise the situation.

MR. CARPENTER: It rather appeals to the average mind as suggestive of compromise.

MR. NORVIEL: The next question: In the proposed guarantee of 6,264,000 acre feet per annum to be delivered at Lee's Ferry, is it to be understood that this amount of water is to be delivered annually, or may it be delivered during any portion of the ten-year period, as may be determined by the Upper division?

MR. CARPENTER: It is not proposed to deliver just that amount and no more or less annually. That is to be the annual average over a ten-year period. As far as the will of the Upper Division is concerned, it was the thought at the beginning and it is still in the mind of the author, that the natural conditions would prevent any arbitrary position, but that in the event the diminution should be beyond that, which may be possible, that the Upper division should not encroach upon the flow of the stream to such an extent as to reduce it below an average annual figure of the Lee's Ferry diminution. The author of this compact makes no pretense that those figures are absolutely accurate and is not bound to the particular figures mentioned. There had to be some set of figures taken and they should be made to conform to the facts whatever they

12th - S.F.

4

may be ascertained to be. If you mean by your question that we might withhold the water for seven years in the upper territory and then deliver enough to make an annual average of six million odd acre feet per annum, delivered all in three years, it is not in the range of my thought that any such condition would possibly be. I might say in that regard that you may have in mind the construction of a reservoir at Lee's Ferry as a controlling factor. It was my thought that that would be essentially a lower division reservoir, or one for the benefit of the lower division, and it was not the thought that it would be possibly placed in a position of taking the whole flow of the river for a year, and depriving the lower territory of the benefit of that flow. That would be too abhorrent. The reservoir at Lee's Ferry would naturally be a stabilizing influence for the lower territory, stabilizing the matter of delivery.

MR. NORWELL: Let me ask the question without the amount of water. In the proposed guarantee of the certain amount of water per annum to be delivered at Lee's Ferry, it is to be understood that this amount of water is to be delivered annually or may it be delivered during any portion of the ten-year period on the arbitrary determination of the Upper division?

MR. CARPENTER: It wasn't the thought that it might be delivered under the arbitrary determination of the Upper division. It was the thought that the river would flow at that

12th- S.F.

point - some water - be it much or little. Naturally, some years it will be much, - some years more, some less.

MR. SCRUGHAM: Wouldn't the possible objection be solved by including with the amount, a minimum flow in second feet?

MR. NORVIEL: It isn't in the compact.

MR. SCRUGHAM: You haven't any objection to inserting a minimum flow?

MR. CARPENTER: Not if you made it low enough.

MR. NORVIEL: I am trying to get at what is meant. That is all.

MR. CARPENTER: That the measured flow of the river as it runs year after year for ten years, when added together and divided by ten, should make six million some odd thousand acre feet per annum.

MR. NORVIEL: I might ask this question then; Is the ten-year period a continuing thing, or is it just for the first ten years?

MR. CARPENTER: Yes, It says/ ^{any} ten-year period. Suppose you were on the twelfth year. You take that year and include the nine preceding years. On the thirteenth year, you could take the nine preceding years.

MR. NORVIEL: The periods overlap, do they?

MR. CARPENTER: Well, you can make them overlap, yes. It is what I would call more of a progressive ten years. Each year would have nine years behind it. Those taken with the one particular year in question would make the ten-year period.

12th - S.F.
6

MR. NORVIEL: At the end of the ten-year period, would you take the next year?

MR. CARPENTER: Any one year, with the nine preceding years, making a total ten-year period.

MR. HOOVER: It is possible under that arrangement, however, that if there were three consecutive dry years, that all of the water might be used in the Upper states, and that in the remaining seven years a delivery of water might be made that would equalize the whole business, is it not?

MR. CARPENTER: Theoretically, yes.

MR. CALDWELL: May I ask a question?

MR. NORVIEL: As far as I am concerned, yes.

MR. CALDWELL: Suppose the figure that you mention is 6,000,000 acre feet just to make it easy, is it your idea that during the ten preceding years/ any year - we will say, that there should be delivered down the river 60,000,000 acre feet past Lees Ferry?

MR. CARPENTER: That there should be an aggregate of 60,000,000.

MR. CALDWELL: Is that a minimum which you guarantee?

MR. CARPENTER: Yes sir.

MR. CALDWELL: That would mean absolutely nothing. It is fallacious making an aggregate of 60,000,000 in three years or four years or—

MR. CARPENTER: It is fallacious to say that the river won't run or that we could use all of it. That states the

impossible unless we built the reservoir away above Lee's Ferry and arbitrarily took what came and the reservoir was so large that we could utterly deprive the lower states of any water at all for a three-year period. That never entered my mind because such a thing is inconceivable. It didn't enter my range of thought.

MR. NORVIEL: Let me ask another question that perhaps would clear it up to me. First your statement is that any year and the preceding nine years must have delivered past Lee's Ferry ten times this amount of water, whatever may be agreed on.

MR. CARPENTER: Yes, in the aggregate.

MR. NORVIEL: In the aggregate.

MR. CARPENTER: At least that much.

MR. NORVIEL: At least that much. Suppose it should happen that the first eight years would have contributed to the lower basin 45,000,000 acre feet and it should then be in a dry cycle of years and it would be impossible to deliver the remaining amount of water in the next two years.

MR. CARPENTER: In such an event we would fail to keep the compact.

MR. NORVIEL: Then what?

MR. CARPENTER: Probably have to make it up later.

MR. SCRUGHAM: Can't you save a lot of this discussion by agreeing upon the principle of a minimum flow at once.

12th - S.F.

8

MR. NORVIEL: I am not discussing the question. I am just trying to get at what is meant by this language. In the proposal that one-half the allotment to Mexico is to be delivered at Lee's Ferry, is any estimate to be made of the loss by evaporation or percolation between Lee's Ferry and the point of diversion to Mexico?

MR. CARPENTER: No. That was considered. It was thought that the power benefits and other benefits that would run to the lower country would offset the losses. That power benefits would run to the lower territory, as the water flows along it would furnish an additional amount of energy that would be availed of by the lower country for their development. It was thought that that would offset evaporation losses. Let me make a further statement: If within the Upper territory, say in Colorado, a reservoir is constructed, we will have an average evaporation loss - or if a reservoir was constructed at Flaming Gorge, we will have an evaporation loss. We will have to stand that, and it was thought the power benefits would offset the evaporation loss.

MR. NORVIEL: I am referring to the half of the water you are to deliver to Mexico.

MR. CARPENTER: It was thought that all the evaporation losses along the river in such division would be offset by the power benefits, and the Mexican water with it. I may say, Mr. Norviel, -- on that line of the Mexican water -- that the increased loss would probably be negligible for that amount of water will be

traveling along a river already full, so to speak. You would only increase the water and you have your evaporation losses anyhow.

MR. NORVIEL: Well, that is argument, but the question was, is there to be an estimate made of the evaporation losses between Lee's Ferry and the point of diversion.

MR. CARPENTER: Yes sir, that was thought of, considered and discussed between myself and Mr. Meeker to considerable length. And as I stated at first, it was thought the power benefits in that additional amount of water would more than offset the evaporation loss.

MR. NORVIEL: That would perhaps bring another thought in that connection. It is your intention then, that whatever the evaporation loss and loss by percolation of the one-half you propose to deliver to Mexico, shall be made up from the water you turn down in the amount that you have specified or propose to specify.

MR. CARPENTER: It would presumably.

MR. NORVIEL: There would be a recognition of the existing rights of appropriation or a provision made for these rights?

MR. CARPENTER: No. It was thought unnecessary. I might say there that whatever structures are built, for example, in the Upper Division would naturally be subject to existing rights there. Whatever diversions and appropriations are made in the Lower Division would naturally be subject to the existing rights

12th - S.F.

10

and conditions there.

MR. NORVIEL: What do you mean by "there"?

MR. CARPENTER: In the Lower division.

MR. NORVIEL: Was any estimate of the loss by evaporation and percolation between Lee's Ferry and the point of use taken into account in arriving at the estimation of 6,264,000 acre feet?

MR. CARPENTER: No. I understand there is a loss in that section, but that was an unknown quantity.

MR. NORVIEL: I have one more question I will ask but I think it has already been answered. Is it intended in the draft of agreement to cover only the unappropriated water or the whole of the water in the basin both appropriated and unappropriated?

MR. CARPENTER: The whole of the water of the basin.

MR. HOOVER: May I ask a question there? The plan conceives a reconstruction of the river before any diversions were made at all - conceives a sort of fifty-fifty division of the river as it was before white men began to divert it?

MR. CARPENTER: It would probably result in that conclusion.

MR. A. P. DAVIS: The irrigation in the Upper Basin is now about 1,530,000 acres. The consumptive use of water on that area is about 1.54 acre feet per acre, and the amount consumed in that basin would be the product of those two figures. On the Gila, including the Salt River, there is about 400,000 acres of land irrigated; I guess something over that, speaking from

memory. I haven't seen the figures for some time but from memory between four and five hundred thousand acres. Perhaps you have it in mind, Mr. Norviel.

MR. NORVIEL: Something over 400,000 acres I think.

MR. A. P. DAVIS: Before that is entered upon, it would necessitate another thing which is discussed somewhat in my report and there is some data on it - that those figures affect the measurements at Yuma in different amounts throughout these years. The amount varies and there would have to be a presumptive increase applied to those figures at Yuma, and they would all be increased by the amount of the use above. For example, the Salt River reservoir, the large increase of consumption due to irrigation from it didn't take place until six or eight years had elapsed. That applies also to the Upper Basin. The consumptive use in the Lower Basin is much greater per acre than in the Upper basin, probably by fifty or sixty per cent. By the consumptive use, I mean per acre. The consumptive use in total would be less so that they would not quite balance. The flow at Yuma, to be increased by that amount, would have to be increased more than it would be diminished.

MR. EMERSON: Mr. Davis, you have a certain acreage and a consumptive use of 1-6/10 acre feet for that acreage. Did that include the diversion to Imperial Valley?

MR. A. P. DAVIS: No, that was only the Upper Basin.

MR. EMERSON: How many acres?

12th - S.F.
12

MR. A. P. DAVIS: 1,530,000.

MR. NORVIEL: Do you have in mind a statement made by Engineer Merriell, the engineer in charge of the Gunnison project, I think it was in Grand Junction, when he said that in six acre feet there was 20% return flow - no, 60 inches I think he said - leaving four feet of consumptive use in the project.

MR. A. P. DAVIS: I remember his testimony. A large amount of return water is diverted on the project, and used over again. I was speaking on the average, it is greater in the lower valleys than in the higher.

MR. EMERSON: Do you think it would average more than 1-6/10?

MR. A. P. DAVIS: That is as near as Mr. Conklin could estimate.

MR. NORVIEL: I would like to ask Mr. Meeker if that isn't about the result of his investigations also.

MR. MEEKER: My investigation covered the Western Slope of Colorado, and I have used a consumptive use of 1-3/10 acre feet per acre per annum.

MR. NORVIEL: As the estimated consumptive use for that state.

MR. MEEKER: Yes sir.

MR. EMERSON: I would like to ask for information, a further question, Mr. Norviel. As I understand, you don't wish to declare yourself upon the principle of dividing the river

12th -S.F.

13

into these two divisions until you settle certain matters of detail that are brought up by that particular form of compact. Is that right?

MR. NORVIEL: No. I don't think you understood me. I am asking these questions with a view to arriving at an understanding of certain things so that I may study them a little more. I haven't had the opportunity to study them that I think I should have had.

MR. CARPENTER: Understand, the proposed pact is simply a suggestion of a basis for discussion.

MR. NORVIEL: But what I want at present clarified, is the meaning.

MR. EMERSON: Would you accept it as a principle, a question of division of waters as between an upper and lower division.

MR. NORVIEL: I hope to be able to tell you sometime tomorrow.

MR. EMERSON: It seems to me you should decide a general broad principle. If we reconstructed the river as to flow, it apparently might result in a little balance in favor of the lower division.

MR. A. P. DAVIS: Yes sir.

MR. NORVIEL: Perhaps one-half million acre feet, something like that. Then there would be a question arise at once as to the evaporational losses between Lee's Ferry and the point of diversion.

MR. A. P. DAVIS: Yes sir.

MR. NORVIEL: Have you computations of that loss?

MR. A. P. DAVIS: I estimate a loss between Boulder Canyon and Yuma at about a million acre feet per annum. That is based upon measurements made at Topock and Yuma, at intervals for a period of years, which are very erratic, - and a few measurements above. Under normal conditions when there is no particular storm condition, there is a decided loss between Topock and Yuma and the measurements of the river at that time gives us the best information we have as to what that loss is. Of course, that is a net loss at the particular time, and by taking these dry times, we get at the loss, which is a variable amount. I have roughly estimated that the losses between Lee's Ferry and Yuma are somewhat larger; but not much larger than the inflow.

MR. NORVIEL: Do you mean to say the losses are larger than the inflow so that the inflow between Lee's Ferry and the Yuma dam do not compensate for the losses?

MR. A. P. DAVIS: On the average, I think that is true. That includes the inundation of between two and three hundred thousand acres of land. But the area of bottom land that overflows outside the river bed is somewhere in the neighborhood of 200,000 acres, more or less. It couldn't be very accurately determined as the river varies all the time and it can't be measured every month. And I have here also for the information of the Commission an estimate I asked for to check my own ideas,

12th - S.F.

15

from Mr. Grover who is the Chief Hydrographer of the Geological Survey, on inflow. It isn't complete, but I can allow for the lack. Mr. Grover estimates the Paria River an average flow of 60,000 acre feet; Kanab Creek, 30,000; Little Colorado River, 200,000; Virgin River, 233,000; Williams River 75,000. These are most of them based upon meagre measurements and while individually I would from my own memory make some corrections, I would arrive at nearly the same conclusion as Mr. Grover does, excepting that he has entirely omitted all of the areas except those five streams while they include only about 2/3 of the drainage area. To complete it on the same basis, assuming that the little streams not included in these five principal streams, flow at the same average per square mile, it would bring the amount up to just a little over 1,000,000 acre feet, which is practically the same as our estimated losses, before any fifty-fifty proposition was suggested between Boulder Canyon and Yuma. I think probably the 1500 second feet loss between Boulder and Yuma was large but certainly the excess was not more than enough to balance the rest of the canyon. The losses in the canyon are relatively small, and the losses below are great because of the broad expanse covered by water.

MR. NORVIEL: Mr. Davis, one more question. Assuming you have read this compact, or heard it read, and understand its purports, does it contemplate necessarily the construction of a large dam in the lower river and the storage of water and stabilizing the flow of the river in order that the lands in the

12th - S.F.

16

lower basin may be served with water?

MR. A. P. DAVIS: Such a reservoir would be necessary if this compact were entered into, of course.

MR. CARPENTER: And if the minimum were reached of the delivery, it would be necessary.

MR. A. P. DAVIS: Storage would be necessary in any event.

MR. NORVIEL: I will ask if you had in mind the storage and control of the floods of the river in the lower basin?

MR. A. P. DAVIS: Yes, in both basins. Our upper development must largely proceed from storage as well as the development below. But it does contemplate the storage and control of the floods in the lower basin.

MR. NORVIEL: It being necessary to construct a large dam in the lower river to take care of the floods to be delivered to the lower basin as its portion of the waters of the Colorado River, and on occasion perhaps of one, two or three years when no water of consequence may be added, what effect would evaporation have on the quantity of water for use in the reclamation of lands below?

MR. A. P. DAVIS: It would reduce it and under the compact as proposed by Mr. Carpenter, it would be charged against the lower basin as I understand it.

MR. NORVIEL: Could you estimate the amount of that loss by evaporation?

MR. A. P. DAVIS: Yes, it can be estimated and I can give it to you in a few minutes, very roughly. I have a table here

12th - S.F.

17

of the area of the reservoirs that might be used either at Boulder Canyon or at Glen Canyon. They would not have any very different results. I think I might take Boulder Canyon as a type and with, say, 16,000,000 acre feet which would be a necessary storage to entirely control the river outside of any flood control considerations, that would expose to evaporation, an area of 80,000 acres.

MR. NORVIEL: And the evaporation per annum would be how many acre feet?

MR. A. P. DAVIS: I suppose we might assume about six feet. That reservoir would not be full, of course, all the time. In fact, under normal conditions, we are assuming it would be approaching emptiness. But we are safe in taking it at 6 feet. Assuming about one-half of it would be exposed, that would be about 240,000 acre feet per annum.

MR. CARPENTER: With respect to any reservoirs constructed in the Upper area, there would be evaporation there also, and that would automatically be cared for and deducted under this plan without any figuring.

MR. A. P. DAVIS: That is true. This compact requires, however, that the lower basin stand the loss from either Lee's Ferry, or anything below it.

MR. NORVIEL: I am just endeavoring to ascertain the approximate loss. You speak of a dam creating a reservoir with a capacity of 16,000,000 acre feet. Under this compact - this form of draft - the lower states or basin would be chargeable for all the water that passes Lee's Ferry. In such a reservoir

12th - S.F.

as you suggest, would there not be a great loss of that water because of the inability to hold it?

MR. A. P. DAVIS: Unless a larger reservoir than that was provided, there would.

MR. NORVIEL: How large a reservoir would you say was necessary.

MR. A. P. DAVIS: I should say that a reservoir with a capacity of 24,000,000 acre feet would be the wise one to build, 4,000,000 of which I assumed would be purely for flood control, the balance of 20,000,000 would entirely control the river as it has occurred in history, and these flood conditions, I am assuming, would be outside of past experience.

MR. NORVIEL: Isn't it a fact that during several years it has flowed more than that amount?

MR. A. P. DAVIS: Yes, but you are using it all the time. You don't have to use all the water that flows.

MR. NORVIEL: Under the conditions imposed by this draft, would it be safe to deplete the quantity of water more than one-half in any one year in the reservoir?

MR. A. P. DAVIS: Yes. If you never deplete the reservoir more than one-half, it means you have a larger reservoir than you need. To use a reservoir economically you must assume that you empty it sometimes, that is, empty the storage portion of it.

MR. CARPENTER: Mr. Davis, a drought in the lower territory is indicative of a drought at the source is it not; so the Upper basin suffers by that ^{drought} as well as the lower basin, does it not?

12th - S.F.

19

MR. A. P. DAVIS: It probably would, yes. As a matter of fact, there are but few large diversions in the upper basin but what at some time normally take all the flow of the river now. The Grand Valley Project is the only one I know of in the Upper basin that doesn't take practically all of the water that is available in the low water seasons which we have experienced. Now if an abnormal year occurred, all those projects would be short. They would be unable to consume as they want to.

MR. NORVIEL: In those years they would be unable to turn down any water perhaps.

MR. A. P. DAVIS: No, they would close down their head-gates. The entire project in the upper basin, as a physical possibility, can be closed off and use no water. They contemplate that possibility. It is something that the upper basin is deliberately shouldering. Of course, they wouldn't do it if they felt any danger in it.

MR. NORVIEL: In other words, you think if they should deliver in a flood this year, three times the amount and then the three succeeding years were dry, they would be privileged to take it all out, and that they would shoulder the same responsibility as we? This year they turn down a three year amount, and then for the two succeeding years, they would not be compelled to turn down any.

MR. A. P. DAVIS: No, that doesn't follow. The compact contemplates ten years and in nine years they could turn down

12th - S.F.

20

enough to fill their contract if they were able. On the first five years they could turn down enough to save it back the next five.

MR. NORVIEL: And you think that would be shouldering the same burden as we?

MR. A. P. DAVIS: If they turn down a full supply for say seven or eight years and then two or three years of drought would come whereby they couldn't turn down that amount of water after storage is provided, these excess years would save the situation during the dry ones.

MR. HOOVER: Don't we predicate this whole operation on the creation of storage in the lower basin?

MR. NORVIEL: This is going further than I had anticipated. The questions I asked were for enlightenment only on the language and we are getting further away from what I had in mind. The other discussion is very enlightening. I am very glad to hear it, but it should come in a general discussion.

MR. A. P. DAVIS: The percentage of inflow below Lee's Ferry in the compact Mr. Carpenter has presented, is assumed to be 14. I am not informed of any figures on which they can be based, possibly Mr. Meeker could enlighten us on that point. As I take it, the Gila furnishes about 6% of the flow and some other percentage is furnished below Lee's Ferry. In my report you will find 14% taken as including a lot of small streams, but it includes three important streams above Lee's Ferry, so

as I understand it the 14% is certainly too high for the flow of those streams - The Fremont, Escalante, and Paria. There is still more drainage area that isn't included in those streams.

MR. NORVIEL: If the division point is a mile below the mouth of the Paria, the Paria should be taken into consideration in the upper Basin, should it not?

MR. A. P. DAVIS: Yes.

MR. CALDWELL: Why single those streams out?

MR. A. P. DAVIS: They are streams that are included in the 14 % which should not be. The Gila, 6% and the others 8%, adding up to 14%, and it includes those three streams and a few small streams besides, and I think the flow above the Gila and below Lee's Ferry would be somewhere about 5% instead of 8%.

MR. NORVIEL: Making about 11%?

MR. A. P. DAVIS: Yes.

MR. NORVIEL: The losses would be greater than that.

MR. A. P. DAVIS: No the losses would be deducted.

MR. S. B. DAVIS: Inasmuch as Mr. Norviel is not prepared to state tonight his position on the general proposition of the division of the water between the two basins, might it not be well to proceed with the call of the states and ascertain what the position of the other states is?

MR. HOOVER: I think so.

MR. McCLURE: The fifty-fifty basis appeals to me as a fair

12th - S.F.

22

base for discussion.

MR. HOOVER: This is just upon the general principle of establishing a division between the upper and the lower states.

(Call resulted as follows:

AYES:

R.E. Caldwell,	Utah;
Col. J. G. Scrugham,	Nevada;
S. B. Davis, Jr.,	New Mexico
Frank C. Emerson,	Wyoming
W. F. McClure,	California
Delph E. Carpenter,	Colorado

MR. HOOVER: I want Mr. Norviel to understand that this is not a committal as to details or quantity - just the principle.

MR. EMERSON: It seems to me that the tenor of the conversation has been rather to convince him that he doesn't want to accept the general principle, that is, basing it upon these certain arbitrary figures.

MR. NORVIEL: I think you are wrong.

MR. EMERSON: If we would say that you would have 95% of the water you would agree to it. It isn't a question of detail.

MR. NORVIEL: Didn't I say yesterday that I was willing to enter into a discussion of detail, and that if the details could be worked out, I would be in favor of it?

MR. EMERSON: If we could say tonight that you would have 95% of the water that goes by Lee's Ferry, wouldn't you accept it.

MR. NORVIEL: I think you might answer that for me.

MR. EMERSON: Then you are in a position to accept it in principle.

MR. NORVIEL: I want to clarify the language.

MR. CARPENTER: He thinks he left the impression with us that he is willing to discuss this as a matter of detail, but he isn't settled in his opinion yet.

MR. HOOVER: I think we could proceed on the line of international conferences, reaching a settlement of principle, and then draft whatever is agreed to.

MR. NORVIEL: Well, it was not particularly the English of it, but the import at which I was trying to arrive.

MR. EMERSON: We don't want to cloud the main issue by unfavorable consideration of detail.

Meeting adjourned at 9:30 P. M. to reconvene at 10:00 A. M., Monday November 13th.

Clarence C. Stetson,
Executive Secretary.

The above minutes were approved at the 27th meeting of the Commission, held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

12th - S.F.
24

MINUTES OF THE

13th Meeting

COLORADO RIVER COMMISSION

The thirteenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Monday morning, November 13th, 1922, at 10:00 A.M.

There were present:

Herbert Hoover,	representing the U.S.,	Chairman
R. E. Caldwell,	"	Utah
Delph E. Carpenter	"	Colorado
Stephen B. Davis, Jr.,	"	New Mexico
Frank C. Emerson,	"	Wyoming
W. F. McClure,	"	California
W. S. Norviel,	"	Arizona
James G. Scrugham,	"	Nevada
Clarence C. Stetson,	"	Executive Secretary.

In addition there were present:

Governor Thomas E. Campbell of Arizona
Edward W. Clark, Joint Commissioner and Advisor for Nevada
Arthur P. Davis, Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative
Ottomar Hamel, Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
C. C. Lewis, Assistant State Water Commissioner and Advisor for Arizona.
R. T. McKisick, Deputy Attorney General and Advisor for California
R. I. Meeker, Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan, Legal Advisor for Arizona
Charles P. Squires, Joint Commissioner and Advisor for Nevada
Dr. John A. Widtsoe, Advisor for Utah.

The meeting was called to order at 10:00 A.M. by Mr. Hoover.

MR. HOOVER: Last evening we left off in discussion of the

general principle whether we could accept, - whether we could accept a general principle of a division between the upper and lower states as the primary basis of compact and Mr. Norviel wanted to await this morning before he came to a decision as to whether we could discuss it in principle, without any obligation at all as to detail.

MR. NORVIEL: Mr. Secretary and Gentlemen of the Commission. We from Arizona are perfectly willing to accept in principle the division of the basin into two divisions, and I may say in this that we do not do so reluctantly, nor do we do so with avidity, but calmly, facing a serious proposition, for we feel in this principle that we are conceding a right that is ours by all established rules of law and precedent. However, we will accept the principle and try to adjudicate the matters on the basis of a division as suggested, a division of the waters.

MR. HOOVER: That will bring us to the discussion of detail. In order that we might have as constructive a discussion as possible we might consider for a moment the problems involved in the detail and attempt to dissolve them into their component parts. For instance, such a division as this implies a point of division. It has been suggested that Lee's Ferry shall be the point. The second point involves a method of what, for lack of a better word, we might call averaging, and the third point, in my mind, would involve a principle of a quantitative character as to the volume of water, - not as to the method of actual division of the water itself.

13th - S.F.

MR. NORVIEL: I don't know whether I was quite clear, Mr. Chairman. The discussion last night was on the point of a fifty-fifty partition of the waters. So far as we have concluded up to this time, as I understand it, we have only agreed that we would consider a partition of the water, without agreeing that it would be on any particular basis. As for myself, I think that I would like to have it understood with the Commission that in the discussions that may come up now that it should not be overlooked that I myself, speaking for my state, have not committed myself, nor my State, to a fifty-fifty proposition. I haven't any present intention of committing myself to that proposition. I would like to explain that I think the fifty-fifty proposition is infeasible and impossible, as a matter of exactitude, I adhere, so far as I am concerned now, from the information which I have, to the idea that there is water enough in the river, if properly conserved, to answer all the needs of both basins. My idea in partitioning the water was that we might get together on some figure which may be turned down to the lower states, arbitrarily if you please, to which they may attach priorities and it does seem to me that much of the discussion which we had last night, if this idea is adopted, could be obviated; or necessity for it could be obviated, as taking place in this Commission.

Personally, I think I can conclude for myself and for my State what amount I think should go past Lee's Ferry. I think the lower states, or the lower basin may determine for themselves

what amount of water must go past Lee's Ferry. On that basis it may be we can trade, and it may be we cannot.

By "trade" I mean maybe our ideas may be brought together on that proposition.

I want to disavow any intention on my part of doing anything that is in any way harmful to the lower basin and as a matter of principle I think any harm that might work to the lower basin would be harm to the upper basin. I believe sincerely we are a unit, but we must get to some basis on which we can partition the water for the present.

In the proposition which I have before the Commission I have suggested that the compact may be changed in any particular that is thought necessary. I believe at least that we can arrive at an arbitrary figure, if you please, for the partition of the water so that nobody will be in any danger for fifty or sixty or possibly a hundred years, - it may be never, - I really think never, and if we can get to that position we can change the compact as necessity may require at some future time.

MR. CARPENTER: The suggestion of the Chairman that the line or point of demarcation should be the initial fact to be considered seems to me to be well taken. Whatever basis of division or allocation of the water, as between the two natural divisions of the territory involved, may be adopted by this Commission, - after all it will naturally resolve itself down to a point of demarkation between the two divisions.

Might I call attention to the fact that in the memorandum

13th - S.F.

4

of compact which I presented, and to which I am not committed at all, - having prepared the same as other commissioners have, by way of basis of discussion, - I took the old Lee's Ferry, original Lee's Ferry, as the point of demarkation, first because it was accessible; second, because it was the mouth of the neck of the funnel, if I may so term it. It was the natural point where the waters coming in from the catchment basin all account for themselves before passing down through the neck of the funnel and to the country below. Because, further, it included the Paria, which is essentially a stream of the upper basin, while if the present Lee's Ferry were taken it would eliminate the Paria and to that degree eliminate a stream that has its source primarily in the State of Utah.

The matter of elimination or inclusion of the Paria is a matter of the exercise of discretion of the Commission, of course, but the appealing considerations that led to my suggestion on this point primarily result from the natural condition in the topography location, or result primarily from the geographical location and the accessibility of the point. As I am advised, the river in that vicinity is easy to gauge, and may be approached from either side.

MR. EMERSON: Mr. Carpenter, wouldn't there ever come a time when this station might be flooded by the creation of reservoirs?

MR. CARPENTER: Yes, sir. If the station were flooded by

the creation of reservoirs, then of course the discharge from that reservoir could be actually ascertained, the only difference being there would be evaporation loss immediately above the point of discharge as compared with no evaporation loss in the natural river.

MR. EMERSON: Then it would be just a case of changing the means of measurement?

MR. CARPENTER: Yes, and that is what led me in my suggestion to the saying that if a reservoir or reservoirs were created by the erection of dams, a dam or dams, at any point between the mouth of the San Juan and ten miles below Lee's Ferry, then a certain condition should obtain, it being suggested that ten miles below Lee's Ferry would cover the territory within which any dams would be feasible. The canyon drops very rapidly before the ten miles are reached and, in fact, the principal dam sites are immediately above Lee's Ferry.

MR. EMERSON: Would it be practical to establish a gauging station below a possible dam, --

MR. CARPENTER: I am advised they are not as accessible. I am not familiar with the country. The Executive Secretary and others made a trip of inspection there so they are better informed than I.

MR. NORVIEL: Mr. Chairman, we are only here to assist, I suppose, in this matter. It is not our principal proposition, but I may say that at present and for many years Lee's Ferry has been practically a mile above the confluence of the Paria with

13th - S.F.

6

the Colorado. There is a measuring gauge or station a little above Lee's Ferry at this time. A stilling well has been decided upon, to cost several thousand dollars, and the most feasible place or point for its construction is above Lee's Ferry.

MR. A. P. DAVIS: No, Mr. Norviel.

MR. NORVIEL: I don't mean above Lee's Ferry, but above the confluence of the Paria. It will be below Lee's Ferry, but above the junction of the Paria.

MR. S. B. DAVIS: Do you mind telling me what a stilling well is?

MR. NORVIEL: Well, a stilling well is a structure within which the float operates an automatic gauge, for the measuring of water.

MR. CARPENTER: Where the water is stilled.

MR. NORVIEL: Yes, where the water is still. The most feasible damsite, so far as our information goes, for a reservoir, dam and reservoir, in the neighborhood of Lee's Ferry will be above that point. In all probability there will be no dam within a distance of forty or fifty miles, whatever the distance may be, below Lee's Ferry at Marble Canyon and that will be so guarded that it will never back the water up to the present Lee's Ferry. That point I deem will be held sacred in its practical present condition so far as the river is concerned. It will, however, no doubt, in order to gain the greatest drop, or save the fall of the river for the manufacture of power, back

water up into the Paria Creek, or up to Lee's Ferry, leaving the space of two or three miles unaffected by the storage of water below. There is no good place for the erection of a stilling well within a reasonable distance below the inflow of the Paria. That matter has been carefully studied and the decision made by the Geological Survey and the point of construction of the stilling well has been fixed upon so that it seems to me, if the measuring point between the two divisions is to be established at the point of demarkation, so-called, it should be immediately above the inflow of the Paria Creek.

MR. CARPENTER: You believe that is the best place for a station, Mr. Norviel, I take it?

MR. NORVIEL: I have to stand on the record, Mr. Carpenter.

MR. CARPENTER: I mean that is the gist of your thought, is it not?

MR. NORVIEL: It certainly is, or I wouldn't have stated it.

MR. CARPENTER: It is perfectly feasible to include in the upper territory the flow of the Paria by separate station, if you want to create it, isn't it?

MR. NORVIEL: I suppose so.

MR. CARPENTER: You know topographically, that is all I was inquiring about.

MR. NORVIEL: Yes, sir.

MR. HOOVER: Is there any possibility of a gauging station for this purpose below the Grand Canyon?

13th - S.F.
8

MR. NORVIEL: There is a gauging station now being constructed in the Grand Canyon just above the terminus of the Bright Angle Trail. That is being constructed at a cost of some \$15,000 by the Geological Survey as a result of exploration of the river, for the purpose of finding a good place for a stilling well required by Mr. Girard and is the outcome of the investigation demanded of Mr. Girard by the Federal Power Commission that he establish a stilling well and gauging station in conjunction with his proposition. The material is on the ground and I suppose the stilling well is under way.

MR. EMERSON: That would be below the mouth of the Little Colorado?

MR. NORVIEL: Yes, fifty miles, I imagine, about fifty miles below the inflow of the Little Colorado. It is to be an up-to-date, - as perfect a gauging station as probably can be made.

MR. CALDWELL: Mr. Chairman, could not the states be asked one at a time whether or not they favor the point of division being at Lee's Ferry?

MR. HOOVER: I think so. I was going to ask Mr. Arthur P. Davis what his impression was, that we may have all the information on the subject.

MR. A. P. DAVIS: Mr. Chairman, the account given by Mr. Norviel concerning the gauging station is correct. I was there recently. The point selected by the Geological Survey is above the present Lee's Ferry and consequently above the mouth of the

13th - S.F.

9

Paria.

MR. NORVIEL: Mr. Davis, the new stilling well, so-called, you don't mean it is above the present Lee's Ferry?

MR. A. P. DAVIS: The present gauging station.

MR. NORVIEL: The present gauging station, but the one they are constructing as a stilling well,--

MR. A. P. DAVIS: Yes, that is below the present Ferry, but it is above the mouth of the Paria, but I have no doubt that that was selected largely on account of its accessibility. It is right by the road, by the Ferry and near the buildings. There are two things possibly concerning this, if the Commission desires to include the Paria with the upper basin. It certainly is feasible to measure the river below that and the small amount of the cost of a new gauging station is negligible in comparison with the importance of the question you are considering, and if my opinion in that respect should be erroneous, as it might be, it is still possible to include the Paria by a separate gauging station, as suggested by Mr. Carpenter, and the desirability, from a physical standpoint, of including, if a division is to be made into two basins, the Paria belongs in the upper basin, and being so easy to put it there, that seems the logical thing to do, to hold the point of division where suggested by Mr. Carpenter by either method, both of which I think are feasible.

The next tributary of importance below there is the Little Colorado, which gets its water from the lower basin and can be

13th - S.F.
10

used only in the lower basin and must be used largely before it gets to the river. The inclusion of the Paria in the upper basin is the logical thing and can be done under either method suggested by Mr. Carpenter, or by means of a separate gauging station.

MR. CARPENTER: Mr. Davis, where is the Grand Canyon station mentioned by Commissioner Norviel, above or below the Little Colorado?

MR. A. P. DAVIS: Below.

MR. CARPENTER: So the station at that point would cover not only the waters from the upper natural basin, but also the inflow from a stream of the lower basin?

MR. A. P. DAVIS: And the most important stream of the lower basin except the Gila.

MR. EMERSON: Mr. Davis, which method, in your opinion, would be more desirable, from your present knowledge? One gauging station below the mouth of the Paria, or the station above the mouth of the Paria upon the Colorado and the additional station on the Paria?

MR. A. P. DAVIS: The station below the mouth of the Paria, if feasible, would be preferable to one above because you would get a more accurate measurement of the whole thing at less expense.

MR. EMERSON: Can you state definitely at this time whether a station would be practical below the mouth of the Paria?

MR. A. P. DAVIS: I have no doubt of it. The point directed

by the Geological Survey is above, but they are limited in funds and by existence of buildings in which to quarter the observer and it is a very difficult matter to raise funds to either install it or observe and that has doubtless had some weight with them, but there is a considerable distance below the mouth of the Paria in which to make a selection.

I haven't seen the river, below, and they say there are rapids in there, but there are doubtless stretches between the rapids where I have no doubt a good gauging station could be obtained at some additional expense, both for the establishment and for the building of the necessary quarters. After it is provided, of course, an observer could be at one place as well as the other because the road passes close to both points.

MR. CALDWELL: I was going to say perhaps Utah is interested maybe as much as any other one state in the location of this point because of those streams that arise in Utah and out of the headwaters of which we must secure irrigation. The fact is, from my observation with respect to Lee's Ferry country that a station at or very near the present Lee's Ferry would be the best place to locate it.

MR. A. P. DAVIS: Most convenient.

MR. CALDWELL: Excluding the other streams coming in below at this station.

MR. A. P. DAVIS: The Paria you mean?

MR. CALDWELL: Yes, As for myself and my state, I am not concerned as to whether the station is above or below Lee's Ferry

13th - S.F.

12

because the adjustments can easily be made.

MR. A. P. DAVIS: Yes, that is true.

MR. CALDWELL: And inasmuch as the natural, logical place for a gauging station is about where it is now, I would favor that location.

MR. HOOVER: Perhaps we could make it read, --

MR. CALDWELL: (Interrupting) Pardon me just a moment. The fact is that very soon after you leave Lee's Ferry as it is located now the river breaks into rapids and continues for some miles down river. It is very steep and it is very likely that there may be a continual changing of the cross-section in those places unless some expensive cross section is provided, some protection for a cross section is provided, which I think wouldn't be necessary at all at Lee's Ferry.

MR. A. P. DAVIS: Well, I recognize the difficulty of accurate measurement in rapids, but in a canyon beset with rapids there is much less likelihood of changing cross sections than in the upper canyon.

MR. CALDWELL: It seems there may be a difference in this particular section. If you would see the rapids I think you would possibly agree that the channel changes at this point notwithstanding the rapids.

MR. A. P. DAVIS: They have that trouble very seriously ^{now} where the gauging station/is. The sand bars are continually shifting, which isn't the case at a rapid.

MR. CALDWELL: The river where the rapids are now is very

13th - S.F.

13

wide and it shifts from one side to the other, depending on the stage of the water.

MR. HOOVER: We might formulate this into some expression of division at or near Lee's Ferry, either by separate gauging or one gauging, so as to include the Paria. We could perhaps designate somebody to determine that, as for instance the Reclamation Service. The important matter is the principle that the water is to be determined as at a point below the Paria, whether gauged there or not.

MR. NORVIEL: I think that would be satisfactory. I don't desire to quibble in this matter because we deem that ⁱⁿ very/material, as to where the point of demarkation is to be. It may be above or below. The flow of the Paria may be taken care of, whether it be a stream in the upper or lower basin. However, I would not like to tie the river up in such a way that we may not utilize the full fall of the river because it drops rapidly from Lee's Ferry. If the river is to be limited we shall want to utilize all of the drop in the river so that it may necessitate the measuring of the river above the Paria and then measuring the Paria itself. That will not be excessively expensive, but I suggest that we leave the point of demarkation just where Mr. Carpenter has put it so far as we are concerned, and that the measurement of the water may be made at the most accessible point and, if necessary, at two points, one in the river itself and one in the Paria Creek to take care of that.

13th - S.F.

14

MR. CALDWELL: I understand, Mr. Carpenter has located a point of division below the Paria.

MR. NORVIEL: Yes.

MR. CALDWELL: I think your argument favored the point of division above the Paria with separate measurement of the Paria.

MR. NORVIEL: No, it may be below or above or anywhere, it is absolutely immaterial to us.

MR. CALDWELL: I can't say that it is quite immaterial to me.

MR. HOOVER: Your idea is to include the Paria in the measurement, whether made separately or together?

MR. CALDWELL: I think it would be more satisfactory if we make the measurement separately, measure the Paria separately and put the gauging station above the mouth of the Paria because that will conserve the river resources Mr. Norviel speaks of, and it has other advantages.

MR. CARPENTER: The thought was the more gauging of the stream instead of a gauging station would be adapted to the conditions of development and the line of demarkation was not intended to fix absolutely and forever the place of gauging. That would be wherever good engineering dictated and could be changed from time to time. It might be changed by natural erosion or other conditions.

MR. A. P. DAVIS: It occurs to me, Mr. Chairman, that the matter as left in the draft of compact by Mr. Carpenter, leaving the determination of the flow to the Geological Survey without

any restrictions as to how or where they shall determine, that is the safest and most flexible and less likely to run into difficulties in the future.

MR. HOOVER: All that we may do for the moment is to agree on the point that we include the flow of water of the Paria and of the Colorado at Lee's Ferry. The question of where the gauging station is to be set is secondary.

MR. NORVIEL: I think so.

MR. HOOVER: That is the proximate point of division. Is that satisfactory to you Mr. Emerson?

MR. EMERSON: Entirely.

MR. HOOVER: Mr. Caldwell?

MR. CALDWELL: Yes, sir.

MR. HOOVER: I think we could accept that as the proximately point where we are going to divide. We could settle the detail as to where the gauging is to be done later on. Mr. Davis, is it satisfactory to you that we fix the division point proximately at Lee's Ferry and include the Paria?

MR. S. B. DAVIS: Yes, sir.

MR. HOOVER: We can determine where the gauging station is to be by some device later on, or method of gauging. That satisfies you Mr. Scrugham? (Mr. Scrugham assented)

The next point I had suggested is method of averaging the flow. Mr. Carpenter's proposal is the average of ten years.

MR. McCLURE: What is the objection of using a twenty year period inasmuch as the Yuma flow has been established for that

13th - S.F.

16

period of time?

MR. NORVIEL: I don't believe Mr. McClure understands what we are driving at.

MR. McCLURE: Maybe not.

MR. HOOVER: The objection raised last evening by Mr. Norviel was that on a ten year average it was possible to have three dry years in which there was no delivery of water at all and to bet on the total of the other seven years supplying the average and that such an interval of three years, taking the extreme case, that would be disastrous to the lower states. That was your thought, was it not?

MR. NORVIEL: Yes, and twenty years would be that much more of a burden, - ten years added to that would be that much more of a burden. We might receive all our water then in five years and none at all in the other fifteen and it might be disastrous to the lower states.

MR. McCLURE: That could be very well covered by the language we would use.

MR. HOOVER: The question as to whether there should be a positive delivery every year, or whether there should be only a delivery of a total over ten years or over three or over five or any other period.

MR. NORVIEL: Well, Mr. Secretary, that is a very serious question in this division and with my present knowledge I would like to have Mr. Carpenter explain it a little further, how he arrived at such a period of time and what his purpose was. With

the knowledge that I have and the study I have been able to give it since receiving this paper, I do not think that we can afford to agree on a longer period than three years to average the flow to be turned down the river. I think that would be as long as would give us any safety, that would be satisfactory at all to our people below,- and I think when California studies this question carefully and seriously they will come to the same conclusion; so, I at this time, without further information on the subject and more analysis of the situation in that river, will oppose anything longer than a three year period of averaging the flow.

MR. EMERSON: How about the suggestion of a stipulation as to minimum yearly flow?

MR. NORVIEL: That will be possible, - I would be very glad to include that in it, and when the time comes to discuss that question, we will suggest it.

MR. EMERSON: It has a direct bearing upon the proposition and is probably worthy of consideration now.

MR. HOOVER: Looking at it from an engineering point of view, the whole of this proposal consists of watering of the lower states by flood flow and using the minimum regular flow in the upper states.

MR. NORVIEL: We think, not from what Mr. Carpenter said, that they would be, of necessity, compelled to construct large dams and store large quantities of water throughout the basin in Colorado, Utah and New Mexico which will control the floods

13th - S.F.

13

to a great extent and utilize the water in the upper basin, leaving only the excessive floods to the lower basin.

MR. HOOVER: That was the thought.

MR. NORVIEL: I suppose it would work out to that.

MR. CARPENTER: No, Mr. Chairman, you are in part right and in part in error. Mr. A. P. Davis stated last night, you will recall, that do what we may in the upper basin, approximately 50 per cent of the flow of the river could not be diverted. Our diversions are above the territory in which that water rises and that water will flow anyhow, that is in low river water as well as in high.

MR. HOOVER: Would that apply to the minimum flow of the river?

MR. CARPENTER: Yes, it will. It applies to the very lowest flow of the river. The topography is such that our diversions must come out well upstream and therefore the territory below the geographic points at which we will divert is left free from interferences and its flow is bound to pass in any event at Leo's Ferry.

Mr. Norviel is correct, furthermore, in that we must store within the upper territory for our future development. Looking at the map, New Mexico must develop the San Juan territory by reservoirs on the San Juan, which would primarily catch the June floods, if I may use the month as an easy designation of the annual flood flow. On the Dolores the same is true. All of the country, all the territory, both in Colorado and Utah, which

may be served from the Dolores will depend upon a reservoir similar to that on the San Juan, New Mexico, and the same obtains throughout the upper territory so that the upper states will be developing from now on upon the water stored from the flood flows, ^{and} we will depend more upon the flood flow than will the lower basin because fifty per cent of our minimum flow is bound to go down anyhow past Lee's Ferry so that it isn't predicated upon the thought of leaving the lower area to look entirely to the salvation of floods. The lower area, however, as well as the upper area, must, when it does construct its reservoirs, provide for adequate storage to carry over from the low to the high and high to low years.

MR. HOOVER: What is passing through my mind, if I might suggest it simply as a matter of discussion, is as to whether there is a meaning here. I have a conception of rivers as a series of retaining vessels of which a large vessel, or several vessels, will be in the territory of the lower division. That the primary object of the lower division is to secure into this receptacle a sufficiency of water to give them a constant flow of eight or nine or seven million acre-feet per annum; that that being the case, their desire must be to keep this receptacle filled to a point of security in that light and that the basis of averaging might be entirely reversed onto the same basis whereby instead of penalizing the situation at some point in a ten year average, the thing be thrown into a position of keeping those vessels filled up to a point which would allow

13th - S.F.

20

such a regularity of flow there, when once constructed.

Perhaps, to get that clear, supposing we said that the flow was to be for an average of three years and that the flow in the fourth year was to be such a minimum as with the total flow during the previous three years would give a sufficiency to have kept these lower reservoirs up to a constant flow from their discharge.

MR. CARPENTER: You arrive at the same conclusion, Mr. Chairman, because the control of the discharge from the lower reservoirs is entirely within the keeping of the lower users and you would have to guard against the wastage and the careless withdrawals in order to prevent the withdrawal of extra water from the upper territory for replacement.

Now I might explain this to Mr. Norviel. The selection of a ten year period was the result of consideration of periods from single year to twenty years. The best average, of course, and the fairest average of the flow of any river is that obtained from the twenty year period as compared with one. A study of the flow of Laguna Dam, which appears on page 5 of the document No. 142 of the 67th Congress, "Problems of the Imperial Valley and Vicinity," will show that to take a three year period would impose a harsh and unnecessary burden on the upper territory, in the low cycle, - in a cycle of low years. These years tend to run in cycles. On the other hand, a twenty year period was considered unfair to the lower basin as prolonging the reckoning and too remote a period. A consideration of this table and

13th - S.F.

21

a consideration of the stream flow tables of many other streams, indicates that a ten year period gave a fair and reasonably accurate average of the flow of the river, taking both high and low cycles, and that a ten year period would reach into both cycles and largely include them, and that as the future development in both the upper and the lower basin must rely upon storage, the storage facilities would care for that rise and fall.

MR. NORVIEL: Both in the upper and lower basins?

MR. CARPENTER: Both. It would all be taken care of automatically because of the amount to be delivered at Lee's Ferry and any shortage would adapt itself.

MR. HOOVER: I didn't mean to convey this method would mean the control of reservoir discharge, but of supplies to reservoirs. Perhaps I would get my notion more clearly on a quantitative basis. Supposing the desire is to furnish to the lower division a flow of eight million acre-feet, or some such amount, and supposing that in a given three years thirty million feet had been delivered, or six million in excess of the total assured them for the fourth year there would be a relief to the upper states of six million feet out of the eight million. Thus they would have satisfied the situation for the fourth year if they delivered only two million acre-feet. The average would then progress to another three years in which you have ten and ten and two or twenty-two million feet or a deficiency for the year of two million feet in order to give

13th - S.F.

22

the full twenty-four million feet. That sort of measure would not give some relief on erratic flows of famine years and at the same time would impose upon the lower division the necessity of providing a storage so that they would get their security from the great excess of flow.

MR. HOOVER: In one case you are providing in advance for the security of the lower states and the other case you have an advance provision. You may have had a period when the flow was actual average for five years and then three famine years, and during the famine years the lower states may have been seriously injured.

MR. CARPENTER: That carries also with it the fact that the visitation of famine also strikes primarily the source states, the states of origin. Any shortage of flow in the river strikes the states of origin much harder than the lower states, because that very famine is what causes the shortage in the upper territory. It seems to me incumbent upon the lower states to be reasonable in the demand of guarantee. In other words an absolutely preferred delivery should not run wholly to the lower states. In making a division of the water it should rather be the disposition to lay the burden of water shortage, a drouth, upon the whole territory, and also to permit the enjoyment of excess flows to the whole territory. Another thought, any student of the river must realize that the future development in

13th - S.F.

23

both areas will be that predicated upon the construction of reservoirs. Nevertheless, we have no power to say by whom these reservoirs shall be constructed, in what localities or when they shall be constructed. That should be left free to both communities to use such instrumentalities as may be at hand, and the division of the water should be so made that either area may build, or neglect to build, of its own motion, and as it may believe construction or lack of construction is at any one time justified. The suggestion you make presupposes the construction of reservoirs in the lower countries, and along with it there should be concurrently a like construction of reservoirs in the upper territory to permit the deliveries as you suggest to the lower territory. The suggestion I have made leaves that matter to be worked out entirely by the two divisions.

MR. NORVIEL: Continuing the thought expressed, and the facts that we have before us that the river is erratic in its natural state, Mr. Carpenter's suggestion that it would be necessary for them to develop the river by storage at every conceivable point where the water can be utilized, I concede that to be the true development for the future, and will be, of course; so that the full use of the water in the upper states under any consideration of a period of time of averaging the flow, will make the river more erratic than it now is or accentuate the erratic condition of the river, to the extent that in cycles of dry years on a period of average of anything more than 2 or 3 years would permit all of the water or practically all of the

13th - S.F.
24

water to be utilized in the upper division, or perhaps put a disastrous situation on the lower division, so that any period of average flows to any considerable number of years would certainly be disastrous to the lower states.

MR. CARPENTER: I fear that the Commissioner from Arizona fails to recognize the condition that has proven to be almost universally true; that the equalization of stream flow, both seasonal, and over a period of years, including the wets and the dries, the fat and the lean, has been best accomplished and most accurately approached, by the first use, and a resultant conservation of waters at the heads of the streams, and that the upper development instead of making a stream more erratic will tend to avoid the other contingency of lean years that we are now discussing. It will improve the condition of these lean years and flatten the peaks of high years so that a graph, if you please, of the flow of the river over ten years as it now flows as compared with a graph of the river flow made as it would flow ten years after the reservoir development has occurred through the entire area, would hardly be comparable, as the depressions would be much modified and the peaks much reduced. In truth, the best possible safeguard for the lower states to insure a delivery at Lee's Ferry within reasonable inclusive figures from year to year would be the immediate development of the reservoir storage of the upper area. To do it all at once might shock the stream flow at first, and probably the word "immediate" is too drastic, but the early development of

13th - S.F.
25

that upper area, the withholding of the water at the source, the releasing of these waters gradually in the very season when the return flows and waste run off would turn back to the stream their various excess, would supply the stream below. If you presuppose an adjustment upon reservoir construction below, in as much if not more, you should presuppose reservoir construction above, so that the reservoir construction below may work in co-ordination with that above.

MR. NORVIEL: I am very glad to hear that argument from our friend at the top of the hill for it puts us in a better situation. The statement/a while ago that they should not take more than 50% of the flow of the stream for use in the upper states, and now his argument is that the more use they make of the water in the upper basin by the return flow the river will be increased, or the water will be increased and stabilize a flow in excess of that which now obtains in the river. Therefore he would have no objection to including in the average of the flow for a period, the establishment of a considerable minimum flow of the river, for his argument is that the more water is used above, the greater will be the minimum flow in the river, positively established; therefore, I see no reason why we cannot include a minimum flow to be included with the average that will give some satisfaction and stabilization to the water that comes to us, and I think perhaps that ought to be now discussed and fixed upon.

MR. CARPENTER: If it is found and considered to be advisa-

ble by us, that an assurance of the proper minimum be set, well and good. It is not within the range of my thought to even conceive of a condition where the upper states would strip the stream and deliberately paralyze the country below, but if that minimum is established then the objection to the ten year average is immediately dissipated.

MR. NORVIEL: No, you couldn't say that.

MR. CALDWELL: It seems to me that it is not possible to think of this problem with respect to the partition of the waters, and divorce from our thoughts the idea of the control of the river. If this river were under control, or if it flowed uniformly, we could divide it. It doesn't flow uniformly and that is our great difficulty. The only way to bring about anything like a uniform flow is to provide storage in the river. We do know something of the amount in acre feet that that river will deliver. What we want to do is to divide up that river on the basis of acre feet between the Upper and lower divisions. If you consider it in connection with storage and control, we can do it; if you don't consider it in connection with storage and control, we are going to have difficulty. Averages over years are difficult. We don't know what it is going to be in advance and we should know something about what the aggregate is going to be, and what the annual is going to be to the lower states. I believe we can do it by control of the river. I don't conceive that it is necessary immediately to control the river entirely in order to reach the conclusion of this proposition. For instance, if six, seven, eight, nine million acre feet is deter-

mined to be the proportion of the river that is going past Lee's Ferry annually to the lower states, it is not necessary that storage be provided at this time. The development may take place according to the necessities of the case in either basin, but we can proceed to divide the river as if it were controlled and when the exactions of the compact are imposed upon either basin, control must be had accordingly, so that the compact can be lived up to.

MR. NORWELL: You agree with Mr. Carpenter's idea that the greater use of the water above will have a tendency to regulate and establish a better flow in the river, less erratic than it now is.

MR. CALDWELL: I think that's obvious.

MR. NORWELL: So that you would have no objection to the agreement of a minimum.

MR. CALDWELL: If storage is presupposed, I think I just said what that storage idea should be, and I think it can be worked out.

MR. HOOVER: I think it is obvious that the whole possibility of division rests on the premise of storage, otherwise it is quite impossible.

MR. CARPENTER: Either reservoir or land storage - storage of some sort.

MR. CALDWELL: Personally I would not wish to bind the upper states to an agreement whereby they are dependent upon land storage. I don't regard it as uncertain, but I do regard it as uncertain as to when it will occur, as to when the benefits from it will accrue so we couldn't compact on that. We must come to

a very positive basis of storage. That positive storage may never be required if in the upper basin the land storage is provided as practical necessities compel.

MR. NORVIEL: By land storage you mean the use of the water for reservoir irrigation.

MR. CALDWELL: Someone used that; I don't know its technical meaning. I mean the return flow that comes after irrigation.

MR. HOOVER: When we consider the question of storage, not only from the seasonal flow of year to year, but the flow over we are looking to a term of years, the equalization. Therefore, you want a term of years for average so as to include the second form of retention.

MR. CALDWELL: My thought is that we provide in the compact for a certain definite amount of reserve storage. By that I mean storage capacity to catch the water from wet to dry years. We can obviate the necessity of going further into averages because we don't know in the first place what the average is now. The reason I make that statement is this. Mr. Carpenter made the statement a while ago that the fairest way to gauge a river is a 20 year average, or some other term of years. Certainly that would be true if the river ran from year to year and time to time without interference, but in the case of the Colorado River we have a 20 year period covering the last preceding 20 years, and during that 20 years very much of the water has been diverted and we have our average disturbed by the diversions which have taken place during these 20 years. I say the 20 year average is

very uncertain on which to base a calculation as to what the Colorado River actually flows or will flow in the next 20 years.

MR. NORVIEL: From the basis of the arguments up to date, without committing ourselves to it, I suggest that we include in the - if an average period of any kind is to be left in the compact - that we include in it also the minimum flow of not less than 7,000 second feet. Not to commit ourselves, but 7,000 second feet at the measuring point.

MR. CARPENTER: More than now flows?

MR. NORVIEL: Including every day in the year. I will insert the word "constant" minimum flow of 7,000 second feet.

MR. HOOVER: That's to be the average for the year?

MR. NORVIEL: Not to be reduced below that point.

MR. CALDWELL: There is really no necessity for doing that.

MR. HOOVER: What would that represent in acre feet, supposing it never got over 7,000?

MR. A. P. DAVIS: About 5,000,000 acre feet annually.

MR. CALDWELL: Suppose it came to five, six, or seven million acre feet annually - suppose it does - what would be your object in requiring that that be a constant flow?

MR. NORVIEL: To avoid the possibility of having the river dry up for one, two or three years, which I understand from Mr. Carpenter it cannot/^{do} in the first place, that they cannot take all the water, that 50 per cent of it will be available in the first place, and that the establishment of a return flow by

virtue of the use in the upper basin will increase the amount, and add to that 50 per cent a very large portion of the amount of water that you will divert and use. Thereby the longer it runs the greater will be the increased flow of constant water in the stream.

MR. EMERSON: Would you be satisfied with a minimum flow in acre feet per year rather than tie it down to flow that would be operative every day?

MR. NORVIEL: It works out to the same thing.

MR. EMERSON: No, entirely different. The whole thing is predicated upon a large storage and carry over reservoirs from the fat years to the lean.

MR. NORVIEL: Averages are a favorite thing here. We'll say an amount that this number of second feet would average during the year.

MR. EMERSON: The average is quite different from the minimum.

MR. NORVIEL: Any amount that this average flow would produce.

MR. S. B. DAVIS: What would that average in acre feet?

MR. CALDWELL: 7,000 second feet is about 5 million acre feet per year.

MR. HOOVER: Assuming that the Laguna gaugings are approximately correct at the worst period at Lee's Ferry, in which the average flow was 10 million acre feet - that was the worst that has ever happened in the river and 5 million feet would be approximately half at Lee's Ferry.

MR. NORVIEL: Which is slightly below the mouth of the canyon. It is approximately a million and a half acre feet more than the flow at Laguna, showing a loss there of more than a million and a half acre feet in the river, so that, and I assume since the evaporation loss where the river runs through and adjacent to Arizona, equals the inflow, that the flow at Lee's Ferry would probably be a little greater, or about the same, as it is at Topock, so that the flow there at that point would be considerably more than the flow at Yuma.

MR. CARPENTER: As I understood Director Davis last night, and checking the data since that time confirms it, certain spot measurements have been made, and not altogether complete investigations made, as a result of which I thought he conceded that the inflow between Lee's Ferry and Laguna about offset the losses in that river between Lee's Ferry and Laguna and not merely between Lee's Ferry and Topock.

MR. NORVIEL: I didn't say that. Lee's Ferry and Laguna. The conclusions I arrived at is that the flow at Lee's Ferry is practically the same as the flow at Topock.

MR. CARPENTER: Topock is at the mouth of the canyon. Then you wish to add or deduct from it a loss between Topock and Laguna.

MR. NORVIEL: We are talking about the flow past Lee's Ferry; that's where we have fixed this flow. The flow past Lee's Ferry is approximately a million and a half acre feet more than at Laguna.

MR. CARPENTER: My understanding is that the inflow between Lee's Ferry and Laguna offsets the loss in the river between Lee's Ferry and Laguna.

MR. NORVIEL: That's right; that leaves us then with the flow at the top of the river about the same, whether at Topock or at Lee's Ferry.

MR. EMERSON: Is there any objection to the establishment of a minimum flow as a principle?

MR. CARPENTER: I have no objection.

MR. HOOVER: My personal thought is there would be no providing that a reasonable number of years be taken, the minimum flow objection to the establishment of some minimum flow/being as-

insurance merely that in that period of years there would not be that hard application that might otherwise be feared.

MR. EMERSON: The word "yearly" should always be understood in the expression of minimum flow.

MR. CARPENTER: In preparing my draft, I at one time had a minimum flow, but I feared it would provoke opposition that should be discussed here, and hence I left it out because I thought that was a proper factor for discussion. The opinions might well vary as to what that minimum flow would be. Some might say it was fixed too low and others that I had fixed it too high, and so I left it out completely, presuming it would come up at this time, and I felt the more I thought of it that it was a dangerous factor to consider in one way. If you get that minimum too high and in some one particular year it dropped below, it might be the source of unnecessary friction. Most

interstate, like international strife, is the result of heated action. However, if it is low enough so that there would be no question of ability to deliver and no danger of violation, I can see no objection of putting some such proposition in as an assurance against the exhaustion of the stream above to the detriment of the people below.

MR. CALDWELL: I can agree with that partially. If you mean a minimum flow guaranteed the lower states without any further qualification, I don't think it would be wise, although I think a guarantee could safely be made so far as the practical divisions are concerned. A guarantee or something that amounts to a guarantee, which is both a maximum and a minimum. A minimum to the lower states and a maximum to the upper states. That might be arrived at with some minor qualifications.

MR. CARPENTER: Wouldn't that really be an average?

MR. CALDWELL: Not necessarily; it may be based on an average and upon our knowledge of the river now.

MR. NORVIEL: By that you mean a certain percentage of the—

MR. CALDWELL: No, not percentage. A certain amount.

MR. NORVIEL: A certain amount of acre feet of water to be used in the upper states without any relation to the lower states?

MR. CALDWELL: No. I mean this; there is a certain amount of water which that river contributes which is unappropriated. What we are trying to do is to give a portion of that water to the lower states, and retain a portion for the upper states. We

dont know exactly what the river will produce, but we do know that whatever it produces, storage will be necessary in order to divide the aggregate of the water between the upper and the lower basin. Now, then, we may say that that river produces say 16 million acre feet and we want to give you 8 million. The upper states would agree, say the upper basin would agree to turn past Lee's Ferry 8 million acre feet annually provided storage is provided so that we may control the river sufficiently to give you that, but the people of the lower states would not wish at this time to be compelled to build that storage if it were unnecessary just to fulfill some arbitrary agreement whereby there must pass Lee's Ferry, whether used or not, a certain number of acre feet annually.

MR. S. B. DAVIS: I dont like the idea of a joint guarantee by the upper states at all. It puts New Mexico in this position, assuming there is a guarantee of 5 million acre feet for the sake of argument; that is more water than flows through New Mexico, and we would not be in a position to sign a joint guarantee which the state itself could not carry out. It seems to me from our standpoint that we would want something in the way of an understanding as to just what portion of that Guarantee should fall upon New Mexico.

MR. NORVIEL: Judge Davis has the idea of co-partnership in which each party is responsible for the whole debt.

MR. S. B. DAVIS: If the 5 upper states will guarantee to the lower states, that is a joint guarantee. I have no objection

if it is segregated as to just what I am guaranteeing. It is like asking me to sign a note of John D. Rockefeller if that feature is worked out.

MR. NORVIEL: It seems to me that we are agreeing upon the principle of a minimum flow and that the minimum flow should be established with a minimum annual flow and then that there be a period of average, during which period another flow, larger of course, should pass the point of demarkation. The establishment of the latter we have not reached.

MR. HOOVER: You would not object to a ten year average if there was a minimum for any one year.

MR. NORVIEL: It would depend upon the minimum. If we can have what we demand, a fair minimum, we might not raise the period. However, I would not want to commit myself to that until I have more time and discuss it, knowing perhaps a little better when I approximate the minimum that shall be guaranteed. Of course, the larger minimum flow, the longer the period we might consider.

MR. HOOVER: We can bring our second point down to this, that the basis of average should be a term of years and a minimum flow.

MR. NORVIEL: Yes, if we are to have a period at all then there must be included in it a minimum flow.

MR. CALDWELL: I would have to dissent from that, but I would like to think the matter over.

MR. HOOVER: We might tentatively agree to that; the quanti-

tative question would involve that whole problem. Is that suggestion satisfactory to you? (All assent)

MR. S. B. DAVIS: It is to me with the understanding I stated.

MR. NORVIEL: I would like to hear from California.

MR. McCLURE: I answered yes.

MR. HOOVER: Then we come to the third problem, the quantitative division.

MR. NORVIEL: Mr. Secretary; gentlemen: We have apparently arrived at a point or period of this discussion that bids us pause and look and listen. This question that we are now entering upon is the crucial point of the whole institution. It is crux of the situation, and it must be considered with extreme care. I have given a great deal of thought to this subject. I considered it quite carefully, as I thought, before our first meeting at Washington. I worked it over as carefully as I could from the data at hand and finally arrived at the conclusion that such a division of water would be impracticable except upon an acreage basis, and so presented my thoughts in writing at our first meeting upon that basis. In the studies prior to that time I used every available bit of information that I could obtain in that time, and with my limited knowledge of affairs and conditions. I had available, so far as I know, the information that was to be supplied from the Reclamation Service and Geological Survey. I went to the several states, to the engineers and to others whom I thought had any knowledge of the situation

to obtain as best I could the amount of water in the several states necessary. In our own state we were not prepared; we did not know what our needs might be out of the Colorado River. We had a vision of an empire within our state to be irrigated and reclaimed from the waters of the Colorado River. We know that we have an abundance of land to utilize a very large volume of water from the Colorado River, but just how much we did not know - we do not yet know - we have an engineering commission now in the field and I hope by the first of the year or soon thereafter they will give us a fairly accurate report upon the number of acres that can^{be} irrigated from the Colorado River. We have, however, gone far enough into this question since our meeting in Washington, that I can confidently say, or rather I say with a great deal of confidence, that we will be able to place upon land from the Colorado River the waters of that stream to the extent of 860,000 acres, approximately. I don't mean by that the irrigation of lands within the state from the smaller streams like the Little Colorado or the Gila. The inland streams, the Little Colorado and the Gila are, I might say, already appropriated; projects covering the full amount of water have been initiated and the water applied for. These rivers are not large; they do not give a very great amount of water. The flow of the Gila river at San Carlos is approximately 400,000 acre feet per annum. The project which has appropriated the Gila at that point cannot more than half be supplied with an ample supply from the river

13th - S.F.

38

because the water isn't there. There will be 2 or 3 times - there is 2 or 3 times the number of acres that could be included within that project of the finest land in the state if the water available was sufficient. At other points below the Gila the return flow can be taken care of and will be, eventually, and yet not half the available irrigable lands can be supplied with water along the Gila from all the inflow of the Gila below San Carlos. So that it is impossible for us to cover all the irrigable lands within our state from the waters of the rivers that rise within or flow across our state aside from the Colorado. I think the number of acres is fairly limited and know in the State of California Mr. McClure is satisfied that a certain acreage in California shall be the limit of requirement from the Colorado River. Just what that is I don't remember, but we have the figures. I ascertained as best I could from Mr. Davis' reports, from other reports and from the engineers, and I made my calculations in Utah of something less than 500,000 acres of new land and in New Mexico about the same amount. In Wyoming near the same amount. In Colorado, the best information that I could obtain, and I will say that I obtained this from Mr. Conkling and I think Mr. Meeker at Riverside in December in last year, and the amount as I remember now - I don't want to commit Mr. Meeker to this, but I am quite well satisfied that this was the amount he told me. I know Mr. Conkling gave me the figures of 1,018,000 acres of new land. That was in December. In the last of January at

13th - S.F.

39

Washington when your Honor appointed myself and others to find out the requirements of water, I asked the various commissioners what their requirements would be and between the middle of December and the 26th of January, during which period the hills of Colorado were covered deep in snow, I doubt if any further engineering measurements were taken, the amount there required was 1,825,000 acres, an increase of 810,000 acres, perhaps out of abundance of caution. I asked Mr. Caldwell what his requirements would be and he frankly told me he didn't know, but that if he must say how much, why one million acres.

MR. CALDWELL: In order that we may be straight. I said one million acres was the minimum below which Utah would not go.

MR. NORVIEL: You didn't like to be committed to that, but you gave me that number of acres upon which I might place the foundation of our figures. I asked the representative from New Mexico and the reply was 1,400,000 acres. In Nevada the amount had been raised slightly from 2,000 to 82,000 acres. In our own state I did not know and under my proposition of dividing the water in a way between the upper and lower basins, I thought it did not matter, because it was necessary that a large storage dam or dams should be built in the river and that reasonable use of the water in the upper basin would permit an ample flow to go to the lower basin, so that our wants would be supplied upon the basis that I had figured before. Checking

13th - S.F.

40

the figures that were given me at that time and estimating the amount of diversion for use upon certain bases, which I think all were ready at that time to admit were correct, or nearly so, and the result was that far above the average flow of the river would be necessary for diversion and the consumptive use, the amount of which I had figured, and I think was acceptable to all the commissioners, and would amount to more than the flow in the river, assuming that some water would go to Mexican lands, so that as my friend Caldwell has insisted all the time, there is water enough for all, and I am here to say at this time and have always said that there may be water enough for all, but none to waste.

MR. CALDWELL: If you quote me in that matter, say this: that I think there is water enough in the river for all if properly conserved.

MR. NORWIEL: I will accept the amendment. I also am satisfied that there will be water enough for all if properly and beneficially used and conserved, and we don't expand beyond our present knowledge of the limitations, but we don't know what the future may bring forth. We don't know what devices may be invented to divert or lift water in order that it may be taken out of the basin or be used on lands now entirely infeasible. With this view in mind I am struck with awe and admonished to be very cautious in what we are now about to undertake. Having these things in mind and looking to the future as we must, I anticipate there will come a time not too

far in the future when the water for power will be of more cash value than much of the water used for irrigation. However the social question of providing homes in the basin must necessarily supersede at least for a period of years the use of water for power. The beneficial use of water must be guarded. Perhaps it would be properly guarded by the authorities within the states, but some provision I deem it necessary to put into this pact in the guardianship over the use of the water, so that infeasible and impractical uses of water, bearing little or no return, must be prohibited, my friend Emerson to the contrary notwithstanding. Let me say that -- or before, within our state we are in need of immediate power. It is costing our people now practically \$100 per horse power to make it in hydro-electric, or to make it from the old methods. Ten tons of coal on the average will create 1 h.p. year. On the valuation of \$10 per ton gives us a valuation or cost of \$100 per h.p. year, so that for every h.p. that we create at this time in the river we will release \$100 worth of coal for other uses or oil, no matter which, and we must look to the future and conserve the supply of coal and oil for other uses while the water is now going to waste, and the use of it for power does not waste it, nor take it from other uses of irrigation and domestic supply. The creation of 1 h.p. year also will release \$100 worth of coal carrying railway equipment for other uses. So that 100,000 h.p., or I will take the Girand/^{project}as a basis, 200,000 h.p. created at that one point,

13th - S.F.

42

upon which the heavy hand of opposition has been laid, though it has been financed and ready to go for a long time, would create within our state 200,000 h.p., and would release or save for other uses 20,000,000 worth of railway coal carrying equipment to other uses. We might multiply that by the number of h.p. that can be created within our state, conservatively estimated at 5 million h.p. The figures become staggering, yet this is only the beginning of the real value to be created within the vicinity to be reached or covered by the power from these several points. Eventually our state will be able to furnish power to turn every wheel of industry from the sewing machines to the railways within a distance or radius of 500 miles from the points of creation of power. This will build up this section of the country beyond my comprehension. I only speak of this to show that it necessitates at this time a careful consideration of the use of the water of this river and especially the diversion of the water out of the reach of the users within the basin. 100,000 acre feet per annum diverted throughout the basin means 137 second feet of water, approximately. That 137 second feet of water passing down the river when fully developed with power plants within our state would create an enormous power and would eventually amount to \$10 per h.p. at the base bar or switch board, an increased figure of more than 65 millions of dollars per annum. It may be that the creation of homes outside the basin, and the growth of vegetation by agriculture would be worth more than that. It

certainly would be if it were necessary to sustain life and provide homes. No other consideration I think could enter into it to compete with the valuation of power. Now, I cannot think, cannot get the consent of my mind, that there shall be any arbitrary consideration given to the division of the waters at the point of demarkation. It is abhorrent to me to think that we will give any consideration at all to the gambler's chance of 50-50. It is without reason and should not be given consideration. What we must do, and I conceive it a duty that I owe to my State, that before we enter upon the discussion of any definite amount of water to be divided between the upper and lower basins we must know how much consumptive use is necessary in each of the states above and below, and adjudicate upon an equitable apportionment - the equitable apportionment must be adjudicated upon the needs of the several states, the actual needs, present and to be. Equitable apportionment as I conceive it does not mean that one state would have any advantage over the other, and the good Lord knows that I ask for no advantage for our State over any other State. We want to be absolutely fair and right in what we say and do in this agreement so far ^{as} our State is concerned. I believe, if we find that sort of a position and take it and agree to it, that our legislature will adopt it. I dont believe they will ask for anything more, and I know that they will not be satisfied, nor agree, to anything less. So that what we do now, and having reached the crux of the situation, can be based upon

13th - S.F.

44

our actual absolute needs, as near as they can be ascertained. I know of no way to reach that point than before proceeding further that we have a table of actual needs set down of acreage to be served with water, present and future, and whatever other needs the several states may have for the water that they can conscientiously ask for with the idea of being accepted.

MR. S. B. DAVIS: Doesn't that come back to the very idea of distribution to each state which I understood was rejected yesterday?

MR. NORVIEL: I want to add this; this was the stonewall we came up against at Washington. It was an impassable barrier it appeared at this time, but we cannot afford to take the gambler's chance of flipping a copper at this time when it may be an everlasting document under which we can never emerge after once entered into. If we are going to follow this program we must find out just what our needs are and adjudicate accordingly. There is no other way, no escape from it.

MR. CALDWELL: How are you going to find them out?

MR. CARPENTER: I fear the Commissioner of Arizona overlooks the fundamental fact that the proposed delivery at Lee's Ferry is in fact but an outside barrier against the upper states and not necessarily a limitation upon the lower states. It doesn't mean that because a certain outside barrier were beyond which we could not go, in diminishing the flow of the river, we would ever reach that barrier, every drop of

water that we do not beneficially use will go on its way down through Lee's Ferry. We cannot prevent it. For example, excess applications above return and arrive at Lee's Ferry, but when the necessities of the upper states become so great that they reach the limit or the barrier, then they can go no further. That is the actual condition. As far as comparing the benefits obtained from the use of water in one region with the benefits to be obtained in another, those might be considered, but in the final analysis the homes of the people, the interests of the communities are the first consideration. I might say that it was my privilege to aid in urging this very doctrine before the Supreme Court in the suit brought against Colorado by Wyoming and we were very properly defeated. Finally again, because we fix a limit beyond which we shall not go, does not mean that we will control the water down to that limit. And then the development above will not be made for amusement, it will be made for human necessity, and every drop that isn't extracted for human necessity passes automatically down to Lee's Ferry and thence to the sea.

MR. NORVIEL: I understand that was the situation Wyoming found itself in. All water not used at the Laramie was to pass down to them and they should be satisfied. I understand they were not satisfied, and, then, I have a hazy recollection there was some sort of decision that was somewhat favorable to the lower states. We do not want to place ourselves in the position that Wyoming was in.

13th - S.F.

46

MR. HOOVER: I understand the basis of the compact is necessary - a limitation or a maximum on the upper states, and that it does not from the nature of things provide a minimum for the lower states simply on account of the physical necessity.

MR. NORVIEL: We are perfectly willing to take second hand water, provided the amount is sufficient.

MR. HOOVER: Dont I understand this from your argument, that whatever the upper states can use properly is an equitable use. If there is enough water with conservation for all, the determination of that which they can use within 50 years hence is an equitable division, isn't it?

MR. NORVIEL: Whatever they can use. No, I don't think I so expressed myself; I didn't intend that. Not that the upper states may take all they can possibly use and if there is any left the lower states may have it. That isn't what I understand as equity.

MR. HOOVER: We are trying to fix a maximum up to which the upper states can develop and what is left for the lower states. If the upper states are not able to use that maximum it necessarily flows down to the lower ones.

MR. NORVIEL: That isn't my idea. That is a condition that has always existed and would always exist whether we enter into an agreement or not; that whatever they do not use will go down to us, but that isn't what I am here for, to take what they cannot use. What I want - the question I think it is my duty

13th - S.F.

47

to raise at this time is our necessities and their necessities and then adjudicate according to those necessities the available supply.

MR. CALDWELL: Speaking of this word "adjudicate". It seems to me that it is impossible for us to adjudicate, in advance, rights based on necessity with respect to water especially. We adjudicate rights to water after we have determined the uses to which they are put. I don't think there is any possibility of determining in advance with any exactitude what Arizona can use, how many cities she can build because of this power she is going to develop, how many acres of land she can irrigate. Assuming that Arizona had land enough to use all the water of the Colorado River, I would still think that a partition of the water should be made somewhere from the river to protect the development of the upper states for the benefit of Arizona. It would be a very great misfortune to have Arizona develop alone. The upper states must be permitted to develop, and the only way we can get to that is by the very simple matter of partitioning the water on some more or less arbitrary basis at this time.

MR. NORVIEL: That would be to my mind more than a temporary adjudication. We could not afford to present a proposition of that kind as a permanent institution of that kind in our state.

MR. CALDWELL: I appreciate the force of what Mr. Norviel says and it appeals to me. At the present time we are trying to work out a compact between the states, and the reason for it

13th - S.F.

48

did not grow primarily out of the fact that the upper states had to have the compact. It grew out of the necessities of the lower river which I think everybody frankly admits. We probably could go on for many years if it were not for the crying necessities in the Imperial Valley for protection and irrigation and the necessity for power. As a matter of fact, notwithstanding the needs for power, except in a very limited way, we could still go on and develop the Colorado River without a compact, and the upper states would be in a position to do so by spending their money without a compact. The upper states have entered into this thing with spirit, with zest, with all good feeling for the Colorado River basin, and even with compassion for the citizens of the United States who are now in jeopardy in the lower region of the stream. That's my chief motive for considering what I think is a correct method of developing the Colorado River to the point of agreeing to a partition of the water. I don't think that this river should be cut up, sliced up and partitioned forever regardless of whether this state or the other state could use it or not. To me, that's as abhorrent as it can be to Mr. Norviel. The principle of beneficial use is fundamental and is correct; the water should go to the people who can use and benefit by the water. There is also the question of greatest benefit to the greatest number within the basin, or a given area which must be considered. I do not think that it is at all necessary to suppose that this compact cannot at some future time, or that

13th - S.F.

49

it will not at some future time be modified to meet exigencies of the case as they develop. Just as we have met now to meet the exigencies of this case. It isn't conceivable to me that any state in this basin would wish to corral and forever hold when it could not use it, any portion, not a quart or cupfull of the water of the Colorado River. I believe it is entirely possible and feasible to suppose that these states can, as the exigencies arise, meet again for the purpose of modifying the pact which we may enter into, when we will have very much greater knowledge of the situation than we have now. I think that that is a reason why we may be able to partition the water now without the necessity of determining with exactitude the needs of the various and sundry states.

MR. NORVIEL: One statement in reply to Mr. Caldwell. He told us a truth, but he did not tell it all, and unless we have that impression remain with us, I desire to add that the work of this Commission was initiated by the lower states; that is only a part of the truth. It came about in this way, the necessities of the lower states demand development in the lower river, for protection and development, and we were about to begin some large development when the heavy hand of opposition was laid upon us from the upper states, and I might add and that that opposition naturally still rests upon us and therefore it became necessary to discuss the question that we are now discussing, so that this is not wholly the outgrowth of a desire on the part of the lower states. If we had been left

13th - S.F.
50

with our own sweet will to do as we might, perhaps this matter would not be here at this time or for discussion.

MR. HOOVER: I think Mr. Norviel's argument and Mr. Caldwell's too, is directed against the word 'perpetual' in this compact, and that if there should be an injection of a time where under proper circumstances this pact would be subject to revision, the whole process of the pact would become much easier. A pact in perpetuity for centuries is a considerable undertaking for any body of men and perhaps it would ease the whole process of discussion if we could consider some basis under which this pact could be subject to revision.

MR. McCLURE: Perhaps California is in a better position to accept a pact providing for perpetual use than any other state because we have a more definite estimate of our needs than other states have been able to furnish, but it would be under very great pressure I assure you as California's Commissioner, that I might be prevailed upon to sign a pact for perpetual usage.

MR. CALDWELL: I think that if the Commissioners have read the draft which I submitted, they may have overlooked a suggestion that this pact can be modified under certain circumstances.

I would like to make a suggestion aside from the subject in hand. This is just an observation. We accomplish much at these meetings undoubtedly and much comes up in every session which requires, as far as I am concerned, thinking, and I have

13th - S.F.

51

come to the conclusion that perhaps we should not be too eager to be meeting all the time but leave time for work and thought on the outside. I just offer that as a suggestion.

MR. HOOVER: One member has suggested that we have no night meetings; perhaps we could take a longer time for noon recess because it is pretty difficult to sit here for more than 2 hours and a half and if we began at three we would still have plenty of time.

Adjournment taken until three o'clock.

Clarence C. Stetson

Executive Secretary.

The above minutes were approved at the 27th meeting of the Commission, held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

13th - S.F.

52

MINUTES OF THE

14 TH MEETING

COLORADO RIVER COMMISSION

The fourteenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Monday afternoon, November 13th, 1922, at 3:00 o'clock P. M.

There were present:

Herbert Hoover, representing the U. S.,	Chairman
R. E. Caldwell, "	Utah
Delph E. Carpenter, "	Colorado
Stephen B. Davis, Jr., "	New Mexico
Frank C. Emerson, "	Wyoming
W. F. McClure, "	California
W. S. Norviel, "	Arizona
James G. Scrugham, "	Nevada
Clarence C. Stetson,	Executive Secretary

In addition there were present:

Thomas E. Campbell, Governor of Arizona
Key Pittman, Senator of Nevada

Edward W. Clark, Joint Commissioner and Advisor for Nevada
Arthur P. Davis, Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottamar Hamele, Chief Counsel, United States Reclamation Service, Department of the Interior, and Advisor to Federal Representative
C. C. Lewis, Assistant State Water Commissioner and Advisor for Arizona.
R. T. McKisick, Deputy Attorney General and Advisor for California.
Charles A. May, State Engineer and Advisor for New Mexico.
R. I. Meeker, Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan, Legal Advisor for Arizona.
P. G. Spillsbury, President, Arizona Industrial Congress and Advisor for Arizona.
Charles P. Squires, Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsoe, Advisor for Utah.

14th-S.F.

1

The meeting was called to order at 3:00 P. M. by Mr. Hoover.

Mr. Stetson submitted to the Commission the following communication from George H. Maxwell, Executive Director of the National Reclamation Association.

"TO THE COLORADO RIVER COMMISSION. IN SESSION AT BISHOP'S LODGE, SANTA FE, NEW MEXICO.

"There should be no effort to force a compact between the States at this time.

"Flood protection on the Colorado River should not be delayed by being complicated with any controversy relating to such a compact.

"The alleged primary ultimate purpose of the creation of the Colorado River Commission was to expedite flood protection for the Imperial Valley in California and the Yuma Project in Arizona.

"Secondary purposes were:

1. Land Reclamation
2. Power Development

"The Imperial Valley and the Yuma Project must have immediate protection, otherwise both are doomed to certain destruction. The necessary works for flood protection must be built without delay.

"The nation will see this necessity and safeguard against this appalling menace if there is no effort to entangle flood defense with profit-seeking schemes for land reclamation or power development.

"The flood menace must not be used as a 'stalking ox' behind which to conceal a plan to create an Asiatic Menace in Mexico more dangerous by far to the United States of America than the original flood menace.

"As between the submergence of the Imperial Valley by floods and the devastation of Southern California and Arizona

14th-S.F.

2

in an Asiatic War, the loss of the Imperial Valley would be the lesser of the two evils.

" The plan for power development by dropping the regulated flow of the Colorado River back to the bed of the river at the Boulder Canyon Dam to develop power at the dam was subtly conceived to secure the lion's share of the water for the profit of American Land Speculators in Mexico. Once the water has been dropped back to that low level, less than 1,500,000 acres can be irrigated from it in California and Arizona. Water enough to irrigate a larger area than that will go to Mexico, perforce. It can go nowhere else.

" In the Los Angeles Times of October 22, 1922, the public announcement is made that ' when the flow of the Colorado River is equated by means of a dam at Boulder Canyon or elsewhere approximately 2,000,000 acres of highly productive land will be under cultivation, ' and ' a large city at the head of the Gulf of California, where the railroad will bring cotton, cotton by-products, alfalfa, and many other products to be transshipped by steamships to Atlantic and Pacific Ports and to the Orient.'

" In other words, American speculators are planning to annex the Colorado River to Mexico to reclaim over 1,000,000 acres of land now owned by them immediately, below the line in Mexico.

" On this great agricultural foundation a new seaport city is to be built at the head of the Gulf of California, connected by rail with Calexico, to take from Los Angeles the trade of the Imperial Valley and the whole Colorado River country.

" The population on these newly reclaimed lands in Mexico will be Asiatic, paying tribute to Mexico, but constituting an Asiatic City and State, maintaining in America, with Asiatic labor, a crushing competition with American agriculture, labor and industry.

" The battle against this scheme to annex the Colorado River to Mexico to create Asiatic competition in America, will be one of the most bitterly contested conflicts ever fought out to the end in this country. It cannot be compromised. There is nothing that can be made the subject of compromise. It may be years before it is settled.

" Flood protection for Imperial and Yuma must be disentangled from it absolutely and completely. That means that flood protection must be provided otherwise than by the Boulder Canyon Power project, behind which the Mexican scheme is now camouflaged and intrenched, and to which the effort has been made to tie the need for flood relief, like a can tied to a dog's tail.

" The Mexican Alliance has shattered the Boulder Canyon Power Dam Project. The Wyoming Decision in the United States Supreme Court has eliminated the Colorado doctrine as to interstate water rights. The original arguments to sustain the necessity for this Colorado River Commission have been wiped off the slate, any action by it now can serve no useful purpose and will be futile.

" To epitomize- delay threatens the present plans for flood protection from four sources:

1. The inextricable interrelation between the Boulder Canyon Power Project and the establishment in Mexico of a competitive Asiatic City and State.

2. The complexities of the scheme for financing the Boulder Canyon Power Project by bonding municipalities taking power from the dam.

3. The inevitable sustained opposition to any compact between the states, until the facts relating to areas irrigable, character of works and cost of construction are known.

4. The irreconcilable determination to prevent any compact that would under any circumstances diminish the total flow at the North line of Arizona and thereby proportionately reduce the potential power resource in the Grand Canyon of Arizona, which is a stupendous national asset.

" Unless this Commission wishes to endanger the existence of the Imperial Valley and the Yuma Project by delay, it can do only one thing, and that is to defer any effort to force a compact between the States and concentrate all its influence on immediate flood relief, urging upon Congress the necessity for works to control and regulate the flow of the river being immediately built and for a complete survey, investigation and report at National expense as a basis for an ultimate plan for the highest development of all the resources of the Colorado River as a great national asset.

" A plan for immediate national action that will disentangle flood protection from all complications causing delay, and afford immediate and complete safety from flood devastation for the Imperial Valley and the Yuma project, and the entire Colorado River country, is as follows:

1. Adopt the Dayton-Miana River Flood Control Plan on the Gila River and build the Sentinel Reservoir with all possible expedition as an emergency flood protection structure:

14th-S.F.

4

2. Adopt the plan urged in the La Rue Report and build the Bull's Head dam as a similar flood control dam, to hold back the flood of the Colorado River long enough to close a break if one should occur similar to the break of 1906-07:

3. Build the Glen Canyon Dam solely and only as a flood control dam, without any reference whatever to any use of the water for reclamation or power development. It can be built with half the money and in half the time required to build the Boulder Canyon Dam, and will afford complete relief for the entire flood menaced region in Arizona and California.

" This plan removes the flood protection problem of Imperial Valley and Yuma entirely from any complication with the conflict arising from the plans of Arizona and California to reclaim 2,000,000 acres in those states with the water of the Colorado River which it is sought to secure for the reclamation of a similar area in Mexico for the establishment there of an Asiatic City and State for an Asiatic agricultural Colony in Mexican territory.

" There can be no justification for this Commission doing anything that will aid that Americo-Mexican-Asiatic conspiracy against the United States of America; nor for complicating or delaying the relief necessary for the Imperial Valley and Yuma by an adherence to the Boulder Canyon Power project, or by attempting to force the adoption of a compact at this time which is impossible without further surveys and investigations. Those surveys and investigations should be made by the States and the United States through existing agencies. The time is not yet ripe for the creation of any new Commission on the Colorado River. It would merely create complications and do more harm than good causing delays otherwise unnecessary.

" What is desperately needed to end an appalling danger is immediate appropriations by Congress for expenditure through existing national agencies for flood control. An effort to create new machinery now means delay where delay may be fatal to existing communities, cities, towns and farms.

Respectfully submitted,

NATIONAL RECLAMATION ASSOCIATION

By George H. Maxwell,

Executive Director."

Dated November 13th, 1922.

14th-S.F.

5

It was moved by Mr. Carpenter, and duly seconded and
Ward
carried, that Mr. L./Bannister be admitted to the meetings
of the Commission.

MR. HOOVER: We left off before lunch, and the suggestion
was made that we consider the subject of a time limit,--some
period for revision. Mr. Emerson, you think something of that
kind might be well taken up ?

MR. EMERSON: Yes sir.

MR. HOOVER: Mr. Carpenter have you thought about this
phase already ?

MR. CARPENTER: Yes, I considered it very carefully. It is
a subject which might well be discussed. I see no objection to
its discussion.

MR. HOOVER: Have you given any consideration to any
machinery by which the door might be reopened for revision.

MR. CARPENTER: The time limit must be so broad and so
long that it will not force any unnecessary development in
any section in order to keep pace, and if that is provided,
and adequate time is given, then the compact might run for a
certain term of years, and continue thereafter until a call for
a revision should be made by a majority of the states, the
thought being that, at the end of the term, if things were run-
ning satisfactorily there would be no occasion for its
arbitrary expiration. However, if conditions developed that
made it wise that there be a revision or reconsideration of the
whole subject, then, a call could be made and it should be

14th-S.F.

6

obligatory that that call be complied with, and it is thought that might be brought about by providing that all rights that vested within any state, or in either division, between the time of the date of expiration of the compact and the call, should vest subject to the provisions of the existing compact.

After the call has been made, rights should be suspended until the revision had been concluded. That last item being merely an incentive to a united effort on behalf of all of the states to get about the council table.

Of course, any compact we might make now can be abrogated or changed at any time by the same power that makes it. In other words, if ten years from today our efforts should prove to be ^{so} /unfortunate that parties should wish to rid themselves of the compact, the same parties that make it may destroy it, but of course, that action would have to be unanimous, and might be difficult.

Roughly, that is about the thought I had worked out. But I feel that nature has such a strong hand in the control of this river, after all, that such a provision is unnecessary. But if it is going to have any psychological or actual value, I see no objection to a time limit, but that time limit should not be short.

The flood menace of the South is fully realized and sensed by all of us. It appeals to us and we desire to formulate some plan to protect the people against disaster. This will result in a fast development below, a forced development, a forced growth,--and this to prevent disaster.

There is no impending disaster above. That country should develop along its natural lines. It is to the welfare of the river that it should not develop suddenly above, and it is to the welfare of the river that it should develop suddenly below. Now, the span of time should be sufficient in the growth of the Basin generally, so that each individual farmer, as well as each individual project should be protected. Thus each may start naturally, and in such a way that when he does develop a new farm or a new project the country will be ready and the returns from the production will be sufficient, so that he may pay for the burden of the development.

Sudden development in the southeastern corner of Utah and the southwestern corner of Colorado, by the use of the Dolores waters, to use an illustration, would be unfortunate now, because no adequate transportation facilities enter that territory. The territory is settled and is in the early stages of development. In ten, fifteen or twenty years, it is probable they will build a project following some series of dry years when distress is felt. Most of our western development has proceeded along natural lines, and has been the result of a famine for water.

To return to the Dolores Project, it will probably be twenty or thirty years before that project comes into full development. It might be earlier. Other like projects should be delayed until transportation conditions are adequate. That is largely an accidental occurrence but makes possible the natural development. It is said, to use an illustration

14th-S.F.

8

that oil has been discovered at Shiprock. That might suddenly cause the building of railroads into that territory, which will then furnish transportation and would promote an earlier development, but that does not insure development, - it is another accidental occurrence, so far as that development is concerned. That will serve to illustrate the reasons why upper development will come gradually. The development will not be all at once. It will be promoted by need.

MR. HOOVER: Mr. McClure, what is your opinion about such devise of this type ?

MR. McCLURE: I am on record in the minutes of a previous meeting favorable to a plan whereby in any compact made, that the time limit for revision, if desirable, should not be short.

MR. HOOVER: That we must have a settled basis for a considerably long term of years ?

MR. McCLURE: That is my suggestion and desire.

MR. HOOVER: The other suggestion of Mr. Carpenter is that all existing rights should be fixed at the date any such revision is called and that thereafter rights should be left open until such time as agreed upon ?

MR. McCLURE: A new start, an opportunity for adjustment, yes.

MR. HOOVER: Mr. Caldwell, what do you think about it?

MR. CALDWELL: I provided for that, Mr. Chairman, in the draft which I submitted. That indicates how I feel about it. Your last suggestion does not quite meet my approval, - we should not go so far as to provide details of revision.

What I suggest may be too incomplete but it is a suggestion.

MR. HOOVER: Read it again.

MR. CALDWELL: " This compact is subject to modification by the unanimous consent of the Basin states." My idea in that was that if we got together on the original compact, we could get together on a revision of it, and I firmly believe we can do that, and safely depend on it, I would be willing to. If I wanted to be suspicious I could refuse to enter into an agreement of that kind on the theory that some state, whose interest might be opposed to the interest of my state, would not consent here, but I am willing to take a chance on the equity and justice of a provision of that kind.

MR. HOOVER: You would make the conference mandatory,--not dependent upon the call ?

MR. CALDWELL: I think that should be done. I would suggest that a conference should be made mandatory upon the request of four states, or more, and that a unanimous decision be required for modification of the pact. Of course, the actual conditions under which it may be modified should meet the just requirements of any international agreement which, of course, is necessary.

MR. HOOVER: Mr. Emerson, what do you think about it ?

MR. EMERSON: Well, my expressions at our former meetings have been primarily against any plan of a time limit that was then suggested. Of course that contemplated time limits

14th-S.F.

10

of twenty to fifty years; and at that time rights were to vest, to become established and be superior to any rights there after, I would be absolutely opposed to any plan of that kind, yet. However, I feel the weight of this, and there probably should be some provision whereby modification can be had, if it is found out that justice would be better served by so doing. I have not any definite plan to suggest. I am willing to discuss and hear discussions. I think I would be willing to accept anything that could be construed as fair to my state.

Of course, one of the primary reasons Wyoming is in this is to protect herself against any embargo that she feels might be placed upon her future developments, the developments to which she figures she may be entitled to by the possibilities of her greatest natural resource,-- her water supply. We would not subscribe to any doctrine that would mean any race for developments as has been intimated. Otherwise my mind is open in the matter, and I would be glad to consider any plan that would not defeat the purpose of Wyoming. In listening to Mr. Norviel this morning I was unable to ascertain just what he thought might happen in the upper states. We have not any patent evaporators, or any way to get rid of water unless we apply it to valuable, beneficial uses, and I confess that by raising even wild hay upon the meadows at the head of the Green River, thereby sustaining through the winter the life of some of our stock, we are performing as valuable

14th-S.F.

11

a service as any use of the water Arizona might obtain. Hence whatever water does not come to Arizona, will undoubtedly be used in an equally beneficial way in the upper states. Of course, certain loss should be figured in. In other words, any waters we don't use will come to the lower states. I am willing to consider the matter of a time limit for a reconsideration of this agreement.

MR. HOOVER: What do you say, Mr. Davis ?

MR. S. B. DAVIS: I can see no harm, and I can see no particular advantage. The general declaration that the compact may be modified, of course, creates no power, it is really a statement of what would exist anyway. If we provided for the creation of a new commission, by some provision making it mandatory upon the various states to make it at some definite time, we would probably be one step in advance. On the other hand, that commission would have to act with the consent of the several states, requiring unanimous action, and I really see no particular use to put a provision of that kind in the compact. If circumstances arose where the compact needed changing, it is always within the power of the states to do what is necessary.

MR. HOOVER: It is merely a positive step to make it mandatory rather than simply leaving the matter for spontaneous organization. In other words, it might be years and years before a meeting could be organized to reconsider the compact, whereas, by the mandatory meeting there would be a definite

14th-S.F.
12

reconsideration.

MR. S. B. DAVIS: That is very true, but on the other hand, if anyone of the states, in such position, refused to appoint a commissioner, without the provision in the compact, probably the same state might refuse to ratify the compact. I would not say it is of no use, but I am inclined to think there are matters of far more moment to consider.

MR. HOOVER: On the other hand, conditions might have developed whereby certain states might find they could not use the water. It might be found that the upper states could use more water, and the upper states would thus be forced into the position whereby they were compelled to furnish certain minimum amounts of water, and at the same time it would be obvious to all parties that an investigation and revision should be made.

MR. S. B. DAVIS: I have no doubt whatever in my mind that at some time a revision of the compact would be necessary, and when that time comes it will be revised.

MR. HOOVER: Provision for revision would carry conviction before any one of the seven legislatures in considering the compact, because the technical considerations of the pact are at best difficult to explain and a provision for review stands as an evident correction to error.

MR. CALDWELL: I would like to add to what I said before that we should not provide a definite time at which the revision should take place.

MR. CARPENTER: You understand, Mr. Caldwell, my objection,

14th-S.F.

13

my thought was this that we provide a term --

MR. CALDWELL: You spoke of a term of years ?

MR. CARPENTER: I spoke of a term of years, and that it should continue thereafter until a call by four States. From the time the call by four is made all rights are to remain in suspension, - that is from the time of the call until they are settled between the states by another compact.

MR. HOOVER: Suppose one state had a lone grievance, then, under the call by four members, there would be no method securing a meeting. I am just wondering whether or not a conference should not be fixed, that is, if after a certain length of time that on notice of any one state there should be a conference. That does not oblige any state to agree on a new compact, but at least gives the aggrieved state its proper hearing.

MR. S. B. DAVIS: Of course, it is like an amendment to a state constitution. There are state constitutions automatically calling for a revision after a certain period of years, and a reconsideration and possible amendments. On the other hand a majority of the constitutions contain no such provision. Nevertheless, conventions for amendments are called, and called frequently.

MR. CALDWELL: They all contain provisions providing for a call.

MR. NORVIEL: May I offer a suggestion, that in every form of draft that I have undertaken up to this time I have been unable to get away from the idea that there should be a definite
14th-S.F.

fixed time for it to run. Now, under this form that we are discussing, when its foundation is based upon such indefinite information as we have, it becomes imperative to my mind that the agreement shall be definitely limited in time, whether it be long or short. My notion of it is that that time should be fixed not too far in the future. It should be provided that an extension of this agreement may be made at the time by the people then living and who may be appointed for the purpose of looking over the same situation that we are now viewing in the light of the further information and the new conditions that will prevail at that time or, instead of extending, they may revise it. And that time should be a time positive, and not contingent upon the call of one or four states. It was suggested by our Chairman, and I think, in a way, a good suggestion it may be that one of the states may be imposed upon, or may be over-indulged in the future by this compact, and it should not rest on any number, but all should be compelled to come in and act and extend the same compact some further period of years or revise it to suit the conditions then existing.

MR. McCLURE: Did not Mr. Carpenter's suggestion carry sufficient elasticity ?

MR. NORVIEL: The elasticity is alright, but it might be too elastic. I think it should not be subject to a call, but at a definite fixed time, thirty years from the date of signing, or whatever the time might be, this compact ends unless it

14th-S.F.
15

is extended, either automatically or under conditions which may be provided for at this time. If it isn't extended it must be revised. They could get together then and discuss whether it shall be extended or revised or a new compact made.

MR. HOOVER: Suppose it is quite satisfactory ?

MR. NORVIEL: Then it should be extended.

MR. HOOVER: Then isn't it better to have it automatically extended until such time as it is the cause of a grievance ?

MR. NORVIEL: I think that subject to call at that time is quite dangerous, but I think it is an easy matter to put in a provision that the compact shall end at that time unless the extension be made. It would be very easy to extend it if it is satisfactory.

MR. CARPENTER: The provision for a term and call and automatic extension until called, might well provide that the compact shall continue automatically for a period of months, or one year after the call, so that the new compact commission would have time to consider and discuss the whole subject matter before the rights went into abeyance, - that is, all further rights. But the provision of penalty for failure to act should be such that not an unreasonable time after the call should elapse. It might be too severe to say that everything went into abeyance from the call.

14th-S.F.
16

MR. NORVIEL: This condition might be fixed in the agreement, that it might be subject to call by one state, and unless the call is made, then it continues for another definite period.

MR. CARPENTER: When thereafter rights go into abeyance until--

MR. NORVIEL: The contract might read after a certain period the call for revision might be made, whatever time it might be, by one state, and if no state calls, at the end of that period then it automatically goes over for another definite period, again subject to call by one state. I don't think it ought to be subject to call by four states.

MR. CARPENTER: I am thinking out loud along your line, and my first impression, - wouldn't one state, out of ample prudence or caution be tempted to call rather than let it go over for a certain further definite period? So long as everything is going alright - -

MR. HOOVER: Wouldn't it rather encourage the making of a call, if another, say twenty-five year, period were to elapse before a call could be made?

MR. NORVIEL: It ought to be the privilege of the people then to get together and to go over the compact.

MR. CARPENTER: Under my suggestion they would have the privilege of making it one day after the expiration.

MR. CALDWELL: I wonder if we may not approach this in the same way we approached the other matters, - find out, first, whether we can find some method of revising this compact?

14th-S.F.

17

MR. HOOVER: I thought we would get the general consensus of opinion, quite properly, in discussion.

MR. CALDWELL: I didn't know that.

MR. HOOVER: I think everybody agreed to a discussion of some kind.

MR. S. B. DAVIS: If anything should be done, why couldn't it be provided that another commission should assemble say twenty years from now. If there is nothing to be done, well and good, no harm done, and let that arrangement continue along with a new commission every ten years, twenty years or thirty years.

MR. HOOVER: In the recent New York-New Jersey treaty, which I will quote from, the section on that point reads as follows:

"Sec. 7. The right to add to, modify, or change any part of the foregoing comprehensive plan is reversed by each State, with the concurrence of the other."

MR. McCLURE: How many states ?

MR. HOOVER: They are only the two states, but it indicates that even in making that compact they thought they had to have some way of modifying it.

MR. CARPENTER: That merely expresses a right already had.

MR. NORVIEL: Could we fix a compact that would be ratified by the legislatures and Congress without some provision attached to it by which we would be able to get a modification?

MR. HOOVER: I feel it is desirable to have an automatic revision. Just the mere machinery of getting consent for meeting through the legislative bodies, even if all were willing

will be a great task whereas if some automatic clause whereby a commission may be called at some later time were inserted, then it would be simpler.

MR. EMERSON: I believe I would feel that way about it. I would not want to agree to any time limit that would harm rights that had been developed up to that time and vested. However, I feel I might concur in a time limit consideration of this compact, at any time say fifty years from now, or a hundred years from now, when possibly it could be shown how it will work out, without feeling that an injustice was done to any person. I believe we could depend upon the spirit of fair play of the citizens involved, that any adjustments that were felt to be needed would be made. I don't know as I would set any limit of years, as suggested, but would allow an elastic time limit, leaving to the spirit of fair play the question of whether the states shall continue this compact in the same form, or shall draw up another that will not materially prejudice any state or any interest in any of the states, that is recognition shall be given under the new circumstances to present rights and those which shall at that time have become established within the compact, we are now considering.

MR. HOOVER: You could not very well destroy rights that had been established under the compact.

MR. EMERSON: No, you could not destroy the rights, - maybe that is a little strong expression.

MR. CARPENTER: The rights would vest during the term according to the compact.

MR. CALDWELL: I think we should not try to provide the exact things for which the future commission shall meet, except to provide for modification of the compact, if necessary, under then existing circumstances.

MR. S. B. DAVIS: If you want to do away with the necessity of legislative action, you have got to fix a time.

MR. HOOVER: You must fix the right to demand a revision and through the adoption of the pact itself, and this would need be a matter of review through legislation.

MR. CALDWELL: Just briefly, for a short discussion, suppose that, as suggested, the states may be called together at the request of four of the states for the purpose of considering modification.

MR. HOOVER: There are four states in the upper basin, and three in the lower basin.

MR. CALDWELL: Well, say three.

MR. NORVIEL: One might be sufficient.

MR. CARPENTER: Some one of the upper states would probably be willing enough to let the others have a convention if they wanted it.

MR. HOOVER: In that way, there should not be any objection to a call by one or two.

MR. CALDWELL: I think we should have two.

MR. CARPENTER: Would it be reasonable to allow one lone state to force a recurrence of what all of us have gone through, just because some particular people in that state at that moment felt the need of it. That would probably be a little extreme, whereas if two states were similarly affected no doubt the revision might be needed.

MR. NORVIEL: I can see this advantage in having a definite time fixed that at the time of the revision all states would be prepared, whereas, if there was no definite time fixed, none of them would be prepared, and they would have to prepare after the call was made. I think it would be very much better to have a definite time fixed in the compact for a commission, or whatever way they would want to do it at that time. They could then meet together and say that it is working out satisfactorily and we will let it go over another period.

MR. CALDWELL: Another hundred years ?

MR. HOOVER: We could accomplish that by having sufficiently long notice of the call. I should think that some notice of the call might be advantageous because it gives time for development of fact and opinion.

MR. CARPENTER: In the matter of machinery for ascertaining the facts, our present system covers the development of about forty years. Starting from zero we have arrived at our present position. Now it is to be presumed that the present machinery will be more and more perfected, so that a two year period would be adequate time in which to assemble the data for the convention. For example, Mr. Norviel, in my state, administration has developed the fact that it is wise to put automatic registers on every canal along a river like the Platte. If that had been broached twenty years ago it would have been impossible of accomplishment. Now, that would be the natural outcome, a matter of the outgrowth of intense local administration, and

14th-S.F.

the facts could be much more readily assembled at the end of this period, whatever it may be, than they are now.

Take Lee's Ferry station, suppose someone keeps track of the estimates and facts at that point, it will be checked by other states, and it will not be difficult to obtain the necessary data at that point.

MR. NORVIEL: We don't anticipate, as Mr. Emerson has suggested, if there was more water going by Lee's Ferry than the compact calls for, that there would be a race for more rapid development above.

MR. CARPENTER: Not unless there was a fear. That is one objection to an arbitrary call and term.

MR. NORVIEL: I can see, however, by not having any arbitrary call we might use up all the water during an arbitrary period and want more.

MR. EMERSON: You should have the opportunity to come in at any time to talk over the compact, and if it worked fairly--

MR. CALDWELL: It should be made by one or two states, according to the way you look at it.

MR. NORVIEL: I think one should be made, if it is to be made in that way, by one state.

MR. EMERSON: Well, if those desiring reconsideration did not have enough support to get two states to make the call, how could you expect to have a successful outcome for the new compact.

MR. NORVIEL: I assume the people then sitting around the table would have a degree of fairness for their fellow men, if the occasion were properly presented at the time to those

present at another meeting like this.

MR. EMERSON: I say you can depend upon the spirit of fair play.

MR. NORVIEL: But I am not in sympathy with the primary law, I think it ought to be brought up at the regular election.

MR. CALDWELL: I think one ought to be able to get the concurrence of two others to have the new compact made.

MR. NORVIEL: Wouldn't that make it necessary to go out and convince two other states, and if those two were unwilling, - wouldn't care about it, wouldn't want it brought up, - then it would be necessary to go to two others.

MR. HOOVER: Wouldn't you have to go to the legislatures?

MR. NORVIEL: That is a matter I am not advised on. I was under the impression that the governor of a state could handle it? Perhaps you would have to go to the legislatures to get a concurrence. That might be the proper form. I am not informed on that matter, whether we could leave it to the governor of the state to concur in the call for the conference, for instance.

MR. HOOVER: Judge Davis, what about that?

MR. S. B. DAVIS: I think the power to appoint the commissioners could be put in the governor. Of course any appropriation for expenses would require legislation;

GOVERNOR CAMPBELL: I don't think this commission could give power to the governor.

MR. S. B. DAVIS: I rather think so, whatever is done here will be ratified by the legislature. It would amount to an act by the legislatures authorizing the governor to act.

GOVERNOR CAMPELL: Yes, if placed in there, the legislature would ratify it.

MR. S. B. DAVIS: That would be where the authority would come from.

MR. NORVIEL: That would be on the assumption of a definite time.

MR. S. B. DAVIS: Of course, that is the obvious way to handle it. I would not say that it could not be done except in that way.

MR. NORVIEL: Wouldn't it be better if we put into the compact a provision that at a given time the governors of the several states appoint a commission to meet and either to revise or extend the compact?

MR. S. B. DAVIS: That would be the simplest way.

MR. CARPENTER: I have become convinced that the governors of the states may presume to exercise the power of appointment of a compact commission without legislative act, for the reason that whatever is done, in any way, will have to be ratified, -- and even though ultra Vires, my impression is that if the compact were ratified it would become law.

MR. HOOVER: It would become entirely legal if put in the compact.

MR. CARPENTER: Yes sir. A provision that the call having been made, the governor should appoint a Commissioner, would be just as definite as though a time were set in specific terms.

MR. NORVIEL: That is to say, when the governor in any states gives at any time, -

14th-S.F.

24

MR. CARPENTER: No, I don't mean to be that broad; it amounts to this: Following my suggestion, the terms or time of the compact, to continue thereafter until call is made.

MR. NORVIEL: Who is to make one ?

MR. CARPENTER: One of the states. This compact could provide that, upon that call, the governor could appoint.

MR. HOOVER: He could be put in the same position under that proposal.

MR. EMERSON: The only advantage about requiring more than one state to make the call is that the governor in one state might become panic stricken, or not have just cause to start a movement which would be expensive, and a great deal of trouble, and it is certain that, if he had just cause, he could get the concurrence, at least of two other states. The compact could so be drawn that it would not be necessary to put in operation the legislative machinery to carry out the plan.

MR. HOOVER: How would it be to have two states and the President, or three states ?

MR. NORVIEL: That is all right.

MR. EMERSON: That is all right, fine, but not let it be at the call of simply one party.

MR. HOOVER: The others, the two, by and with the consent of the President, could get the three votes necessary for the call ?

MR. NORVIEL: Yes, that is all right.

MR. CALDWELL: I think that would be a good suggestion.

MR. EMERSON: And no time limit made,--even after a short period, say of ten years, it might need modification. As I say, leave things up to the spirit of fair play, -- the average, human spirit that you could depend upon.

MR. NORVIEL: I think that is a good suggestion.

MR. HOOVER: Then in that case, not to have a time limit, but at the call of three, either three states, or two states and the President ?

MR. CARPENTER: I wouldn't concur in that, with the call at any time.

MR. S. B. DAVIS: I still am very much in favor of a definite new commission at the end of a definite period of time.

MR. EMERSON: How are we going to know what period of time to set ?

MR. S. B. DAVIS: Get together and discuss it.

MR. CARPENTER: If there is a provision for the call by the Governor it avoids the necessary legislation at that time, except the matter of providing for the expense.

MR. EMERSON: It seems to me we are pretty sure of the basic fact of sufficient water supply. We rather recognize that from the start, and it doesn't seem necessary that we should set a time limit for revision,--make it ten years or any other short period, -- because if we are anywhere near right it probably never will come up.

14th-S.F.
26

MR. CALDWELL: Why can't we provide that a compact Commission be formed for the consideration of revision of this compact at any time upon the call by the President of the United States. He isn't going to call these states together without consultation with several of them at least in a matter of that kind.

MR. NORWIEL: The President might not know whether everything was going smoothly or not.

MR. CALDWELL: He would find out.

MR. CARPENTER: He might be prevailed upon by one panicky Governor.

MR. CALDWELL: I have some faith in the President of the United States yet, whoever he may be, and I am willing to wager that if any one state should represent to the President that the compact should be changed, therefore a convention called, that he would look pretty thoroughly into the matter in every state to see what the situation might be.

MR. EMERSON: The President of the United States has several other things to do, I think.

MR. CALDWELL: He has several people to do them. We have got him in now with three; would it not be much more convenient for him if he acted alone? That may sound humorous, but it is logical.

MR. EMERSON: I think he is in a good place in with those two others.

MR. CALDWELL: It is agreeable to me.

MR. HOOVER: That is, at any time after blank years, the Governors of any three states concurring, or any two states and the President of the United States concurring, may issue a call for reconvening of this Commission, for the purpose of revision.

MR. EMERSON: That is all right, except the blank.

MR. HOOVER: It comes, more or less, to a continuing compact subject to the call and reconsideration and, therefore, meets Mr. Carpenter's point on that. The point left open is whether this call can be issued tomorrow or whether it cannot be issued for a certain number of term of years. The thought strikes me, and there is really weight to the argument, that this situation could be allowed to develop for a term of years. Viewing it practically, it will be at least forty years before the development of the basin will have taken place to such an extent as to bring up any serious conflict. That is, the physical process of bringing lands under water and building dams and canals and financing them will require a long period. There will be a fairly long time before any conflict will actually arise, and it is desirable, it would seem to me, that there should be peace on the Potomac during the whole of this preliminary period of development at least.

MR. CARPENTER: And no sword of Damocles hanging all the time to precipitate a conflict.

MR. CALDWELL: The combination of time and call by several of the interested parties could easily be made, it seems to me. For instance, we could provide that the call shall not be made before fifty years, say, in any event.

14th-S.F.

MR. CARPENTER: If I may interrupt you, you might do this. Provide a long term and provide that during the term all the states and Governors may agree on unanimous call.

MR. HOOVER: Well, unanimous would include three.

MR. CARPENTER: I retract.

MR. NORVIEL: I think that suggestion is good, but I don't want to put it fifty years.

MR. CALDWELL: A hundred years then, Mr. Chairman.

MR. HOOVER: Director Davis, assuming a division of the water is made, how long do you estimate it will take for enough acreage to have been developed so that there would be a likelihood of any conflict over this division ?

MR. A. P. DAVIS: That depends very largely upon what the division is. We don't know that yet. If a compact is made such as I conceive will be made by this Commission, I think thirty or forty years, - forty years would be my guess. The question could be better answered after the compact is written than it can be now, but my present guess would be forty years.

MR. HOOVER: I was assuming the case of no compact. Suppose somebody, everybody, got to work and developed the river without any form of arrest, would it be some forty or fifty years ?

MR. A. P. DAVIS: You would get into trouble long before that.

MR. HOOVER: Assuming a normal development, looking at it purely from an engineering point of view, dismissing all legal arrests, how long, from an engineering point of view, before this river could get to such a point of development that there could be any overlap of water rights ?

14th-S.F.

MR. A. P. DAVIS: That is going to be a long time, because of the margin of water that there is available. If this compact is written so that there is an adjustment a large development can go on. I think it is only by the occurrence of unforeseen things, - things none of us think of now or can think of now, - that an adjustment will ever be required, but is undoubtedly wise to have some limitation in there because we can't foresee everything. I thoroughly agree with the idea of having a provision for revision, but it should be after a period of years so that the sword of Damocles, as Mr. Carpenter says, will not be hanging during the interim and discourage investments. I suggest forty.

MR. EMERSON: It seems to me that point is one that should be looked at in the light of the effect it will have upon the minds of the legislature. A longer time might be favorable, as a matter of fact for Wyoming, still I can well conceive that from the standpoint of psychology it might be better to have a shorter time limit so the legislature won't feel that this generation is acting too much for the generation to follow.

MR. HCOVER: In the form we have it now it doesn't follow that, even if we put a time limit on of 25 years, it would not necessarily end in 25 years.

MR. EMERSON: If we are going to place a time limit on it I don't believe it should be set at too long a term of years.

MR. S. B. DAVIS: It shouldn't be forgotten it can't be revised without unanimous consent anyhow.

14th-S.F.

30

MR. EMERSON: That is always true.

MR. CARPENTER: Secondly, during the term the legislatures by unanimous action, could revise it anyhow, - the legislatures and Congress..

MR. NORVIEL: It seems to me this period should not be set at a longer period than one generation at least.

MR. HOOVER: There is a good deal of conservatism about revamping anything once settled upon, and where people have gotten into harness, I doubt very much if it would ever be called into question until actual conflict had arisen.

MR. EMERSON: What do you think, Judge Davis ?

MR. S. B. DAVIS: We are dealing with some/^{thing} we can't tell how the legislature is going to look at.

MR. EMERSON: That is a very important consideration, how the legislatures are going to look at it.

MR. S. B. DAVIS: From that standpoint we want a shorter term rather than a longer term.

MR. HOOVER: Just to form the debate suppose we put in 25 years and not commit anybody to it,- just to think about.

MR. NORVIEL: That sounds familiar to me at least.

MR. CALDWELL: Let's put in fifty years and think about that too.

MR. S. B. DAVIS: If I was going to vote for 25 or 50 years I would vote for 25.

MR. HOOVER: Mr. McClure, what do you think about it ?

MR. MCCLURE:.. Any period from 25 to 50.

14th-S.F.

31

MR. CARPENTER: I might remark that there is a psychology for the short term that we must not overlook. On the other hand, the term should not be so short as to leave a feeling of apprehension in the upper territory that, unless they do something right now, they may be found in want on the day of reckoning.

MR. EMERSON: Aren't you pretty well protected in that, in view of the fact that any future compact would have to be unanimous, so that point is covered ?

MR. NORVIEL: It would only be to adjust something that is overlooked at this time.

MR. CARPENTER: I fully realize that all our efforts here could not necessarily foreclose the right to readjust.

MR. HOOVER: I had one idea I didn't mention, and that was that this Commission shall assemble within two years after such call. This I put in so as to give a certain length of notice.

MR. CARPENTER: Let's see if I have in mind your ideas.

MR. HOOVER: At any time after blank years the Governors of any three states concurring, or any two states and the President of the United States concurring, may issue a call for the reconvening of this Commission for the purpose of modification or change of this compact. The Commission shall assemble two years after such call.

MR. NORVIEL: Within two years I should say. Two years would be rather definite. Now as to the period of time; that is the next question.

MR. HOOVER: I think we might leave that open for debate at another session thus giving us some time to think it over. If we can take that as a tentative arrangement we might then go to the third point, which we deferred in an endeavor to assist in this particular discussion. That was the question of the quantitative division. On that we have agreed tentatively to a ten year average with an annual minimum, but we have not discussed any question of figures.

MR. CARPENTER: Speaking of minimum, during the recess the matter of that minimum was discussed somewhat by Mr. Meeker and myself. Whenever that minimum is considered it must be realized,--and I want to reiterate it, -- that the minimum, that the necessity for a minimum results from the penalty visited upon the source. It comes from a drought that strikes at the roots of agriculture in the upper section. The result of that drought afflicting that section is what produces the reduction in the stream. Therefore, the minimum should be of such a quantity that the penalty of the drought will be equally distributed over the whole river system.

I might suggest one factor that might enter into the discussion in view of Mr. Norviel's statement this morning. Practically all of the available lands in the State of Colorado, -- I am excluding forest reserve and the areas withdrawn,-- are now settled, or being settled, so that the visitation of a drought will affect the people of the entire area in that state. Hence the idea in fixing the minimum should not be to guarantee that the lower division will have enough in low years, because that would be unfair. The idea should be, in fixing

the minimum, to allocate the drought, if I may so term it, among the people of the entire basin, much the same as we allocate the waters in fat years.

MR. HOOVER: In that vein of thought, is it not feasible to determine what water is being consumed in the upper basin and to say something on this line, - that an amount of water shall pass Lee's Ferry as a minimum equal to one-half the total flow of the upper basin ?

MR. CARPENTER: I fear not. It is possible, but there are so many streams that the problem becomes very complex. You have to take into consideration, as I understand, both the inflows and the diversions. This involves a pretty complicated machinery which resolves itself into a matter within the keeping and the conscience of probably a few men in the territory.

If we had one stream, like we do after we get to the canyon, it would be a very simple matter but after you proceed above the canyon the river spreads out like a fan, with all the fibers of a fan, and those branches in turn spread out and they in turn spread out, and so it goes. I wish it were feasible. It is possible. I might point to suggestions from these experts, - not presuming to trespass upon their ground in saying what I have, - but Mr. A. P. Davis and Mr. Meeker could doubtless inform us somewhat along that line.

MR. HOOVER: I was thinking about making concrete your safety clause on/^{famine.} There might always be some hardships from some definite figures unless they are very low.

(Addressing Mr. A. P. Davis) Mr. Davis, do you think there is any device by which the consumption of water could be judged in the upper basin ?

14th-S.F.-34

MR. A. P. DAVIS: Not entirely. I agree with Mr. Carpenter about that. While it is possible of being presumed, it requires such a long series of observations and study of those observations afterwards that the results would be too little to be of consequence or be of use at that time. You want it at the time that you start making these measurements and you wouldn't have it for months and perhaps a year afterwards, because of the large complications and study that would be required. You have got to distinguish the diversion, the application, the return flow and all those details in order to get at the ground of consumption in the upper basin. I don't think it is practical to make that a really vital part of this compact. It is a thing that is very useful when determined. A study ought to be made right straight along and it might be that, by long experience, we would be able to foresee these things to such an extent that it could be made somewhat useful.

MR. HOOVER: You don't see any practical way at all of spreading the famine then ?

MR. A. P. DAVIS: The way of spreading the famine over the upper basin would have to be some such device as suggested if it could be done. But it can be done as between the two basins by fixing the minimum at Lee's Ferry.

MR. CARPENTER: At a low enough figure.

MR. A. P. DAVIS: At a proper figure. Too low would put all the burden on the lower basin, too high would put it on the upper basin.

MR. HOOVER: It comes back more or less to fixing the minimum at Lee's Ferry.

Now isn't it a physical fact that, if there is a shortage of water, that shortage will be felt after the flush flow and not before? In other words, the southern basin will actually develop. In the handling of a given year of famine have the advantage of the bulk of its water before the famine/ the May and June flow is the flow out of which the southern states are going to secure their irrigation water for the season, isn't it?

MR. CARPENTER: Yes sir.

MR. HOOVER: And the important thing to them is the flow during that period.

MR. CARPENTER: It is the period before the real leanness is felt. The water is being used during both May and June.

MR. NORVIEL: I think this will be the condition; that the flush waters will be small and will be the waters that would pass Lee's Ferry on their own account without the minimum flow. Then the continuous melting of the snows above will furnish the ordinary supply for the upper states, but there will be none coming down unless there is some arrangement by which it will be allowed to pass Lee's Ferry in a lean year. Therefore the pinch will be felt below and not above. It will be the flood that will be short and not the flow thereafter.

MR. CARPENTER: In a single year the pinch below will be reflected on the succeeding year because there will be a carry-over from the previous fat year.

14th-S.F.

36

It is only where there is a low cycle of two or three or four lean years that the real minimum will come into play.

MR. CALDWELL: Mr. Chairman, I have been a little misty as to just what you mean by minimum flow. Would this be considered to be what the lower basin wants? That if a reserve storage of say six million acre-feet is provided at or above Lee's Ferry, that they shall have turned into it annually six million acre-feet to be turned down to the lower basin? Would that be considered a minimum to the lower states?

MR. CARPENTER: That is to control it altogether by the storage?

MR. CALDWELL: Yes, that is what I think we will finally have to come to.

MR. CARPENTER: What power have we over the instrumentalities by which that storage might be created?

MR. CALDWELL: Well, first, would that do it?

MR. HOOVER: If the upper states keep a parcel of water, six million acre-feet, ten million or twenty million, on hand in order to make the guarantee good, it would be assurance to the lower states and no doubt would assist them.

MR. EMERSON: We don't know just how we will bring about the building of the reservoir.

MR. CALDWELL: In the first place, Mr. Chairman, it is very probable that such reserve storage above the point, say at Lee's Ferry, would not be necessary for many years, and the reserve might be held at a lower basin reservoir, if it were

14th-S.F.

37

constructed, and this would answer the same purpose. That would be at the option of the lower states. I don't think that this would rush the development of the river beyond what should be normal. These structures on the river are ultimately going to pay for themselves, or else we have all miscalculated, and this one can be added and finally paid for in the same manner. Some of us seem to have a very great deal of confidence in the paternalism of the Federal Government. It would be a fine thing if the Federal Government would undertake to control the river to such an extent that we could partition the waters between these basins.

MR. HOOVER: As a matter of physical fact, it doesn't matter whether the storage is in the upper or lower basin.

MR. CALDWELL: I would say except theoretically. Theoretically the upper basin would not want to be held to passing six million acre-feet past Lee's Ferry when that water ought to be, and was, stored below.

MR. HOOVER: That was why I made the suggestion of some sort of retroactive plan, based on the amount that had gone down to storage.

MR. CALDWELL: I think that matter could be settled, but I am wondering whether or not this language should be changed to meet that situation?

MR. HOOVER: As a matter of physical fact again, the flow at Lee's Ferry, even after deducting the present usage from the upper basin, at its worst period has not been less than ten

14th-S.F.

38

million feet in any one year.

MR. EMERSON: Nine million one year.

MR. HOOVER: Nine million one year, but the worst period of three years was ten million.

MR. CARPENTER: Ten million average.

MR. HOOVER: Ten million average. Half of that would be five million. That is after taking care of the present usage in the upper basin.

MR. CARPENTER: But you also must remember that there will be some additional development above as well as below. This will probably reduce that figure somewhat. In other words, the development and benefits above and below should be equally distributed.

MR. HOOVER: The total acreage now in sight within a reasonable period would not absorb more than an additional five million feet even in famine year.

MR. CARPENTER: No. I probably gave you the extreme view. To take four and one half or five million acre feet as a minimum would be to say to the upper territory, in such a year you shall not irrigate by any new projects but you must pass that amount below. If that were reduced to three or three and a half million, then, it would leave a latitude for the growth above.

MR. HOOVER: I was taking the estimated acreage in the upper basin with your estimated consumption and the estimated new acreage and it comes out about five million feet, doesn't it, Mr. Davis ?

MR. CARPENTER: I understand.

MR. A. P. DAVIS: Why no, not that much so far as the estimate in this book is concerned. (Indicating Senate Document 142, 67th Congress, 2nd Session, "Problems of Imperial Valley and Vicinity".) I don't want to unduly put that forward, but that is my opinion, that the future irrigation in the upper basin, as far as I can predict it, is not to exceed two and one-half million acres, which, on a consumptive use of one and one-half acre-feet, which is more, I believe, than they figure up there, results in a use of three and three quarter million. I think three and three-quarters million is abundance to estimate for future irrigation uses up there, and allow half a million or three-quarter of a million acre-feet to be taken out of the basin additional. That leaves four and one-half total.

MR. HOOVER: Five million is a pretty liberal estimate?

MR. A. P. DAVIS: Yes.

MR. HOOVER: In other words, on the famine flow there is still five million acre-feet left at Lee's Ferry?

MR. A. P. DAVIS: Yes.

MR. HOOVER: There probably would be physically that much.

MR. CARPENTER: Mr. Chairman, we must be a little broad
ness--
in this matter. We can't partition this river with exact

MR. HOOVER: I agree with you. It seems to me that assuming that storage is an issue in the lower river, as it probably will be an issue, the upper states have a right to credit for the water that they may have contributed in excess. Now I am talking against a famine period. If the upper states have

14th-S.F.

40

created a credit through excess flow, which it is within the power of the southern states to have stored they should have some credit in the famine years as against that deposit established in the lower basin.

MR. NORVIEL: That is provided for in that average period.

MR. HOOVER: What we are trying to get away from is the abstract question of a famine. We are talking about minimum annual flow now, - that is whether because you have no provisions for holding it, your idea of a minimum annual flow will be rightfully tempered by the water they may have sent during some previous period to the lower basin in excess of the ten year average.

MR. NORVIEL: Yes, that should be taken into consideration, but there is this contingency in the average of ten years, - the cycle of dry years may not be limited to three but may extend over a longer period than that and unless we have a constant supply of some water our necessities may deplete the supply to such an extent as would be disastrous.

MR. CALDWELL: Mr. Chairman, it seems to me now, - I may not be thinking clearly, - but it seems to me that reserve storage created will take the place of dependence of average flow. It will meet the requirements better than by calculation of average flow. Cut that out altogether and say that there is enough water in the river. We will hold back a certain amount of it, and in the event that it is held back in reserve you are entitled to six million acre-feet of it anyway. We don't need to talk about average flow as far as I am concerned. I am will-

14th-S.F.

ing to take a chance on what is in the river, if there is a certain amount of reserve storage for the purpose of supplying the lower basin.

MR. CARPENTER: Mr. Norviel, in following out your line of thought, you fear that a series of several famine years might work disaster below. Isn't it a fact that a series of several years of famine would have first visited the upper territory and worked its inquiry there even before it is felt with you? Therefore, isn't the disaster visited upon both areas? In other words, if the assurance is given that the lower states will always have enough water, the upper states must take the hazard. That is visiting the disaster entirely upon the upper states, isn't it ?

MR. NORVIEL: I know this, that if I were very hungry and should have the first chance at the cupboard I should probably feel more secure than if I were the last man.

MR. CARPENTER: If your arm wasn't long enough to reach the shelves of the cupboard, some of the food would be left.

MR. CALDWELL: Why take a chance of wasting this water to the sea ? Let's hold it back and give it to the lower basin. That is the concern of the whole basin.

MR. CARPENTER: In communities, where reservoir development has proceeded to and approached the nth degree, water becomes the equivalent of gold in the bank and, peculiar as it may sound, is drawn upon and delivered in those districts

14th-S.F.

42

much as money is checked from the bank. It is there, locked up, and is available to all.

MR. NORVIEL: I perhaps ought to ask Mr. Davis a question, first, on the proposition Mr. Caldwell just now raised, "why waste it to the sea?" Assuming, of course, that we have a large storage capacity below, - I will ask Mr. Davis if the minimum flow of six million acre-feet would supply the present demands on the lower river and waste any to the sea?

MR. CARPENTER: You are assuming that is all they get.

MR. NORVIEL: Assuming that is all that comes down in one year.

MR. A. P. DAVIS: If regulated, as you say in reservoirs, for the present development. that would be enough/ The present requirement below Lee's Ferry for present development is about four million acre-feet, including the use from tributaries, but I thought your request was for a minimum of five million.

MR. NORVIEL: Mr. Caldwell raised me one more, Well, whatever it is, five or six million, if that were the minimum flow demanded after the reservoir was fairly--

MR. A. P. DAVIS: The present area in the United States irrigated from the main river below Lee's Ferry is 508,000 acres exclusive of Nevada's requirements and in Mexico 190,000. The total amount required now for American lands, including ^{is} Nevada, 2,560,000 acre-feet from the main stream.

MR. NORVIEL: Is that the Imperial Valley and the Palo Verde?

MR. A. P. DAVIS: From the main Colorado River. Of course that doesn't include what is diverted from the Salt River.

MR. NORVIEL: From the main Colorado itself ?

MR. A. P. DAVIS: Yes. The figure was what would be supplied at Lee's Ferry under Mr. Carpenter's supposition, which was 6,000,000 but the requirement for present development is 2,560,000 in the United States.

MR. HOOVER: All projects in the South including only that for the United States, requires how much more water from the Colorado River ?

MR. A. P. DAVIS: You mean, for full development ?

MR. HOOVER: Yes. How much further water beyond the present supply ?

MR. A. P. DAVIS: I will have to figure a little.

MR. HOOVER: Give us the United States separately,

MR. NORVIEL: 508,000 acres in the United States, excluding Nevada.

MR. A. P. DAVIS: That is the present but the total development was asked for, 1,220,000 acres.

MR. HOOVER: That is Colorado River water ?

MR. NORVIEL: Yes.

MR. A. P. DAVIS: For the area in the United States, 1,220,000 acres at five acre-feet per acre, would be 6,100,000 acre-feet.

MR. EMERSON: Consumptive use was five acre-feet ?

MR. A. P. DAVIS: No, but I am simply giving you that. It is the fact, the present lands do use five acre-feet. I am giving you the fact, that five acre-feet for 1,220,000 acres comes to 6, 100,000.

MR. NORVIEL: What is the estimated acreage of new development in Arizona?

14th-S.F.-44

MR. A. P. DAVIS: About 240,000.

MR. NORVIEL: That would practically be taken up with the Parker project and lands in the Yuma project ?

MR. A. P. DAVIS: And the Mojave Valley.

MR. NORVIEL: The Mojave is only estimated at 27,000.

MR. A. P. DAVIS: That is correct.

MR. NORVIEL: It is all taken up in those few little projects right along the river.

MR. A. P. DAVIS: In other words, it doesn't include Mr. Maxwell's high line.

MR. NORVIEL: Nor my basis. I think, Mr. Chairman, that each of the commissioners should write out his requirements, the actual needs as far as they can be ascertained, with some degree of accuracy.

MR. CARPENTER: Based on good engineering.

MR. NORVIEL: Yes on good engineering, with a degree of feasibility applied to the proposition. Then we can have before us some figures. While in a way I would be willing to take Mr. Davis' figures all the way round, if the others would be satisfied with that, I am not sure but I rather think that we would fall in line.

MR. EMERSON: I think that is a pretty good suggestion. Now probably the only uniform analysis of any kind that has been applied to the river basin has been made by the Reclamation Service and it, with the means and information at hand, has

tried to reach a certain estimate. Now, if we are^{not} going in to allocation of the water to the several individual states in a large way, it seems to me an estimate of the Reclamation Service might be a fair basis to work from. It is in my opinion, going to be a great number of years before we ever reach those figures.

In Wyoming we carried on investigations this Summer again that will enlarge the irrigable area in one project there of some 900,000 acres, still it is going to be a great many years before that project, in all probability, will be economically feasible for full development.

I wish to call attention to the fact that the Reclamation Service has applied the only system of uniform analysis that has been applied to the basin and we might as well give some consideration to those figures.

MR. CARPENTER: Mr. Norviel, I think you are probably laboring under a misunderstanding of the Colorado figures as finally given. Mr. Conklin for the Reclamation Service, and Mr. Meeker for the State of Colorado made a joint investigation of the Colorado River area covering quite a period of time. They did not ascertain many smaller areas. Mr. Meeker continued the investigation upon the^{same} basis the succeeding year and also had the cooperation of the water commissioners, - water police, - whose duty it was to aid him. The final figures given by him are the result of the work by Mr. Conklin and Mr. Meeker and then continued into the next season, taking up small detailed tracts scattered over one-half of our state and requiring a very thorough field analysis. This is the reason it was raised from one

million some, to 1,825,000. Have I stated that correctly ?

(Addressing Mr. Meeker)

MR. MEEKER: The work Mr. Conklin and I did was office work. Later, I spent five months in the field checking up the office work and expanding the field work. The figures submitted were not available early in the Winter when we were at Riverside. They were not made available until the March hearing in Denver. They were not completed until that time.

MR. EMERSON: Mr. Chairman, here is the way this thing appeals to me. We are liable to knock out the props from under this whole scheme if we are not a little careful. If each state comes in and presents the acreage that they in fairness and in full protection to themselves think they ought to hand in, it is going to show, if we take some of those acreages, that we haven't got water supply enough. At the same time there isn't a member of this Commission but what believes there is enough water in the Colorado River for all the beneficial uses we are going to find for it. Now, as we are not going to try to allocate this water to the several states, but rather in two big divisions, I think we want to go pretty slow about discussing this proposition on this general acreage basis.

Why can't we consider the system of uniform analysis that has been applied by the Reclamation Service because that doesn't defeat the premise upon which our whole structure is founded. The fact that we believe there is sufficient water for all has always been the hopeful phase of the situation and I believe we want to be rather careful as I say, not to knock

14th-S.F.

47

the props out from under us by consideration of the high figures which would show on the face of them that there wasn't water supply enough for all. I, for one, feel just about the same as I felt in Washington. Wyoming would be willing to take the general analysis supplied by the Reclamation Service, not saying it is accurate for Wyoming, or entirely fair if we were going to apportion upon a basis of allocation of water to each state.

MR. CARPENTER: You mean for the purpose of considering the whole area ?

MR. EMERSON: Yes, for the purpose of considering the whole area. Because we know, when we look at these figures and sum them up as turned in by each state, we would not have water supply enough. At the same time we know in our own mind, and are convinced, that there is water supply enough for all and we don't want to defeat that conviction.

MR. HOOVER: Mr. Davis, this further work that has been done in Colorado and Mr. Norviel's few words, has that amended your views ? Have you given consideration to that ?

MR. A. P. DAVIS: No, sir. The estimates of irrigable acreages we have made in Senate Document 142, have been made upon a uniform basis. There isn't any question but that we could include projects that were not considered feasible and were not included. Just where to set the limit is a matter of judgment. The estimates do include many projects that I personally know, having gone over and examined them and tried to work out something that looked feasible under the provisions of the Reclamation Act, where no interest is charged. In that way I have

checked the estimates in so many states that I believe they are liberal. They are not, of course, infallible, - they have mistakes in them no doubt, they have some errors of judgment, probably, but those are relatively small and the limits of feasibility are set so wide that I think a fair adjustment has been made. The fairness of that can be judged somewhat by the classification we have made. The acreage in each state is separated into four different classes, one that we consider feasible now and others that are dependent upon some future development such as increased value of land but for which we know the water supply is physically available, and which could be built if the money were available.

Now that is the basis upon which these estimates are made. I don't know but that the time will come when a sufficient addition in all the various states could be made to reach up to the limit of the water supply, but at present, on the basis we have estimated, there is a large surplus. I haven't had brought to my attention anything that materially changes the result. The one that looks the most glaring is the one in Nevada, which was chiefly due to the allocation of the waters to the other states where the claim had been made by the State Engineer there was a feasible project. If increased in Nevada it must be decreased in other states and that applies, to some extent, in other places, but not to that striking extent.

MR. CARPENTER: You believe your figures would hold good for fifty years ?

14th-S.F.

MR. A. P. DAVIS: I feel confident of that.

MR. NORVIEL: Are the same figures in the complete report as in the preliminary report ?

MR. A. P. DAVIS: No, they were modified in various cases.

MR. NORVIEL: Upward ?

MR. A. P. DAVIS: No, not always.

MR. NORVIEL: Well, modified figures are the result of your personal investigation ?

MR. A. P. DAVIS: No, the result after study.

MR. NORVIEL: Not the result of the State Engineers investigations.

MR. A. P. DAVIS: In some cases we got additional information from the State Engineer. We tried to have all the information we could get. In some cases we didn't succeed in getting any in time for publication from the State Engineers. I think there were two cases at least of that kind.

MR. NORVIEL: Well, now, the concentrated effort, then, that you have given to this matter we are now talking about, is centered in this report ?

MR. A. P. DAVIS: Yes, we have got some information now that is later than that report.

MR. NORVIEL: Well, have you that available so that we might have it ?

MR. A. P. DAVIS: Some of it. I haven't it in written form here, but I could by illustration give you one of the cases. Mr. Caldwell is familiar with the investigation that has been carried on on Green River, the results of which were not available to place in the final report.

14th-S.F.

50

MR. NORVIEL: That would make a deduction in Utah ?

MR. A. P. DAVIS: A deduction.

MR. NORVIEL: Of how much ?

MR. A. P. DAVIS: The figure published here is 150,000.
I think that was reduced to about 40,000.

MR. NORVIEL: Then that would be a difference of 110,000
to be taken off the figures that you have ?

MR. A. P. DAVIS: It would in that particular case. We
have some additional information on White River that would
partially offset that. That would be an increase.

MR. NORVIEL: Well, what increase would it be ?

MR. A. P. DAVIS: I think there is about 40,000 acres there.

MR. NORVIEL: An increase of 40,000 ?

MR. A. P. DAVIS: I don't know that that is feasible.
We know there is water for it, that was allocated to Colorado
in the report. It could be used in either state.

MR. NORVIEL: You would hardly add that to your figures?

MR. A. P. DAVIS: It is about in the same class with many
others.

MR. NORVIEL: That is, the addition of the 40,000 on the
White River would be about the same class as the reduction on
Green River ?

MR. A. P. DAVIS: No, I don't mean that. I mean it is
about the same class as some of the projects we have included
in the list where the feasibility is doubtful. That, of course,
is subject to revision. These projects that can be considered
on the basis of land values that we can reasonably anticipate,

14th-S.F.

or of which we now know or can reasonably anticipate, the costs of construction, I think are generally included in this. There has nothing come to my attention that would materially modify these figures.

MR. NORVIEL: You feel then with this little change in Utah that so far as your judgment goes the states would be safe in making this allocation of water based upon your figures of new acreage in this basin ?

MR. A. P. DAVIS: In Utah you speak of ?

MR. NORVIEL: Yes, with the changes you speak of ?

MR. A. P. DAVIS: Yes.

MR. EMERSON: I will tell you, Mr. Norviel, right there that if we are going to allocate according to the states I wouldn't be satisfied with the figures that have been set down for Wyoming but if we are going to consider this basin in two big divisions I would be inclined to stand upon the general figures as between the two divisions as the basis to work on.

MR. CALDWELL: In other words, you think the estimates in the other states are large enough to protect Wyoming ?

MR. EMERSON: Yes.

MR. NORVIEL: Figuring on the division of the basin into two divisions.

MR. CALDWELL: I mean the other states of the upper division.

MR. NORVIEL: Mr. Chairman, it seems to me while the acreage estimated by the Reclamation Service in our state is very small, I would like to talk this matter over and see if we

14th-S.F.

can't agree on Mr. Davis' figures as a basis of adjudication of the waters between the two divisions. I wouldn't want to say right now, but it may be that we can reach a conclusion based on those figures.

MR. CALDWELL: I think, Mr. Norviel, you can safely consider some of the upper states are just as hesitant as you are in concluding to accept that as a basis.

MR. NORVIEL: Well, if you have anything better to offer I would like to hear it.

MR. CALDWELL: Mr. Davis, 4.4 is what you estimated for the Imperial Valley. I think you estimated something less for Arizona, 3 acre feet if my memory serves me right.

MR. A. P. DAVIS: Three and a half acre-feet for pump lands, and 4.4 for gravity.

MR. CALDWELL: In Arizona ?

MR. A. P. DAVIS: In Arizona, or the whole lower basin from the main Colorado River.

MR. EMERSON: The consumptive use in Arizona would be much less than it would be in the Imperial Valley, would it not ?

MR. NORVIEL: Mr. Davis has included some of the lands as in California.

MR. EMERSON: Return flow.

MR. NORVIEL: The fact is you will get some return flow both in the Imperial Valley and also in Arizona.

MR. A. P. DAVIS: That is one reason that the duty of five was reduced to 4.4.

MR. NORVIEL: What do they use now in the Imperial Valley per acre ?

MR. A. P. DAVIS: About five.

MR. CARPENTER: Isn't it a fact you probably have your figure of acres more accurately down in the lower country, than you do in the upper because of the scattered areas in the upper territory ?

MR. A. P. DAVIS: That is probably true. So far as projects we have included are concerned, they are to rather a high degree of accuracy. These new projects that Mr. Norviel refers to I never heard of before, - I don't know what he refers to. There are physical possibilities that I know of that were not included. Concerning these there is of course a difference of opinion as to whether or not they should be considered feasible but they are, as far as I know what he refers to, work of extreme difficulty. I would like to say in regard to such things as that, that there is a well nigh universal tendency to judge feasibility solely on the cost of construction, which is a fallacy, or only a half truth.

To use, for illustration, Mr. Maxwell's high line, with a distance of 200 miles, air line from the point of diversion to the point of first application, which by the curves, possible curves, would be doubled or more. Some places have been reported where there are three big washes to the mile with numerous little washes between and where the work is nearly all rock. Now that is a matter of tunneling or the construction of very numerous structures, and you can't tunnel it all, of course. A 200 mile tunnel would be utterly out of the question but if you don't

14th-S.F.

you have got these numerous structures which every engineer knows give unending trouble in maintenance at connection between the concrete structure and earth, or rock or whatever they connect with, subject to cloud bursts, floods, etc., Now on such a simple project as the Salt River project the cost of maintenance is heavy. It is heavy on the Yuma project and so I conclude, after seeing that country, which I have seen nearly the whole distance at various times, and particularly for this special purpose, I conclude, if that could be built for nothing, it couldn't be maintained and operated at feasible cost.

MR. CARPENTER: Isn't it possible to build similar projects all over the upper territory ?

MR. A. P. DAVIS: We could take a very large quantity of water entirely outside of the basin that I don't consider feasible at all, and haven't considered feasible. You could go through tunnels fifty or sixty or a hundred miles, if those were feasible, - you could take the whole headwaters of the Grand River across onto the Great Plains where there are unlimited lands that need it, but those things I don't consider feasible at all and haven't included.

MR. NORVIEL: Well, we have got to stop some place. I will say the lands I have in mind in the main are in the lower Gila Valley where the Parker diversion might be carried down,--

MR. A. P. DAVIS: It strikes in above the Sentinel Reservoir doesn't it ?

MR. NORVIEL: No, it doesn't go as far up.

MR. A. P. DAVIS: In regard to that I would like to say I don't claim any infallibility of my figures and would be very glad to find a feasible project which will take some of this water that I believe is surplus in Southern Arizona, because it is a splendid place to use it and a fine climate to produce. The Sentinel Reservoir has a possibility of storing Gila waters sufficient to irrigate a hundred thousand acres of land. We have investigated that. We have got surveys of canals, lands and everything of that kind but if one wanted a hundred thousand acres of land they would have to go a long distance in that valley to find it. A great majority of what was examined looked fairly good on the surface but was underlaid with hardpan or was too alkaline, too much alkali in the ground itself for fertility but we did, by going a long way down the river valley, succeed in finding nearly a hundred thousand acres of land. It was scattered and of such quality that the soil conditions alone shed doubt upon the feasibility of the irrigation project. I don't claim there is not a feasible site there. We haven't had it included because it hasn't come into the Imperial Valley problem and I am not willing to say today there isn't a feasible project of a hundred thousand acres in the Gila Valley to be irrigated from that river. I hope there is and I believe some day we can work one out. It isn't feasible today, but one may be worked out in the future. That is the same land you propose to cover with this Parker project.

MR. NORVIEL: Part of the same land ?

14th-S.F.

56

MR. A. P. DAVIS: Part of the same land. The diversion of the river near Parker can be raised about 70 feet. There is a great deal of the roughest kind of rock country to be crossed, and it is a long distance to reach the Gila Valley, which greatly increases the cost, of course. I am not saying it is ~~utterly~~ infeasible, but the acreage isn't there to take care of an excessively costly project. I wrote to you that was the most promising thing I knew on the river in addition to the projects published.

MR. NORVIEL: We have investigated to some extent, but just what we can do down there, we do not yet know. And that is one of the reasons why I am falling back upon your figures. We contemplate a soil survey in that region. Before anything very extensive in the way of investigation is carried on, of course we shall have to have a soil survey, or get the soil survey, if there is one made, from the Department. I thought there was one available, but I haven't it.

MR. A. P. DAVIS: I might say in that connection that in the early days, eighteen years ago, when investigating the Yuma Project, we made a survey of a high Canal line- one that doesn't run into the mountains at all - and we made an estimate and concluded it to be infeasible because it gets out of the river bottom country. It is just a series of breaks, nearly all of the construction work requiring drainage crossing every two or three thousand feet, on the average, and that kind of thing is always costly.

MR. NORVIEL: But the canal that we hope to be able to take out or to put the water in, would cover some valleys which

I am informed would not be reached by gravity from the Gila River, - and better soil and better valleys than those being reached by the Gila.

MR. CALDWELL: It seems to me we are getting away from the real issue.

MR. CARPENTER: There is one question that I have been wanting to ask Mr. Davis that would recur to our point of departure. Mr. Caldwell had proposed a flat annual delivery of six million feet. Mr. Davis, assuming that reservoir structures would be put in at Lee's Ferry or in that vicinity for the purpose of making possible that flat delivery of 6,000,000 acre feet to the lower country, would it be possible from your knowledge of the flow of that river to conserve all the flow of that river in the Lee's Ferry Dam and only deliver 6,000,000 acre feet a year and no more ?

MR. A. P. DAVIS: It would not be possible without a very much larger consumption in the Upper basin than I consider possible.

MR. CARPENTER: It keeps piling up and piling up and going over ?

MR. A. P. DAVIS: Yes.

MR. EMERSON: Were we trying to determine what the amount of this minimum flow should be ?

MR. HOOVER: What we are proposing to do here, if we can get to it, is to determine what the minimum flow is - what the average flow is in one instance and the minimum in the other - which would pass Lee's Ferry. That is our main issue and it

looks as if the flow at Lee's Ferry is somewhere about sixteen or seventeen million feet.

MR. A. P. DAVIS: At Lee's Ferry, I think it is something like 16,500,000.

MR. HOOVER: And it looks as if the total demands of the southern territory direct from the River are something like 5,000,000.

MR. A. P. DAVIS: The actual figures are 5,100,000 acre feet. That, excludes the Gila which isn't available for any of this land and also irrigation from other tributaries.

MR. NORVIEL: And if the high line canal is put in - I mean the All-American - the Gila where it empties into the Colorado would be available to no one except Mexico.

MR. A. P. DAVIS: The Gila is not available for anything except in its own basin.

MR. NORVIEL: So it need not be considered at all ?

MR. A. P. DAVIS: Well, the water can be used in its own basin; but it would cost so much money to provide the necessary storage that it is useless to talk about using it in the Colorado River Valley.

MR. CALDWELL: It may not be under present conditions that you would care to store the Gila and it may not be necessary.

MR. A. P. DAVIS: We can't use it without storage.

MR. CALDWELL: But when you have storage, it will be because there is no water in the Colorado. We are looking to the time when just such an exigency will exist and those things will be

done quicker if the necessity is imposed than they will be if they get water to those lower regions by imposing penalties upon the upper region.

MR. A. P. DAVIS: The whole thing I am trying to get at is that the Gila River is an expensive storage proposition. We consider it feasible, but it is very expensive. It isn't feasible, to store water on the Gila for the use on the Colorado.

MR. HOOVER: I would suggest that we ask Mr. Davis to make up a new table based on the figures of the Reclamation Service, so that at least we can talk about the same figures. From a treaty point of view, Mexico has no right to call on us for water ?

MR. A. P. DAVIS: No. and I would like to say here while we are on the subject that an investigation has been made of the conditions on the river near the Imperial Valley and I would like to impress upon this board that there is later information than was available when we visited that region last Spring. Then, they had just completed a diversion from the Bee River to the Pescadero. The river was turned through this cut, and is running there now. The river during flood carried a large amount of timber and drift, and ran into a region covered with mesquite, and other brush, and the water spread out and our party had to carry their boat for miles. The drift has clogged the thing up so that the water goes over it in rapids. It has silted to such an extent that the deposit has a depth of over thirteen feet already from one flood season. And even in the channel of the Pescadero that they cut, silt has been built up as high as

14th-S.F.

60

six feet on the sides and that is filling up so rapidly it won't hold but one or two more floods and unless they can extend that channel and continue it down further South they will within a year or two be right back where they were a year ago. Flood conditions in the Imperial Valley are exceedingly acute and I have realized that to such an extent, that I think that is the most important thing that could be done with the Colorado River, - to construct a storage reservoir that will be big enough to control those floods.

If large storage within the next few years is not provided at the Boulder Canyon the results will be disastrous.

MR. NORVIEL: The hope was that the Pescadero Cut would take care of the flow there for eight or ten years.

MR. A. P. DAVIS: Yes, they hoped that it would. But the accomplishment that they hoped for is short-lived. The remedy is a short-lived one.

MR. CALDWELL: Mr. Davis, not to cast any doubt on what you say, but just as a matter of fact the deposits down below there are greater somewhat this year than they may be expected to be next year, aren't they ?

MR. A. P. DAVIS: Why ?

MR. CALDWELL: Because of the amount of stuff that washed out of Pescadero Cut.

MR. A. P. DAVIS: Yes, some was washed out of there; but it has mostly been replaced by deposits in addition to what I spoke of. The water has backed up and deposited a great deal in the cut, and even the banks have been built up higher than their machine built them in building the cut.

14th-S.F.

61

MR. NORVIEL: Didn't the Pescadero Cut refuse to operate at all for a little while and the water go on down to Volcano Lake ?

MR. A. P. DAVIS: Not after they built the dam. Of course they had to build a dam across the river to turn the water into the cut and during that time the water ran down there. They have spent nearly \$300,000 in the present year on this work.

MR. CALDWELL: Mr. Davis called attention to the very acute situation that exists down in the Imperial Valley. I would like to assure Mr. Davis, however, that I don't think he has increased in any particular degree my anxiety for the Valley, because I have been extremely anxious about it ever since I came in touch with the question. It does seem to me, however, that with a provision in the compact whereby after a term of years the compact may be modified, in order to get the protection that is necessary down there, that the lower states as a matter of interest would be willing to concede something to the upper states in the matter of the amount of water that may possibly be retained up there on the theory that water up there that is not used will come down; but water that comes down and is not used, will not go back.

MR. HOOVER: Isn't that somewhat an argument that the peril and distress of the lower states will lead them to concede

14th-S.F.

62

more than they ordinarily would?

The meeting was adjourned at 6:00 P.M. to
meet November 14th, at 10:00 A.M.

Clarence C. Stetson,
Executive Secretary.

The above minutes were approved
at the 27th meeting of the
Commission, Friday afternoon
November 24th, 1922.

MINUTES OF THE
15th MEETING
COLORADO RIVER COMMISSION

The fifteenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Tuesday morning, November 14, 1922, at 10 A. M.

There were present:

Herbert Hoover,	representing the United States,	Chairman.
Delph E. Carpenter,	"	Colorado
R. E. Caldwell,	"	Utah
Stephen B. Davis, Jr.	"	New Mexico
Frank C. Emerson,	"	Wyoming
W. F. McClure,	"	California
W. S. Horviel,	"	Arizona
Col. J. G. Scrugham	"	Nevada
Clarence C. Stetson		Executive Secretary

There were also present:

Governor Thomas E. Campbell	of Arizona
Governor Merritt C. Mechem	of New Mexico
L. Ward Bennister,	Chairman of Committee of Interstate Waters of Denver Civic Association.
Edward W. Clark,	Joint Commissioner and Advisor for Nevada.
Arthur P. Davis,	Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottamar Hamele;	Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
C. C. Lewis,	Assistant State Water Commissioner and Advisor for Arizona.
A. J. McCune,	State Engineer and Advisor for Colorado
R. I. Meeker,	Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan,	Legal Advisor for Arizona.
P. G. Spillsbury,	President Arizona Industrial Congress and Advisor for Arizona.
Charles P. Squires,	Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsoe,	Advisor for Utah.

15th-S.F.

The meeting was called to order by Mr. Hoover at 10 A.M.

MR. CARPENTER: Mr. Chairman, I would like to ask the privilege of attendance at these sessions of A. J. McCune, State Engineer of Colorado.

MR. HOOVER: It has been moved and seconded that Mr. McCune be asked to attend; All in favor signify by saying aye. The ayes have it, and it is so ordered.

Last evening we were on the discussion of the third one of our main propositions and that was the basis of division of water between the upper and lower basin, and we had tentatively agreed upon a term of years average and a minimum delivery for any one year, and we were discussing the quantitative amount. Before we go on with that I would like to make this suggestion for consideration. That some of our members feel that an accurate division of water at this time is in the nature of a gamble, and that therefore if we can effect certain limitations in the compact which tend to correct the gamble, we meet that possible mistake that we might make at this time, and it was for that purpose that we were discussing yesterday also the question of limitation of term, some positive method of revision. There is another limitation on the risk that would enter into this, and any limitations on the risk makes it easier to arrive at the quantitative question. One would have more courage to arrive at quantities if they are surrounded by safeguards. Any quantitative division is necessarily predicated on storage, and when we come to the problem of

15th-S.F.

storage itself, it falls into two phases. First, storage to equate the flow seasonally in the terms of flood control, as we refer to them, and second, to equate the water over a term of years. Roughly, without any accuracy, the storage required for seasonal control is probably somewhere between 5 or 6 million acre feet. The storage required to equate over a term of years is probably say 10 million acre feet. I am not pronouncing this as final terms. If storage were provided in the river for perhaps in the lower basin of 18 million feet, or somewhere thereabouts, we would have an equation of the river over a long period and in order to arrive at an average delivery over a term of years, such as ten years, that equation is necessary in order to give an assurance of regular flow. Now, if the pact were made conditional upon the erection of that storage at some point, (I am not finding any point), but some point that would serve the lower basin, then, it would not seem to me to be necessary to arrive at a minimum annual flow, but that the whole flow could then be - that the one single quantitative figure would be necessary. Mr. Caldwell was thinking on that same line, it is his original thought, in suggesting that there should be in the upper basin 6 million feet of storage, a minimum of that, in order to enable that basin to equate the flow over a term of years. I assume what he had in mind was storage against the annual fluctuations rather than the seasonal control. Whether that storage is in the upper or in the lower basin, it seems to me to be immaterial whether wo

we regard a certain portion of the water past Lee's Ferry as being a deposit in the bank, or held above. In other words, the upper states may theoretically have security storage to enable them to carry out the assurances from the upper basin by a deposit in the lower basin. If the whole settlement were made conditional upon the creation of that storage before the compact became binding, then there would not seem to me, any necessity for a guarantee flow for any one particular year, so that we might, on that line of discussion, avoid the whole necessity of guaranteeing a minimum flow for a whole year, which seems to me to be pretty difficult.

MR. CARPENTER: The only data we have to obtain the minimum is from the lowest year. It would be the minimum of the lowest, not the three lowest.

MR. NORVIEL: With reference to the suggestion just made, of the deposit in the bank, it would make quite a bit of difference whether the deposit in the bank were in the upper or lower division because there would be a continual interest to be paid on this deposit. If deposited in the lower, evaporation might be counted the interest, and if the deposit is counted in the lower basin that division in the lower basin would have to pay that interest, and if deposited in the upper, of course, the measurement to be at the point of demarkation, the interest would necessarily have to be apportioned by the upper states, so it does make a big difference, and if the deposit is made 3 years in advance, or 4 years in advance, there would be 3 or 4 years of evaporation which is estimated at 6 feet on the

15th-S.F.

surface of the reservoir. This would be a very material matter.

MR. CARPENTER: The excess water stored is on the bottom of the lake.

MR. NORVIEL: Not always, it comes in on top.

MR. CARPENTER: Yes, but it sinks to the bottom.

MR. NORVIEL: You have your exposure just the same. If it were filled up every year, we wouldn't have that continual exposure.

MR. CALDWELL: Eliminating the interest feature, Mr. Norviel, what would you think then, assuming just the storage.

MR. NORVIEL: I still think as I thought yesterday.

MR. CALDWELL: I don't think I have in mind clearly what you thought.

MR. NORVIEL: I don't remember.

MR. HOOVER: That there should be a minimum flow in any one year passing Lee's Ferry of 5 million acre feet.

MR. NORVIEL: I can't conceive of any security without a minimum flow and I see no harm in making the proposition at this time to the upper division.

MR. HOOVER: Supposing that in one year there passed Lee's Ferry 16 million feet, and that your demands, your storage need was, say, 8 million feet, you have a deposit in the bank of 8 million acre feet. Suppose the next year was dry beyond any of our anticipations, and that the upper states only let down 2 million feet. Would it not be a right thing to credit some of that previous deposit in the bank to relief of the upper basin during that especially dry year?

MR. NORVIEL: Surely; that was one reason why I suggested that we cut this period down to 3 years, and I think that's long enough unless we have a minimum flow. We cannot have any security over a 10 year period with no minimum flow, because there may be a cycle of 5 or 6 years during which time the water may be all used by the upper division within the period of time we may fix in this compact. They would use that water in the hope that the next, or the next or the next year they may make up the deficiency, and it may be possible in the end they would not be able to make up that deficiency, and we would have dried up in the meantime, and we would have no recourse unless we fix one of some monetary basis, and I am not anticipating that they would want to agree to that at this time. As I stated in my statement yesterday, we cannot tell what the future will bring in many different ways. We cannot tell what the upper division has in mind, if any.

MR. CALDWELL: Neither can I.

MR. NORVIEL: We cannot tell what use will be made of the water over and above what we now anticipate, most of us, and we don't know what further use will be made of this water, and it would be dangerous for us below to forego the minimum flow in any period longer than three years, and I cannot agree to it.

MR. CARPENTER: With a minimum flow, the whole question of storage is largely removed, is it not ?

MR. NORVIEL: No, we must have storage below.

MR. CARPENTER: I mean the immediate necessity of storage; The river isn't going to stop when we sign this compact. It will run on and without any change.

13th-S.F.-6

MR. NORVIEL: It must be understood and agreed that this compact shall be inoperative until storage is provided below.

MR. McCLURE: Why should we have it below in order to afford flood control and provide a surplus for irrigation ?

MR. NORVIEL: I don't follow you.

MR. McCLURE: I understood you to say that the storage must be below.

MR. NORVIEL: Somewhere in the lower river. Wherever you want it.

MR. McCLURE: Would it not serve our purpose for flood protection at some point above ?

MR. NORVIEL: Frankly, I can't be interested in any storage above the San Juan for protection below. That matter has been handed over to me from different people suggesting that we take up the proposition of storing in Colorado, Wyoming and Utah, and New Mexico for our protection. I cannot get interested in that at all.

MR. CALDWELL: Isn't that just a little way from the question that we are now trying to handle ? (Addressing Mr. Carpenter) You used the word "control" which I think Mr. Norviel takes in the larger sense. What we are trying now to do is to work out what storage will be necessary to carry over from wet to dry years in order that the lower states may have in any one year a minimum amount.

MR. McCLURE: Would not a deposit of 10 or 18 million acre feet in the upper region solve our problem of flood control?

MR. NORVIEL: During the three years, of course the average must be given us.

MR. HOOVER: Supposing, for instance, that the wet years would be the first two and your third was dry; then you come to the 4th dry year. You are asking then for such a minimum on the 4th year as will fill out.

MR. NORVIEL: Ascending minimum ?

MR. HOOVER: The minimum in the 4th year might be only, say, two million acre feet in order to maintain the third year average, then the next year it might have to be 4 million in order to maintain an average, and if you had 3 dry years you might have to get up to 10 million feet in the dry years.

MR. NORVIEL: Here's what I have in mind - I may not be right, But anticipating a ten million acre feet necessity below the point of demarkation, supposing this year we would receive 16 million acre feet in the reservoir, and next year we receive two, and the next year two, making 20 million acre feet for the three years. It will be readily observed that we will have to drain the reservoir at the end of the second year, with nothing to start on and no water coming down. Now, I don't know what Mr. McClure's analysis of this matter is but it seems to me it is encroaching upon the line of danger and is the point which I suggested yesterday, that it is a place for us to stop, look and listen very carefully.

MR. HOOVER: Supposing you had such a situation that there was a flow of 2 years of only 2 million feet. You have a

drouth of such stupendous character that both basins will have to suffer. You have to reckon with that. On the other hand if you take the 20 year record of the river we are dealing here with a very extreme situation a hypothetical extreme.

MR. NORVIEL: That's true.

MR. MCCLURE: That is my answer Mr. Chairman. The possibility is so remote that California is not fearing it.

MR. NORVIEL: I don't know but I am unable to anticipate what intermountain diversion may be made in the upper states. I don't know exactly what the upper states have in mind, but using the past as a criterion, I imagine that they will undertake to reach the limit in intermountain diversion, and it may be to such a point as would create a desperate condition in the lower division. This in addition to their full development within the basin.

MR. MCCLURE: I cannot conceive that such a condition may or will arise within any reasonable period; and the compact, if made, can certainly be revised if any such extraordinary catastrophe should occur.

MR. CARPENTER: Mr. Norviel, the tendency of the people below is to regard the border of the basin as a sort of outer rim, as the rim of a dish. The mountainous areas are largely interior mountain masses and it is physically impossible to penetrate to this interior source if they would, and all they could penetrate would be the mere rim.

MR. NORVIEL: Then, I assume you will be willing to limit

the amount perpetually.

MR. CARPENTER: If it were large enough. I regret to say it appears to me that each time the lower country is considered, it appears to be on the basis there must be a guarantee to them, that they should survive no matter what happens to the upper territory. This is reversing all principles of local justice, to say nothing of interstate justice. The only occasion upon which the lower country would suffer would be when there would be intense suffering above, and we would have no control upon that. The demand should not come, and I am sure it is not the intent on sober thought to make the demand so strong as to say that the lower country must always have plenty of water, and be assured of that no matter what happens above. I think that would be beyond the range of vision of those below.

MR. NORVIEL: Mr. Carpenter, this isn't my draft of the compact. I went over this ground as thoroughly as I knew how alone, and arrived at the conclusion it would be exceedingly/ difficult, if not impossible, to ever adjust it in this manner. However, I am perfectly willing to discuss it with you and arrive at a just and equitable apportionment if we can, but I don't like the term guarantee because I don't believe the term guarantee enters into it at all. Legally, we are exactly on the same basis, on the river. The upper division I think ought to get out of their minds that they are guaranteeing to the lower

division anything. We have the same right in the river. I conceive that they have the same right to the water, to take it and use it as any other part of the basin. We are trying to get away from that; get away from what the State of Colorado terms a "Simon Pure" appropriation state, and the law that appertains in the basin always has tried to divide the matter up on another basis. So that the term guarantee doesn't enter into the question. All we are trying to do is to reach an equitable apportionment of the water that is ours and that doesn't belong to one section or another.

MR. CARPENTER: Assuming your premise to be sound, while of course I disagree, isn't your attitude that the assurance for the country below, no matter how terrible a drought, or how great the affliction may be thrust upon the upper territory, which is the only occasion out of which there would ever arise a water shortage at Lee's Ferry, isn't it always your disposition to get assurance for your dry deserts below and ask us to bear the brunt of that visitation of drouth, which paralyzes us just as much as or more than the lower country? If I am in error that that is your frame of mind, well and good, I beg your pardon.

MR. MORVIEL: You are forgiven for all your sins up to date as far as I am concerned, but as I said before, this isn't my notion. I tramped over this ground, over every angle to every other point, I think and it is going to be, and is, a very difficult problem to solve.

15th-S.F.

The assurance we ask is no more than our legal rights, any other section to the contrary notwithstanding. We ask no more from you than we ask from the state of New Mexico or California or Nevada. We only want what is ours.

MR. CARPENTER: You want the Gila River because it rises in your territory. Supposing we include the Gila so we know where the water supply is. Dont the people of the upper states have as much right to demand that you let the Gila flow in Imperial Valley as you have to ask that we do something ?

MR. NORVIEL: You have the right to ask for as much as you If you have any chance to appropriate any water out of the Gila, can use under the Gila./it is yours. Whatever appropriation you have made out of the Gila is yours and whatever appropriation we can make out of the Colorado is ours. Whatever appropriation we could make out of the Colorado of the unused water is ours and that is all we ask. If we can get it in some other way than by appropriating it, it's up to you to show us.

MR. CALDWELL: I was just trying to get your idea of necessity.

MR. NORVIEL: I gave you my idea on the paper.

MR. CALDWELL: I will make a statement and you can correct it. It is your idea as you stated it that what you want is your legal rights, no more, no less. In which event it does seem to me that we are not here simply for the purpose of drawing up a compact which conforms to the decision of the Supreme Court of the land, and I will ask the Commission if I am correct in that and if that is really necessary.

MR. SCRUGHALL: What do you mean by that ?

MR. CARPENTER: Let me correct probably your thought before the question is answered. The decision which you mention has certain other factors which go with the principle, one of which is that it is incumbent upon the lower states to build their own reservoirs and to see to it that the water does not waste to the sea, - the surplus.

MR. CALDWELL: That's an incident. What is the use of compacting on a proposition of that kind that's settled by the Supreme Court decision. That's my question.

MR. HOOVER: To go back to our original discussion. Mr. Norviel's suggestion was that there should be a minimum flow; that is, in the nature of a guarantee and I am wondering whether or not if this is purely a question of equitable apportionment, one can ask for a guarantee of a minimum flow and whether a famine period does not imply an equitable apportionment for such a period. There is established a state of famine, and you deal with it not as a matter of theory but as a matter of reality and proceed to an equitable apportionment of the entire basin on a basis of a famine rather than in an assured minimum.

MR. CARPENTER: That was my thought in dropping back to the ten year average and that the famine automatically takes care of the situation, but I can well see where other factors along the lines that have developed might make the lower states apprehensive of a deliberate action above, which might add to the famine.

MR. HOOVER: Might project the famine entirely on the lower basin.

MR. CARPENTER: So I am perfectly free to see the value of his suggestion in that regard.

MR. HOOVER: That is in effect a statement that on a ten year average the whole thrust of famine might be put on the lower states instead of the upper.

MR. HORVIEL: That's it exactly. It might be taken care of in this way; in the event of a cycle of dry years the water might be measured in the storage available to the lower division, and an adjustment according to the actual needs within the basin may be made of the flow if that could be done for the particular year or cycle of years, but as Mr. Davis stated that would be exceedingly difficult and expensive of administration. According to my statement in the beginning, I said that the administration of the matter would be practically impossible, and I still insist that I was right. That's the only way that I can see any different arrangement might be made other than a stipulated minimum flow.

MR. HOOVER: If you get a stipulated minimum flow you get a situation of enforcement on the upper basin which implies the same as enforcement on all persons taking water and that amounts to the same administrative control as if you, for instance, declared that in certain circumstances a famine in the basin existed and the same identical control would have to be set up in either contingency.

MR. NORVIEL: I still insist that it is a serious problem to work out, and I don't think it will work by the rule of three as I know it.

MR. CARPENTER: For my part, I don't see any such great objection to the minimum flow as such, if it be contemplated that the drouth might be still more severe than any heretofore known, that might be safe guarded by fixing a minimum, and then providing, in certain extreme conditions, or failure of precipitation to a certain amount, that the minimum might be more reduced. Precipitation generally in the country is more easily ascertained than the flow, but I rather dread that because it adds- it burdens the whole agreement with detail. Regarding annual averages it might be possible to arrive at an annual average on the 20 year record. It is perfectly possible at Yuma to have an average annually, but if there be doubt in that regard that could be a temporary figure and actual gaugings could take place at Lee's Ferry as well as Laguna and other points for the next ten years. We could ascertain the result from these figures taken as an average, which puts off the final determination to a later date. The river itself is so large and its flow so bounteous there seems to be more latitude in this river than usually obtains.

MR. NORVIEL: What is the objection, any way, to a short period of three years ?

MR. CARPENTER: You can't get a true average in three years. For example I may illustrate in this way. You, as an official,

if you were investigating the water supply available to a given contemplated project, you would not be content to take a three year record as the basis in your determination of water supply because that three year record might have been in 3 years of unusually heavy flow. Neither would it be fair to force that project to yield to the calamity of taking three years of low flow or two lows and one average. In order to get the amount of water available for say the San Carlos Project, you would want to take the flow of the Gila River for a longer period than 3 years. Three years is more like a spot measurement. It is hardly fair, any 3 year record.

MR. NORVIEL: I think you are talking about one thing and I am thinking about something else. I am thinking about this period which you speak of as ten years.

MR. CALDWELL: That average is predetermined in your mind.

MR. CARPENTER: My suggestion is - we are working from Yuma, we set a definite figure, and then say that we will make an annual average delivery over any ten year period for that amount of water at Lee's Ferry. Some years low and some years higher, but in the sum total of the flow in ten years it would be an average amount.

MR. CALDWELL: May I try to state that so I can understand it? I think your idea, as I get it, is that we have predetermined the average flow say to be 6 million acre feet, and during any ten years that follow from now on, the upper basin would deliver to the lower basin 60 million acre feet, but in

every case it must be a ten year period, advancing one year at a time. The years considered would be the next preceding ten years. Is that your understanding, Mr. Norviel ?

MR. NORVIEL: I must confess I am confused on the statement of the problem.

MR. CARPENTER: I wish you engineers would try to labor with one another to get that clear in your minds and the mind of Mr. Norviel.

MR. CALDWELL: I have to get it in my own mind first.

MR. EMERSON: I thought we reached practically a determination of this principle yesterday; why reopen in this manner this morning ?

MR. HOOVER: It reopened itself because we have to determine first the average flow for ten years and a minimum flow for one year.

MR. EMERSON: I thought we just decided on the principle.

MR. HOOVER: If we can revert back to these two quantities we have to clear up one point straight away, but the suggestion is made here that this is the average flow for the previous ten years. That cannot be the case for the simple reason that the increasing consumption in the upper states will decrease the flow over a number of years, so you could not take the average at Lee's Ferry. You must take a period of ten years, as the consumptive use in the upper states has increased. Isn't that the case.

MR. MERSON: This matter of a ten year period has been clear in my mind, unless I am wrong, we would proceed in taking each ten years by itself, always considering the last ten years, until we reached the point where there was not the total delivery over the ten year period.

MR. HOOVER: If you do so you must add to your gaugings at least the increased consumption of the upper states. That would make it possible to have a progressive ten year average. Supposing the consumption is now 4 million and it increased to ten, then your gaugings at Lee's Ferry are going to be diminished by 6 million feet and you could not take that as an average.

MR. MERSON: Take a ten year period, now, we can come so far within the ten year average delivery that there would not be any chance to violate the compact, but there will come a time when we will have to take stock, - possibly there will come a time. According to my consideration of the idea, we would proceed with the measurements from year to year, keeping check of each ten years, always considering the last, to gain our average, and whenever it came to the point in a certain year when that year, combined with the last 9 would not hold to the average, it would be up to the upper states to make up the deficiency. I don't see that the increase in consumptive use has anything to do with it.

MR. HOOVER: In this river there was probably 20 million feet, before any water was diverted, and any equitable division

requires a reconstruction of that situation in order to determine what an equitable division is. If you go back to Lee's Ferry and take gaugings from now on and don't consider the increased consumptive use, you are going to have a constantly diminishing flow at Lee's Ferry, and that would not be an equitable apportionment of the river, it would be an apportionment of what is left each succeeding year.

MR. EMERSON: We are going to have a chance for reconsideration and revision of the figures. If you reach a ten year average in the compact, then, if over any period of the last preceding ten years, the upper states deliver that average, there is no default on their part, but, if we do come to the point where during the last preceding ten years they don't deliver that total amount, then, the time of reckoning has come.

MR. NORVIEL: Let me see if I can understand what Mr. Emerson has in mind. You say that the average is adjustable as I take it on the preceding ten years.

MR. EMERSON: You take the last ten years always whenever you are figuring.

MR. NORVIEL: To arrive at what average ?

MR. EMERSON: The last preceding ten years.

MR. NORVIEL: Then it is a changing average.

MR. EMERSON: No a certain average in this compact is fixed. Multiply that by ten and you have the total volume delivered by the upper states in any successive ten years.

MR. NORVIEL: We are now trying to arrive at what is to be delivered, or permitted to go down to the lower division, a specified amount annually or that ten times that amount shall be delivered within the ten years, is that it ?

MR. EMERSON: You have both the average and your minimum at the end of that time.

MR. CALDWELL: I am wondering what will happen when we attempt to describe this to 7 legislatures. My judgment is that we will never accomplish the feat. We will run up against a snag surely. That's only practical, but I think it is important. I do believe if we can so control that river and hold it back that a certain minimum will always be available for the lower states in the dry years, but that contemplates storage. Why not get directly to the matter of storage and face it and name it, talk of it and handle it ?

MR. EMERSON: Any plan contemplates storage.

MR. HOOVER: The compact itself must be predicated on storage, otherwise there is no water. The water has been exhausted in the river now. That flow today is pre-empted. There is no water for division unless we predicate storage. Obviously the compact must be predicated on storage.

MR. NORVIEL: I think the simplest matter is to fix the period within which the minimum amount is to be delivered with a reasonable minimum annual flow.

MR. CARPENTER: The minute you enter upon the task providing for storage, you will develop a sectional psychology.

15th-S.F.

A very entertaining and possibly persuasive address could be delivered before this Commission by an informed person to the effect that all storage, all development should take place on the head waters of the stream, and advocates of the upper states are just as strong as any, and it was my thought to get as far as possible from the storage in the compact, to avoid that very conflict, it being incumbent upon the district, the two divisions provide their own storage in their own way and by the instrumentalities at their hands. Now, the only objection I have to the principle, for example, to providing for storage reservoir, - is the dispute that will arise as to location. Some will say that Lee's Ferry is the psychological place in one way for a reservoir as it's at the point of control of the river as it shifts between the upper and lower division. Now, suppose we provide some instrumentality by which that reservoir could be constructed which in turn would be met by the counter defenses of the lower reservoir, which are very persuasive. Others claim that the Flaming Gorge and sites further up would accomplish the result better and bring greater benefit to mankind because of the successive step of development, so you may proceed step by step and expand on this matter of storage. My thought was to provide a certain definite figure now that should be the annual average delivery, or the average annual delivery at Lee's Ferry, taking that over a period of ten years, and you would have some aggregate of ten times that figure, and that was not to be all we were to deliver, that was to be our minimum.

15th-S.F.

22

MR. EMERSON: I would like to ask, do I correctly understand your proposition of ten year average ?

MR. CARPENTER: Yes.

MR. HOOVER: Does it have any alteration in the future ?

MR. EMERSON: Except by a revision of the compact.

MR. HOOVER: The ten year figure is the ten year figure from now back with no alteration by any future gaugings.

MR. CARPENTER: That's my thought.

MR. EMERSON: Except that 25 or 50 years from now, it may be necessary.

MR. NORVIEL: Let me ask, may the amount that is to be arrived at to be delivered during a ten year period, ^{to} be delivered at any time during that ten year period ?

MR. CARPENTER: That would be the case.

MR. NORVIEL: In chunks of 1, 2 or 3 during the period. In any manner at all during the period.

MR. CARPENTER: Yes.

MR. HOOVER: It isn't a progressive average based on ten years from this day.

MR. NORVIEL: I think its a fixed amount.

MR. CARPENTER: In arriving at that figure I take into consideration the 20 year average at Yuma. That amount is to be fixed by ten years back or forward.

MR. CALDWELL: I wonder now if I understand it. First, the amount to be delivered to the lower states is 6 million; you say that is what they are entitled to next year. Based on the 10 years or 20 that have proceeded, you have arrived at a figure
15th-S.F.

say of 6 million. Next year they are entitled to 6 million acre feet.

MR. CARPENTER: No, during the next ten years they are entitled to 60 million acre feet. That delivery may be up and down.

MR. NORVIEL: That all may be delivered in the 9th year.

MR. CALDWELL: During any ten years you propose to deliver, then, 60 million acre feet.

MR. NORVIEL: That may all be delivered the 3rd, 5th, or 10th year.

MR. CARPENTER: Of course it is physically impossible to ever deliver that water in the 10th year, it would dry up the river in other years.

MR. CALDWELL: This is just an arbitrary figure. That will be enough to carry you over ten years. The only thing is you let some of it go to the ocean, the Gulf of California, and cannot get it back. If we could agree that you would store such of that as is necessary or some specified amount, would that be your guarantee that you are asking for ?

MR. CARPENTER: They, knowing they will get a certain definite quantity of water, and also knowing that by nature they will get more, isn't it incumbent upon them to fix and construct for themselves the instrumentalities by which the use of that water may be brought about ? Let me say in connection with that question, in the recent controversy between Colorado and Wyoming, Wyoming contended that it was not incumbent upon Wyoming to provide any storage facilities by which the excess of the fat years might serve for the lean

years in that territory; that if we interjected a new diversion upon the river and cut off the supply, it was incumbent upon us to supply the storage. The court, very rightly, found that that contention was not right; that to each of these divisions should be left the method of conserving the water within its own territory. Now in some cases reservoirs will be constructed at one point and in some cases another. One factor may develop a reservoir this year and another factor, referring to public or private capital, develop a reservoir another year. It may be found as years progress that it is wise to provide a large control reservoir in the lower part of the upper division; well and good when that time arrives. My thought is now to take, if I may use it, the raw river, leaving it to stipulation that a certain flow pass Lee's Ferry not at any particular year, but an average flow over the ten year period. That leaves each of the territories free to pursue its own course in its own way and make its own provision, and takes care of the lean and the fat years, and also takes care automatically of drought and excessive precipitation. I don't have in mind that the upper territory would deliberately construct great reservoirs above which would withhold arbitrarily the water from the country below, because it is so abhorrent to any principle of humanity, it is not within my range of vision. If that is feared, then, we might fix the minimum. That minimum should be so low that we can certainly meet it. That minimum being merely for the purpose of assuring the lower territory against our radical and arbitrary requirements.

15th-S.F.

MR. HOOVER: Then the question between you and Mr. Horviel is purely the question of minimum between any one year.

MR. ELLERSON: I would like to apply again this Colorado decision which the lower states look upon as vital for their side. If you study the decision in the Wyoming-Colorado case, you may find that that is not altogether true, that the Colorado River is appropriated. Now it is true no doubt as Director Davis says that the Colorado River at the Imperial Headgate is dry today. It is also true that a large volume of water has passed that headgate this year. Applying the Wyoming-Colorado decision to the Colorado river, the Imperial Irrigation District will have no demand upon any upper division ^{that} by reason of that fact, /that river is dry there today. Because during this year a large volume of water has passed by that headgate unused, and the Supreme Court has held that the lower division must provide the storage to take care of the surplus waters of the stream and provide for their low season needs. In that way and in that phase, the Colorado decision is not favorable to the lower states, but does put upon them the burden of reservoir construction. As I conceive the situation, it is founded primarily on the provision for the storage of water to carry the surplus flow of this stream over to those periods of shortage when the water supply may be deficient. If we take a ten year average and with that apply a low minimum flow to the stream, the upper states are doing their part in supplying the water to the lower states and directly in line with the application of your Wyoming-Colorado case by the Supreme Court.

MR. CALDWELL: Within the minimum flow ?

MR. EMERSON: Yes, within that minimum flow. The minimum flow is largely a guaranty from the upper states, and it is reasonable and I can well see where there should be a stipulation of minimum flow to take care of a two or three year period of low years, in order to spread the famine. The upper states will be affected just as much as the lower states, so the figures must be low; but I believe it would be very proper to establish a minimum yearly flow that we will be able to agree upon, but the average delivery over a period of years is certainly essential, so that the surplus water may be conserved; that must be carried over from year to year and more than one year, in order that the just and most efficient use of the Colorado River may be had. It is my understanding that we practically agreed upon a ten year period of average flow delivery, with the stipulation as to minimum flow, and I would like to have a poll of the states to show whether we could not determine that point. But if we cannot come to an agreement, you will find that the benefits of the decisions in the Wyoming-Colorado case are not entirely confined to the lower states, for the burden of construction of the reservoirs to catch the surplus waters of the stream from year to year is placed on the lower division.

MR. CALDWELL: You know about that from experience ?

MR. EMERSON: I certainly do, we had a fine time on the Laramie River in Wyoming this season.

15th-S.F.

MR. HOOVER: Wouldn't it come, more or less to a question as to the minimum flow? Mr. Norviel has suggested a minimum flow of five million.

MR. NORVIEL: Whatever seven thousand second feet work out, it would be I think between five and six million.

MR. CALDWELL: If the minimum annual flow in acre feet were placed low enough, surely, surely something could be agreed upon, but it occurs to me, by agreement in the compact, if it is necessary, that storage may be provided either above or below Lee's Ferry, say reserve storage. I want to say if reserve storage, which means storage for this purpose, be provided, then the minimum flow can be increased if storage is provided.

MR. MILLERSON: Who would be responsible for that storage?

MR. CALDWELL: I think that is another question, but I have read the Colorado-Wyoming decision in the same way that you have read it, and have remarked, as you have remarked, that it is probably just in that matter, but I think the thing could be handled easily because of the necessity of large storage in the river anyway, either above or below, and it does seem to me that the minimum flow becomes a matter of not a great deal of consequence, after all is said and done, if it is low enough.

MR. MILLERSON: It is just a safeguard, and they wish to have it. But it seems to me that if the upper states agree to deliver a certain amount of water over a term of years, and possibly further agree to deliver not less than the minimum yearly amount every year, it is up to the lower states to pro-

vide means o f storage.

MR. CARPENTER: And it is up to them to provide storage as may be necessary, to be sure we deliver our minimum.

MR. NORVIEL: Of course it is necessary that we accept the burden of providing storage below. As I look at it, it is not going to be the easiest thing in the world, - it may not be the easiest thing in the world to provide that storage, but with the assistance of the upper states, not financially, but morally, we are in hopes that we may obtain that storage. The storage alone will not irrigate lands, - I mean storage capacity in the reservoir, if there is no water in the reservoir.

MR. ELLERSON: We are going to agree to deliver the water to fill that reservoir.

MR. NORVIEL: Yes, then unless we can have a minimum flow we may have an empty reservoir.

MR. ELLERSON: We are willing to consider a minimum flow.

MR. CARPENTER: We are willing to consider a minimum flow.

MR. CALDWELL: I didn't get the last remark, I didn't hear what was said the last time.

MR. NORVIEL: We would want to know that we would get that.

MR. HOOVER: To get back to figures, - apparently the flow at Lee's Ferry on an average is about seventeen million feet.

MR. CARPENTER: I think, Mr. Chairman, that is a little high.

MR. HOOVER: Alright, about sixteen.

MR. CARPENTER: Sixteen million, say.

MR. HOOVER: And the upper states have already had the

beneficial use of approximately two million four hundred thousand feet. Mr. A. P. Davis' calculation of their future needs, - I am not pinning anyone to this, but arriving at a hypotheses, - the future need in the upper states is about four million feet. That reaches a reconstructed average of something like twelve million feet passing Lee's Ferry. If you take a drought of years, three, or any number of years, - there was an average, - there was one year that ten million, approximately passed Lee's Ferry, and if the upper states took their full use of four million additional feet, there would still be in the three dry years, six million feet passing Lee's Ferry. However, if they had had their full supply for all of their contemplated needs on the basis of the Reclamation figures, therefore it would not seem to be a very great tax upon them; in fact, they would not feel the effect of the famine on a basis of a minimum flow of between five and six million feet, no famine would have fallen upon them. The famine would only fall, - take the driest years, the worst three years in history, after six million feet had passed, and after they had reached their full development.

MR. CARPENTER: Isn't it also a fact that with respect to the present uses of the Colorado River, those below would not feel the effect of the famine on the river if we only delivered the minimum ?

MR. HOOVER: They would feel the effects of the famine when it got to nine million two hundred thousand ?

MR. CARPENTER: No, when it got below two million five hundred and sixty thousand acre feet.

15th-S.F.

MR. HOOVER: On the basis of the present total development of the lower river, they would feel the effect of the famine when it fell below nine million two hundred thousand feet.

MR. CARPENTER: But of course with that runs the fact that a failure to deliver in the lowest year would be a breach of the compact, therefore the figures must be below --

MR. NORVIEL: Below the possibility of a breach?

MR. CARPENTER: Yes; I don't mean unreasonably low, that isn't my thought.

MR. HOOVER: We could also argue the matter on a basis of a fifty-fifty division. I am assuming ten million acre feet running at Lee's Ferry as being the average of the three worst years. Add to that the consumptive use in the upper basin, bringing the total water in the upper basin to twelve million four hundred thousand acre feet; a fifty-fifty division of the water, would call for, roughly, six million feet, and a fifty-fifty division would still allow the lower states a future development as shown by the Reclamation figures.

MR. NORVIEL: Well, we are trying to arrive at a minimum flow now, Mr. Chairman.

MR. HOOVER: But I was simply illustrating where the minimum flow would lead on the actual figures.

MR. CARPENTER: On that last remark, Mr. Chairman, I call attention to the fact that a fifty-fifty division at Lee's Ferry is not a fifty-fifty division of the river.

MR. NORVIEL: Are you changing the subject now?

MR. CARPENTER: No. It is my thought that the uses during the past twenty years, in the upper and lower divisions, would about compensate or offset, hence we could take the figures

arrived at, and assume that the diminution would compensate,-- use that as a basis for figuring. Meantime I would like to know whether it would likely be acceptable to the lower basin. I think it should be reasonable to store the say, sixty million acre feet, that may come down from the upper basin during any ten years to protect themselves against the drought.

MR. MCCLURE: Yes sir, we would accept, on the part of California.

MR. CALDWELL: What about Arizona?

MR. NORVILL: What?

MR. CALDWELL: The water that comes down for a ten year period, sixty million acre feet, or whatever it works out, should be stored by the lower basin?

MR. NORVILL: The reservoir is to be worked out with the consent and moral assistance of the upper states, with that understanding.

MR. LEEERSON: That is what you got through this compact.

MR. CARPENTER: I think there is not a man in the upper states, and who understands the situation in the lower country, who is not hoping to see a reservoir in the lower river.

MR. NORVILL: I am glad the heart strings have been touched at last.

MR. CARPENTER: They always have been.

MR. NORVILL: It seemed to me there was some opposition in the beginning.

MR. CARPENTER: I will say that it seems to us immaterial what instrumentality is used to get it.

15th-S.F.

MR. SCRUGHAM: May I make a suggestion? I move that five million acre feet be adopted for a minimum quantity per year, to be permitted to flow past Lee's Ferry for the benefit of the lower basin. I will ask for a poll of the states on it.

MR. HOOVER: For any one year?

MR. SCRUGHAM: Yes sir.

MR. CARPENTER: The minimum year should not be taken as an average of the three, but the lowest known minimum, and the lowest occurred in 1902 before any great development within either the upper or lower basins, which may be said to be nearly a natural minimum, and that was nine million one hundred and ten thousand. Would you modify the minimum in your motion to four million five hundred thousand.

MR. SCRUGHAM: What is the object of such modification.

MR. CARPENTER: Because that is half of the lowest known year.

MR. SCRUGHAM: Why should we take half of the lowest known year?

MR. CARPENTER: Because the minimum means the smallest quantity that will be delivered.

MR. HOOVER: Do you accept the amendment?

MR. SCRUGHAM: No; let us make it five million, then call for explanatory remarks when the poll is taken.

MR. HOOVER: Is there a second to that motion?

MR. S. B. DAVIS: I will second the motion.

15th-S.F.
33

MR. HOOVER: It has been moved and seconded that there shall be provided a minimum annual flow, based upon the flow passing Lee's Ferry, of five million acre feet.

MR. SCRUGHAM: Part of my motion was that the states be polled.

MR. NORVIEL: We will accept that on a five year average period. We think ten year average period is entirely too long, too long for any purpose in average delivery.

MR. HOOVER: Will you vote no ?

MR. NORVIEL: No, I accept the minimum flow, yes but not on a ten year average. I don't want a ten year average under any consideration.

MR. HOOVER: Suppose we take the motion as it was made, without mentioning the period now.

MR. NORVIEL: What motion ?

MR. HOOVER: The motion is for any one year, the minimum flow passing Lee's Ferry of five million feet ?

MR. NORVIEL: Yes, sir.

MR. HOOVER: What is your vote on that form ?

MR. NORVIEL: Yes.

MR. HOOVER: Mr. Emerson ?

MR. EMERSON: No, believing the amount too high. We already have a year that shows a little in excess of nine million. No doubt there will be lower years in the future, and if, when we have a very low year, as I have stated before, the onus of any shortage that might be felt should be equally borne by the upper and lower states. My suggestion would be four million.

MR. HOOVER: You vote no ?

MR. EMERSON: Yes, I vote no.

MR. HOOVER: Mr. Scrugham ?

MR. SCRUGHAM: Yes.

MR. HOOVER: Mr. Davis ?

MR. S. B. DAVIS: I vote yes, with the understanding that in some way the amount to be contributed by the various states be distributed.

MR. HOOVER: Mr. Carpenter ?

MR. CARPENTER: I vote no, and would vote for four million acre feet for much the same reason mentioned by Mr. Emerson, with the thought that inasmuch as this is the irreducible minimum, and a famine greater than that of 1902 may come, the burden would fall upon the upper territory. That four million acre feet, or five hundred thousand acre feet less than one half of that recorded in 1902, the flow, is a fair figure, leaving in round figures four million acre feet as the minimum.

MR. HOOVER: Mr. Caldwell ?

MR. CALDWELL: I vote no for the reason that I believe that any minimum should be backed up by some reserve storage to maintain it.

MR. HOOVER: Mr. McClure ?

MR. MCCLURE: Yes.

MR. HOOVER: Of course unless it is unanimous it is not binding upon anyone.

MR. SCRUGHAM: May I modify the motion, substituting four million five hundred thousand acre feet which is half the
15th-S.F.

lowest recorded flow, to be the minimum annual flow past Lee's Ferry.

MR. HOOVER: Suppose we try that out. What do you think about that Mr. Norviel?

MR. NORVIEL: Now, Mr. Chairman, when we are arriving at this figure it must be dependent upon the period of the average, and it is almost meaningless to make anything definite without that, and unless we fix that average period first this would be a mere chance in voting. I can't intelligently vote on it unless I know what the period of average flow is.

MR. HOOVER: I don't quite see that they hang together, because the year indicating the minimum flow of the river, and it does not seem to me it enters into the average flow at all. I don't see how they are necessarily connected.

MR. NORVIEL: Like this, there are, or may be a cycle of three, four or five dry years during which period not more than the minimum flow would come to us. Our storage capacity may be entirely depleted, and yet one or two or three or more dry years may follow that depletion, during which time the minimum flow would be practically the only water available to us, and it would be disastrous then, and the burden of the famine would rest upon the lower basin. It is this other thing that we must keep in mind, that the water that falls on the upper states will be used by the upper states until after the flow has gone by, - until after the full use has gone by.

...say that the users of water will use all they want during the whole season, and then if they are unable to deliver, will simply say the water isn't there, or has not been there, and they can't deliver either the minimum, or any part, in that particular year. This is a problem that will be impossible to figure in the event the water is not sufficient to take care of the needs of the upper states, and will leave a remainder equal to whatever minimum flow we arrive at. If the question is simply as to the minimum flow, leaving to be readjusted the period of the average flow, four and a half million acre feet we will agree to.

MR. HOOVER: I understand we haven't agreed at all on what the average is to be.

MR. NORVIEL: I mean the average period.

MR. HOOVER: The average period, that is entirely apart from the question. And you are prepared to accept four and a half million ?

MR. NORVIEL: That being practically half of the minimum flow as shown by the records.

MR. HOOVER: And not taking into consideration that question at all ?

MR. NORVIEL: No.

MR. HOOVER: Mr. Emerson ?

MR. EMERSON: Yes..

MR. HOOVER: Mr. Scrugham ?

MR. SCRUGHAM: Yes.

MR. HOOVER: Mr. Davis ?

MR. S. B. DAVIS: Yes, with the reservation already made.

MR. HOOVER: Mr. Carpenter ?

MR. CARPENTER: No, with the further objection that if three successive dry years fall upon us, in the third year we would be brought nearer a violation of the compact, and it is not the intention of the upper states to violate this compact, but we expect to live up to its terms, and we do not wish to be placed in the position by nature where we will be compelled to violate it.

MR. HOOVER: You are going on the assumption that there may be worse years than in the past ?

MR. CARPENTER: Yes, and I am also reliably informed that there may be worse ones.

MR. NORVIEL: I would like to have the source of your information.

MR. CARPENTER: I don't care to give that out.

MR. CALDWELL: Worse than what year ?

MR. CARPENTER: 1902.

MR. CALDWELL: That was twenty years ago, and if another dry year were to strike us we would obviously be worse off than we were in 1902, because that was before any great amount of development had taken place, - nearly all of the diversions have been since that time.

MR. CARPENTER: I still think four million feet should be the minimum. Understand when we fix a minimum we fix a point

15th-S.F.

38

beyond which we may not go without a violation of the compact, no matter what the cause, even though it is a cause entirely beyond our control, therefore when we come to fix an irreducible minimum it should be fixed at a point where nature will not compel a violation, or where we, in order to comply, would utterly deprive our territory of water. Therefore, I still believe four million feet should be the minimum.

MR. HOOVER: Mr. McClure ?

MR. MCCLURE: Yes.

MR. A. P. DAVIS: I want to ask what your convention is basing this minimum on. It is undoubtedly true any records of the past twenty years, - it may not cover the extreme, but we should remember this, that in a year like 1902 at Yuma was where most of the extreme drought was known, in which the entire southwest, - the whole Colorado basin, as the records show, suffered drought. Below Lee's Ferry the flow would be nearly nothing in that kind of a year, the losses there being the severest, and in a dry year they would be at least normal, and the probabilities are that it would be more. We have no records, practically, before 1901, and below Lee's Ferry the loss is very much greater than above, and the flow greater there than at Yuma, and therefore, I don't think it is an extreme consideration or an extreme conclusion to think there is a great deal more water at Lee's Ferry than at Yuma in that low year.

15th-S.F.

MR. HOOVER: Mr. Caldwell?

MR. CALDWELL: No, for the reason I voted against the other.

I may be wrong in this, but I will state it anyway: If we should have, arising from natural causes, - if we should have as dry a year as 1902 fall upon us we would naturally expect a lower minimum than we have because of diversions that have taken place in twenty years that have passed since 1902. Now, I would vote against practically any minimum for the reasons I have stated, because it is not backed up by storage, but I might vote for a larger minimum if it were backed up by storage. I might vote for this minimum if it were backed up by storage, /say this at four million, five million, four and a half million, I might vote for half of the minimum, providing reservoir storage is provided of a figure amounting to say, four or five million feet.

MR. HOOVER: Wouldn't you accept that if this pact depended on and only became operative when this storage was provided?

MR. NORVIEL: I will say as far as Arizona is concerned we will have no objection to that, a storage reservoir to take care of that minimum flow.

MR. HOOVER: Your vote is no, though?

MR. CALDWELL: My vote is no.

MR. McCLELLAN: Bearing in mind the statement that we each have the privilege of changing our mind on any point, and believing that if and when the upper states stabilize the flow of the Colorado River that the lower states will benefit thereby, I move that the minimum be set at four million acre feet.

15th-S.F.

MR. SCRUGHALL: I second the motion.

MR. MILLERSON: That is predicated upon storage, because we are going to agree upon some average flow.

MR. SCRUGHALL: Storage might be built, but not necessarily at any specific time or place.

MR. MILLERSON: I am going to take the privilege of changing my vote.

MR. CARPENTER: I don't think we should provide - -

MR. HOOVER: You can make a compact which becomes operative when storage is provided.

MR. CALDWELL: I am not prepared to say yes to your interrogation. I think we should have the utmost freedom here, and I think I should state, for the benefit of the conference, - I am voting no, perhaps not with enough consideration, that is the best thought I can give now, but I would be very glad to give the matter more thought.

MR. MILLERSON: Can we have this motion which is now before us ?

MR. HOOVER: On the basis of four million feet ?

MR. NORVILL: No.

MR. MILLERSON: Yes. I want to add this one further thought, it may not be new. If we were only figuring on direct flow alone, it might be fair to divide the lowest year there has been by two, thereby putting the burden of storage equally upon the upper and lower division, but so long as some protection, predicated upon storage must be furnished, the minimum flow should be below the average for the upper states.

15th-S.F.

MR. HOOVER: Mr. Davis ?

MR. S. B. DAVIS: Yes, with the reservation made.

MR. HOOVER: Mr. Carpenter ?

MR. CARPENTER: Yes, with the further observation, in answer to Mr. Davis, that we are here agreeing to deliver at Lee's Ferry, and predicating our figures here upon the flow of the river at Yuma, and inasmuch as the inflow between Lee's Ferry and Yuma at the time was nil, unless it might be the Gila, and that takes us into the realm of conjecture as to the inflow here, on one side, and loss on the other, but I am willing to vote yes on the four million feet.

MR. HOOVER: Mr. McClure?

MR. McCLURE: I made the motion, yes.

MR. HOOVER: Mr. Caldwell?

MR. CALDWELL: I vote no for the same reason, and I may reserve the right to change my mind if I want to vote yes after reflection.

MR. A. P. DAVIS: The record makes any information, - We have no record of the flow below Lee's Ferry prior to 1902, consecutive record, but we have a record for 1902, and the record for 1902, 1903, and 1904, all years of unusual drought; we have a record for Yuma for 1903 and the flow was a little more than in 1902. It shows a flow on the Gila of only sixty-one thousand acre feet, where the average is over a million, and it shows the next, a Yuma to be twenty-two thousand seven million, which was less than a quarter of the average, and confirms the statement I made, and if you will add

15th-S.F.

the normal flow of the Gila to that low year, and take from the other years, we will find it does not materially change the river.

MR. HOOVER: In other words, the Colorado River was more stable in that year than might appear from the figures ?

MR. A. P. DAVIS: Yes sir.

MR. HOOVER: The figure suggested at this time is four million feet ?

MR. McCLURE: Yes sir.

MR. HOOVER: We have in this case Mr. Caldwell in opposition.

MR. CALDWELL: (To Mr. Norvick) May I ask, you voted "yes" to four and a half million feet ?

MR. NORVICK: Yes.

MR. CALDWELL: It is just a matter of amounts with you ? That would leave me alone in this matter.

MR. HOOVER: Yes. As we don't make much progress in this direction, suppose we take up the question of an average period, and see where we stand on that question.

MR. CALDWELL: By "average" we mean a maximum to be delivered during a period of years ?

MR. HOOVER: Yes, an amount to be delivered during a period of ten years, - five years, - seven or three.

MR. CALDWELL: I think the use of that word " average " has been more or less confusing.

MR. HOOVER: The total minimum figure, because you

15th-S.F.

43

couldn't stop the maximum, - that is beyond human means.

MR. NORVILL: I move the period be fixed at five years.

MR. HOOVER: It being, in a sense of the word, the water during a five year period ?

MR. NORVILL: During a five year period.

MR. CALDWELL: With a minimum ?

MR. NORVILL: With a minimum.

MR. S. B. DAVIS: During that period we would deliver a total of five times whatever minimum was agreed to ?

MR. HOOVER: No.

MR. S. B. DAVIS: What does it mean ?

MR. HOOVER: A total in some average which we are to agree upon.

MR. CALDWELL: With a minimum during one year.

MR. S. B. DAVIS: There being no understanding as to what/ ^{that} average is to be ?

MR. HOOVER: Simply a total for the period of years. Will somebody second that motion as to the five year period ?

MR. SCRUGHAM: Yes, I will second it.

MR. HOOVER: And the motion is, I think, to put it properly in this form, that the total to be delivered over, - the total average is to be determined as the total delivered over a period of five years.

MR. SCRUGHAM: We are ^{to} determine the period at this time without figuring the amount, which is not yet agreed upon.

MR. HOOVER: We are to determine that later on.

15th-S.F.

44

MR. CALDWELL: Again I suggest that the word "average" is confusing, because, after all, we are just trying to determine what the maximum amount delivered will be.

MR. HOOVER: It is instead the total minimum, in fact, because we can't control the maximum. The motion is put, for a total minimum to be determined over a five year period. Mr. Emerson?

MR. EMERSON: No.

MR. HOOVER: Mr. Scrugham?

MR. SCRUGHAM: Yes. However, Mr. Chairman, it would be desirable if we could have some further explanation of the motion.

MR. EMERSON: I take the discharge of the Colorado River at Laguna over a twenty year period, and take one series of five years, - it reads 93, 56, 69, 60 and 98, which indicates that the five year period may very well come when the river would be decidedly below what might be considered a normal flow, therefore I consider the period too short.

MR. HOOVER: Mr. Emerson, if five years were the period it will be less than on a ten year period?

MR. EMERSON: That is true, it would have an effect that way. The upper states could possibly agree to a five year period with a smaller flow.

NORVIEL:

MR./ It is a flexible volume to be delivered?

MR. EMERSON: No, a minimum volume.

15th-S.F.
45

MR. S. B. DAVIS: It seems to me the two things almost go together.

MR. HOOVER: I think it would be better to discuss the question of amount first, and the amount would be less over a five year period than a ten.

MR. NORVILL: It would be just half as much.

MR. HOOVER: No, less than that.

MR. NORVILL: That is one of my problems.

MR. SCRUGHAM: A total minimum for five years ?

MR. NORVILL: We are not fixing an amount of water on the five year average, or ten year average, but we are fixing an amount to be delivered, not equally, but an average equal amount during the period that we are to determine.

MR. HOOVER: Not an average, but a total.

MR. NORVILL: Total, -average annual, or total for the period.

MR. SCRUGHAM: A total minimum ?

MR. NORVILL: A total minimum, or average minimum for the year. That is to be fixed in the figures, - during a period of twenty years, as Mr. Carpenter set out.

MR. LEBERSON: No, the twenty years does not have anything to do with it.

MR. NORVILL: Sure it does, basing the average amount to be delivered on this basis.

MR. LEBERSON: He just uses the figures in arriving at the figures for the ten year period.

15th-S.F.

46

MR. NORVIEL: He takes this as a basis to work from.

MR. HOOVER: I think we could get at it more intelligently to take Mr. Carpenter's figures for the ten years, then if a motion to reduce the period becomes logical, wouldn't that be easiest?

MR. S. B. DAVIS: Mr. Carpenter's idea of six million something for a ten year period, a total of six million two hundred thousand?

MR. LILSON: It is a total amount over a certain term of years.

MR. HOOVER: Mr. Carpenter, I think we might get at it more intelligently to take, from your point of view of a ten year period, and say, if we can agree upon that ten years, then, if any question of a reduction in the time comes up we could work from that.

MR. CARPENTER: The aggregate minimum delivery in a ten year period. I make that motion.

MR. SCRUGGAM: I second the motion.

MR. NORVIEL: Mr. Chairman, the basis of figuring is erroneous, if we are ready for suggestions, the basis of figuring is erroneous in this, that the average of seventeen million four hundred thousand acre feet is the amount as shown by the record in the river at Yuma, - or is it Laguna?

MR. HOOVER: At Yuma.

MR. NORVIEL: And does take care, or include, - or exclude, perhaps the evaporation of the river at that point, and does include the whole use of the water above that point, but does not exclude the use of the water in the Imperial Valley, and

if we are excluding the use of any water we must exclude the whole use of the water, and therefore these figures would not be a proper basis from which to work, because they leave out possibly the largest single acreage or project in the whole basin, and that must be taken into consideration to base your calculations on.

MR. CARPENTER: As I understand Mr. Horvick, there is quite an area of land from two to three hundred thousand acres, of what I might term overflow land, for want of a better term, in Arizona, along the river between Lee's Ferry and Yuma, from which large evaporation occurs during the greater flow of the river, most of the water being distributed in thin sheets over a large area. As I further understand, if the river is regulated, the water will automatically be withdrawn from a considerable part of this land, so that evaporation must be reduced. In your suggestion you spoke of the Imperial Valley. The amount passing Yuma includes that which is diverted in the Imperial Valley. It was my thought, as to the uses above Yuma in the various areas, that they would largely compensate, not of course exactly, so that we could take the record of a twenty year period as an approximate basis from which to work, if it is thought advisable and proper that my theory of compensation is proper, deductions could be made for those uses in the Imperial Valley, and is an absolutely consumptive use, so far as this river is concerned, the same as tunnel diversion or direct evaporation would be.

15th-S.F.
48

MR. HOOVER: As I understand, your whole basis is a proposal that during this whole period, before any provision, whatever may be determined on, shall be a fifty-fifty division of the water in the basin ?

MR. CARPENTER: As nearly as we can approach it, yes.

MR. HOOVER: And that, therefore, you have taken as a basis here, - Mr. Norviel disagree with the basis because of those debits and credits, is that right, is that the facts ?

MR. NORVIEL: Yes, sir.

MR. HOOVER: When translated back to Lee's Ferry we need to make certain debits and credits to get to the Lee's Ferry basis ?

MR. CARPENTER: Yes, sir.

MR. HOOVER: I would suggest that Mr. A. P. Davis might give us the debits and credits that arise in this situation. For instance, the evaporation problem and the inflow below Lee's Ferry; there is the problem of the increased consumptive use in the northern territory, as they may affect that average at Yuma.

MR. CARPENTER: Increased use, also, in the southern territory.

MR. HOOVER: And perhaps Mr. Davis could approximate what the debits and credits are either way, thus establishing Lee's Ferry as a sort of basis. That might assist very considerably in this direction, because we could get promptly to quantity.

MR. NORVIEL: If I may remark, Mr. Chairman, I have before me here a memorandum which has been worked out by Mr. Hoyt and Mr. Grover, than whom I presume there is no better authority

on the quantity of water during any period, be it one or more years, in the basin, and who, I understand, had access to, and the assistance of the Reclamation Service, than which there is no better authority as to the quantity of land available for irrigation now and in the future within the basin, and they had very carefully, I take it, worked this matter out, disinterestedly, in a purely scientific, cold, calculating manner and method to arrive at a just conclusion, and I believe they are right and I am willing to accept their figures on the division, and I honestly think that it would be just and right to take their figures as a basis of our compact.

MR. CARPENTER: May I ask, not at all to embarrass you, if the conditions were reversed, and the basis you suggest had been reversed as respects the upper and lower river, would you have been just as willing to take their figures ?

MR. NORVIEL: Absolutely. I believe they worked from an honest beginning, arriving at a just conclusion, and as I said, and repeat, we want nothing more than what is just and right.

MR. S. B. DAVIS AND MR. CALDWELL: What would the amount be, based on those figures ?

MR. NORVIEL: The thirty-five sixty-five per cent basis heretofore submitted.

MR. S. B. DAVIS: What I am trying to get at, - Mr. Carpenter has worked out sixty-two million feet --

MR. CALDWELL: As to that matter, the U. S. Geological

15th-S.F.

50

Survey is just as authoritative, - of course, these gentlemen are connected with the Geological Survey, so it is only a question of the way in which they have worked up the figures,- I mean the way in which they have approached it, figuring from a thirty-five sixty-five per cent basis instead of a fifty-fifty.

MR. NORVIEL: I understand that they had the assistance,- I might ask Mr. Davis, whether he knows whether they consulted the Reclamation Service in preparing this ?

MR. A. P. DAVIS: Not to my knowledge. I have no doubt that they used all the data that we have available, but in reaching their conclusion of percentage division, that was as new to me as to your Commission, when it was presented.

MR. NORVIEL: My recollection is quite clear that in talking the matter over with Mr. Hoyt he said they had used all of the Reclamation data that was available in reference to working out this basis.

MR. HOOVER: What are the figures ?

MR. NORVIEL: Thirty-five percent and sixty-five percent. The thirty-five percent figured out as the ultimate necessity for the upper basin, and the sixty-five percent as the ultimate necessity in the lower basin.

MR. EMERSON: In regard to the thirty-five sixty-five per cent basis, they started out with certain facts as a basis, and then took a running jump of thirty-five sixty-five, that is about the proposition as I see it.

MR. CARPENTER: That is apparent from the basis of the figures.

MR. HOOVER: I was hoping to get at the basic figures.

MR. CARPENTER: I think the whole matter of the basic figures is a matter all should consider and review. I myself have been prevented from reviewing them before I came in here, and I have not had time since.

MR. NORVIEL: I think this is the crux of the situation, as I stated before, and we want to be very careful in making our deductions.

MR. HOOVER: I might read the last two paragraphs here, I don't know whether you all have it: (Reading from paper entitled " Press Notice From U. S. Geological Survey " "An equitable division of the water of Colorado River ")

" It is believed that all interests will be fully protected by an agreement that at least 65 per cent of the present flow shall reach the canyon section of the river and that no rights for power or irrigation shall be created in or below the canyon that will deprive the State of Colorado, Wyoming, and Utah of a right to consume 35 per cent of the present flow above the canyon. This allotment should apply for 50 years, after which a new agreement should be made."

Obviously that paragraph is a matter of opinion. The statement goes on:

" On this basis of division Colorado, which contributes 11,800,000 acre-feet to the flow of the river, would retain 4,130,000 acre feet, which, with an average consumption of 1-1/2 acre-feet per acre, would irrigate 2,753,300 acres. It would release to the lower river 7,670 acre-feet. On the same

15th-S.F.

basis Wyoming, which contributes 2,300,000 acre-feet, would retain 805,000 acre-feet, enough to irrigate 536,600 acres, and it would release to the lower river 1,495,000 acre-feet. Utah, which contributes 2,300,000 acre-feet, would retain 805,000 acre-feet, or enough to irrigate 536,000 acres, and would release to the lower river 1,495,000 acre-feet.

" Various estimates have been made of the additional irrigable lands in Colorado, Wyoming, and Utah. These estimates generally come well within the additional acreage for which water would be available under the plan of division set forth above. Furthermore, it is interesting to note that the records at Yuma, covering 18 years, as well as those for other stations, in the drainage basin, show that irrigation has not yet had any appreciable effect on the total flow past the gaging stations.

" By this plan 10,660,000 acre-feet would be released above the Utah-Arizona line, or 9,100,000 acre-feet of Colorado and New Mexico are allowed to use the total flow of the San Juan.

"With an average consumption of 3 acre-feet per acre in the lower basin, the quantity of water allowed to pass through the canyon section will be sufficient to irrigate 3,033,000 acres. This area would include, however, the tracts now irrigated in Imperial Valley, as the diversion for that system is made below the gaging station at Yuma. In addition Arizona would have full use of the flow from Little Colorado, Williams, and Gila rivers, aggregating 1,375,000 acre-feet less

15th-S.F.

53

diversion from the Gila in New Mexico or enough to irrigate 425,000 additional acres"

In other words, the acreage provided for in the upper would be about three million four hundred and fifty thousand acres, and as against a probable acreage, including that already in use in the lower basin, not including Mexico, of about ten million; providing here for the minimum use in the upper basin, and allowing for the increase in the lower basin of approximately one million four hundred and fifty thousand acres beyond any known project. In other words, if you are coming into the area of providing for projects unknown there should be the same division with the upper states. The whole problematical development should not be thrown on the lower states, and I presume Mr. Carpenter had that in mind, when he proposed that the division should be on a fifty-fifty basis; in other words, by this plan, all the problematical development would be allowed in the lower states. That goes right to the point we were discussing, and with an equal problematical future development, - that being equally divided between those divisions, that would probably get back to the fifty-fifty division.

MR. ELLERSON: That is presumed to be founded on facts.

MR. HOOVER: In other words, the Geological Survey lower division, and no problematical development in the assumes all the problematical development in the/ upper.

MR. CARPENTER: I considered at the time I made the proposal that considering the probable demands the percentage between the two plans would be a very small difference.

MR. HOOVER: I think that would come nearly to a fifty-fifty division if you divide the problematical development between the two basins, instead of a thirty-five sixty-five.

MR. NORVIEL: Well, quite beyond the problematical development, it is hard to arrive at a just increase.

MR. ELLERSON: Would it be worth putting a motion to ascertain whether we can agree upon the general principle of a fifty-fifty division ?

MR. HOOVER: Perhaps we would come nearer an agreement if we had from Mr. Davis such a statement as I suggested.

MR. ELLERSON: We might agree upon the principle, rather than the quantity.

MR. NORVIEL: I don't think there ought to be anything of that kind in the record, we could not get behind and justify a fifty-fifty division unless based on facts.

MR. HOOVER: What I suggested a while ago, sometimes it is easier to agree upon a method than a principle, and I should think this is one of the cases. I am wondering if Mr. Davis would give that ?

MR. A. P. DAVIS: I can't say without some instructions on which to proceed. As I understand, the problem is translation of the records from Yuma, or wherever they can be found, to Lee's Ferry, and the irrigated land in the Imperial Valley taken into consideration, and any other diversion from the river, and so arrive at the fifty-fifty division. I hope the Commission will be satisfied to accept the measurements as

15th-S.F.

55

made, possibly at Yuma, because if we undertake to do that we can only make a very rough approximation; in our report we have roughly made some reference, and of course, called attention in the text,- but the Imperial Valley development began in 1902, that is the first year they turned the water in there, about 1902 I think, a little in 1901, and there has been more or less irrigation there since that time, and I doubt if we could obtain records of that without great trouble in examining the state records as to such development and use, and I suppose, therefore, for your consideration, as a basis of this argument, that such measurements as are made at Yuma, could be used in translating that back to Lee's Ferry.

MR. HOOVER: Will you, more or less, reduce the debits and credits, in evaporation or use that occur between Lee's Ferry and Yuma ?

MR. A. P. DAVIS: Yes, I will undertake that.

MR. NORVIEL: We are willing to accept Mr. Davis' statement made last evening to offset the inflow below Lee's Ferry and above the Gila, the evaporation between those points.

MR. A. P. DAVIS: I am glad Mr. Norviel is willing to accept that because that could not be very far out either way.

MR. NORVIEL: It would not be very far off either way ?

MR. A. P. DAVIS: No, in my judgment it would be very close.

MR. HOOVER: If we are going to accept the inflow as equal to the evaporation, and translate that up to Lee's Ferry, would that be acceptable to you Mr. Carpenter ?

15th-S.F.
56

MR. CARPENTER: No, I would not say it is. I have great respect for your Reclamation figures, but Mr. Meeker is the one upon whom it will rest to justify our figures to our legislature, and I want him and Mr. Davis to agree in order that we may have no unfortunate kick-back, if I may use the term, later. I just want the facts.

MR. A. P. DAVIS: Might I consult with anyone in making up these figures ?

MR. HOOVER: I would suggest that you consult with Mr. Meeker.

MR. CARPENTER: Whatever you and Mr. Meeker agree upon will be acceptable to me.

MR. HOOVER: In this simplified manner is it likely this will take long ?

MR. A. P. DAVIS: No sir, I don't think it would.

MR. HOOVER: It might be well to adjourn then until such time as the figures are ready, - I would suggest three o'clock.

The meeting adjourned at noon to meet again at three P. M. November 14th.

Clarence C. Stetson

Executive Secretary.

The above minutes were approved at the 27th meeting of the Commission held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

MINUTES OF THE

16th MEETING

COLORADO RIVER COMMISSION.

The sixteenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Tuesday afternoon, November 14th, 1922, at 3:00 P.M.

There were present:

Herbert Hoover,	representing the U.S.,	Chairman
R. E. Caldwell,	"	Utah
Delph E. Carpenter,	"	Colorado
Stephen B. Davis, Jr.,	"	New Mexico
Frank C. Emerson,	"	Wyoming
W. F. McClure,	"	California
W. S. Norviel,	"	Arizona
James G. Scrugham,	"	Nevada
Clarence C. Stetson,		Executive Secretary

In addition there were present:

Thomas E. Campbell,	Governor of Arizona.
Merritt C. Mechem,	Governor of New Mexico.
L. Ward Bannister,	Chairman of Committee of Interstate Waters of Denver Civic Association.
Edward W. Clark,	Joint Commissioner and Advisor for Nevada.
Arthur P. Davis,	Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottamar Hamel,	Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Charles A. May,	State Engineer and Advisor for New Mexico.
R. T. McKisick,	Deputy Attorney General and Advisor for California.
R. I. Meeker,	Deputy State Engineer and Advisor for Colorado.
P. G. Spilsbury,	President, Arizona Industrial Congress and Advisor for Arizona.
Charles P. Squires,	Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsoe,	Advisor for Utah
Richard E. Sloan	Legal Advisor for Arizona.

16th-S.F.

1

The meeting was called to order at three o'clock, P.M., by the Chairman, Mr. Hoover.

MR. HOOVER: We left the discussion to await a report from Mr. A. P. Davis on an approximation of the flow at Lee's Ferry. It might save time if we take up some other phase of the discussion until we have Mr. Davis' views.

One question that has been raised several times and we have not dealt with concretely, is the relation of this pact to storage. Mr. Norviel in his proposal makes a specific provision and we might discuss whether the pact should embrace some condition as to storage. In other words, that the pact might not become operative until storage was provided. If such a suggestion were incorporated it would be necessary to set some minimum of storage that would be the criteria of operation. I think it appears to all of us that we are really doing nothing unless there is storage, that the river isn't in a situation today to permit of any further development of any consequence unless storage is provided; that this pact, whether it refers to the matter or not, does in fact revolve upon storage, but it might loosen it up a little if we did incorporate some basis of that sort.

MR. NORVIEL: Perhaps it might clarify my thought a little before the Commission if I just make a suggestion along that line. It is true that we will have storage in any event or else all that we are doing is vain, probably, but it is conceivable to my mind that we might have a tremendous amount of storage along the river and yet not have any provision at all made for reserve storage,

15th-S.F.

2

as I have suggested, and really that is the distinction that I would wish to make in my suggestion for the pact. It isn't merely dependent upon storage but dependent upon a reserve storage capacity for the purpose of equalizing the flow in order that we may maintain past Lee's Ferry, or to the lower basin, some minimum annually.

MR. HOOVER: Well, do you refer to annual reserve or seasonal reserve?

MR. NORVIEL: A season to season reserve storage capacity.

MR. CARPENTER: Year to year.

MR. NORVIEL: Year to year, wet to dry capacity. Now, to be a little more explicit, it is conceivable to me that storage in the upper basin may be conceived and built merely for power and there would be no reserve storage in it. The same thing could happen on the lower, or it may be built for irrigation with no reserve storage in it.

What I am trying to point out is, probably the simplest thing would be to provide for some reserve storage for the express purpose of equalizing this flow so that the minimum requirements of the lower basin may be met certainly. I may point out that in my judgment it may be many years before that reserve storage would need actually to be provided, but we should provide for it now by agreement. I say we should,--that is just a thought.

MR. HOOVER: You mean by providing by agreement. It is utterly impossible for the seven states to make an agreement to construct storage, that is infeasible, but what the seven states could do would be to agree that this compact wouldn't be enforceable until storage had been provided.

16th-S.F.

3

it in connection with other structures which may be built at this time on the river.

MR. HOOVER: Before we discuss it let's decide on some terminology. When we say reserve storage we mean storage from year to year; when we say control we mean control of the seasonal flow within the year. If we can stick to those two terms we probably will save a lot of explanation and description.

MR. EMERSON: I again take exception to the statement that further large development on the river is now about to cease, or must cease until we get some storage. I can't conceive but what we have the right to continue in Wyoming to develop as fast as we find our projects feasible. We have continual development up there all the time and our position has been made stronger in this regard by reason of the Wyoming-Colorado case. It is certainly a fact that a great amount of water is now passing out through the Colorado River unused and the Supreme Court has held,-- when you know the opinion in the Wyoming-Colorado case,-- that the lower states must conserve the surplus waters of that stream before they can get action against the upper appropriators and I know of no way that development in Wyoming could be stopped by reason of the fact that there is possibly a shortage in the low water season on the lower reaches. It is my opinion we can go ahead unless the Supreme Court in other actions should reverse its position in that case.

MR. HOOVER: Perhaps my remark would be clearer if I amended it to the effect that Wyoming could develop, yet such development would check development below. We won't get development of any

16th-S.F.

5

great agricultural area unless we have storage.

MR. EMERSON: You could in the upper states at least.

MR. HOOVER: That would be a penalty to the lower States.

MR. CARPENTER: It would tend to enforce the storage of that below.

MR. CALDWELL: We won't solve the Colorado River problem without storage.

MR. EMERSON: No, that is true. I haven't thought of making a compact that would only be operative upon the provision of storage. If the upper states agree to deliver a certain amount of water to the lower states at this point of demarkation at Lee's Ferry it seems to me we have gone far enough and if that compact should become operative and the lower states of necessity would furnish the storage they would require, the upper states could be depended upon to get behind their program of providing the storage works, but I can't say at this time that we would be willing to make it contingent upon the provision of storage before the compact became operative.

MR. HOOVER: What would be the effect on the present situation of a compact that was operative from the beginning?

MR. EMERSON: Well, it would,--

MR. HOOVER: Supposing it one without storage?

MR. EMERSON: Without storage?

MR. HOOVER: There would be some period without storage, what would be the effect during that period?

MR. EMERSON: Why things would go on just the same as they

16th-S.F.

6

would go on anyway.

MR. CALDWELL: I think they would go on, Mr. Chairman, the same as they are going on now under the suggestion that I have made with respect to this matter.

MR. NORVIEL: I can't agree with that statement either, if we enter into this sort of an agreement. There would be no recourse to anyone below against anyone above the point of demarkation and I am of the opinion that the pact should remain inoperative until storage is provided.

MR. CARPENTER: Then immediately will arise, I fear, the desire that the storage provision apply to both basins.

MR. NORVIEL: No.

MR. CARPENTER: No, I say it will naturally arise, the desire upon the part of the upper basin that numerous reservoirs be there constructed by advocates of early construction up there, which I believe will tend to cloud the horizon in deriving the benefits to the lower river. If you recall at the outset of this conference, there was back of a number of us a strong pressure to insist that the storage upon the river should proceed from the top down and that in turn, - I felt for my own part, - would tend to retard the large development in the canyon, hence it has always been my view that by making a division of the water, settling the title to the water, making a pact operative with the title vested, then, that left an absolute freedom without commitment, which in turn would permit a concentration of effort for the works necessary for the protection of the Imperial Valley and this without drawing in a condition precedent. That condition would develop a rivalry which

16th-S.F.-7

I felt might defeat the very object that the southern part of the river wishes to accomplish. When this title is settled, then, the next thought which will be prompted, I believe, in the mind of every fair man would be "save inundation of the Imperial Valley", which in turn will bring with it the very maximum storage development you folks need below. That was my line of thought, roughly.

MR. NORVILL: I had in mind, Mr. Secretary, the statement Mr. Carpenter just gave expression to but hesitated to express it, that in the early discussions of this question there was a strong impression given out that the early development of the river should be above, including the storage, and I will add that there was an objection to the development by construction of large reservoirs below because of the fear of establishing priorities there and those two things were, I might say, the incentive for what we are doing now. I doubt whether that thought has been eradicated from the minds of the upper-staters and, therefore, I don't think this pact that we propose should be made operative with that strong desire still existing that the reservoirs and the development of the upper states should not be made until the storage is provided below. While I feel that they would be fair with us, perhaps they might not lend that moral assistance that they would if it were necessary for us to provide storage in the lower division. They might not try to assist us, perhaps, in obtaining the financial aid which we must have to construct the large works in the lower basin, and the pact should not be operative until that is done.

16th-S.F.

8

MR. HOOVER: That brings us to making a very difficult bargain here,- where the specific site of the storage will be.

MR. CARPENTER: May I illustrate? It has been my thought that here is a given block in a city upon some part of which, in order to protect certain parties, it is necessary to build a structure; that the title to the land on which the structure will be built is in dispute, or may become in dispute. It is my thought that we should now proceed to settle the title to the lot, then that leaves us free not only to permit but encourage the construction of the protective structure which the other party needs. To condition the vesting of the title upon the construction of the structure might meet much opposition, supported with great force by many arguments, while to clear the title now you clear the decks and leave an open field, with no objection.

MR. HOOVER: If the decks were cleared and if when it came a question of appealing for federal support to construct your reservoirs we found a conflict between the states; it would be very regrettable, wouldn't it, and would probably destroy the hopes of the southern states to secure consummation?

MR. CARPENTER: I may say in that respect it has been my view, and I speak only for myself, that the prompting of necessity and of insistence of humanity would justify us in adopting, not as a part of the compact but as a separate recommendation, such a resolution or memorandum as would bring to the attention of all parties the necessity of large construction of a type adequate to give protection, and permanent protection, to the Imperial Valley

16th-S.F.

from inundation and I see no objection to adopting such, my thought being that we proceed upon the fundamental idea that the instrumentality by which it is constructed, the source from which the monies are drawn, should be left open so that every available resource be marshalled from whatever quarter to accomplish that great work and, as a mere incident of that stupendous duty confronting us, development of the lower valley will follow. I would be perfectly willing to commit myself to such a policy.

MR. NORVIEL: Perhaps that sort of commitment from each of the states would take care of the situation.

MR. HOOVER: I am wondering whether we couldn't advance a little by the suggestion; that the southern division should, under a general interpretable clause assume the obligation to provide storage, and that therefore they would have the right to designate where they would have the storage built, the other states to agree to support such a designation by the southern states.

MR. CARPENTER: From my own State's standpoint as a State, standing alone, wherever it is built it will be satisfactory to us but how far the other states would care to join in that opinion would be another question.

MR. CALDWELL: As for Utah, Utah would like to see the best structure and the best location to accomplish the purpose, wherever that may be.

MR. CARPENTER: I join in that.

MR. CALDWELL: Personally there are no prejudices on my part or on the part of the people I represent, so far as I know.

16th-S.F.

10

MR. CARPENTER: I realize there can be quite a divergence of opinion and I have heard mutterings of such,- i.e. as to which is the best site.

MR. HOOVER: My thought was that the upper states, having furnished a certain amount of water, are no longer interested in where the structure is erected. If the lower states secure the moral support of the northern states in their application and desire for finance, it might clear the way very materially in this whole matter.

MR. CARPENTER: The exact degree to which that commitment might go would be a matter for mature thought. I wouldn't want to do any violence to the pact or its adoption by the memorandum and to that degree,- proceeding more from ordinary prudence, - I believe we should have time for reflection upon it but for my part I am willing to join in any memorandum that is generally satisfactory to us all. The prime purpose of building works for the lower division should not rest upon increased development,- because they know that we feel we have just as much right to improvements as the lower territory and our population has just as much right to advancements as theirs,- but upon a bigger basis and that is, that of a meeting of emergency, preventing the inundation of the Imperial Valley. As an incident of that great construction the improvement below will naturally follow.

MR. HOOVER: Don't you think, Mr. Norviel, some such an expression as the gentlemen make meets your position very considerably?

16th-S.F.

11

MR. NORVIE: I had hoped to get that kind of expression,
but I was wondering whether this is ^{an} opportune time to ask for it.

MR. HOOVER: I see no reason why we shouldn't go on with the discussion a little.

MR. NORVIEL: I think so, I think it should be given consideration.

MR. CALDWELL: Mr. Chairman, this question came up, it seems to me, somewhat illogically, growing out of the question or a suggestion by Mr. Norviel who couldn't see how a compact could become at once operative unless storage were provided. I have made the statement that I believe a provision for storage and the building of storage is not a prerequisite to the operation of this compact. I think that is true because the river is going down today and it went down yesterday and it will go down tomorrow. The thing that the lower basin wants to know is that a certain portion of that river will continue to go down. The thing that the upper basin wants to do, and the lower basin wants to do I would say, is to help see to it that a certain amount of water goes down to the lower basin. ^{for the purpose} A large storage for that purpose, -/ of irrigation, is not necessary, - absolutely necessary, at this time and may not be for some time to come, at least as long as the minimum which the lower basin will need continues to come down the river, - the minimum in acre feet, in such a way that they can use it. Now that may continue for some time.

The great necessity on the river of course is the control of the river for protection purposes. Now if we sign a compact which

16th-S.F.

12

says that the lower basin is entitled to, say, six million, eight or ten million acre-feet, every season down the river, provided a certain amount of storage is made available on the river, that is a perfectly good agreement to go into effect now and we may go on under that agreement for ten, twenty or thirty-five years and the necessity for the storage may never arise, but the agreement can stand and the pact can be operative.

Now that is just by way of making myself clear on that proposition.

MR. HOOVER: Your thought was to make the compact, so far as the minimum assurance is concerned, operative as against storage?

MR. CALDWELL: Yes. We have been using that "minimum" and "maximum" and I think it makes a little difference as to which basin you live in whether it is minimum or maximum; a maximum from the upper basin, a minimum to the lower basin.

MR. HOOVER: Just to formulate that so I understand it, your thought is that if the upper states agree to a minimum for any one year that that agreement should be contingent on storage having been erected?

MR. CALDWELL: That is it.

MR. HOOVER: That is the compact is not inoperative prior to that, but that only the minimum comes into effect when storage is provided?

MR. CALDWELL: That is it, that is the point exactly. That is what I had in mind, and as to the other question that grew out

16th-S.F.

13

of that, I have always believed that the conclusion of a pact among these states, that was agreeable, would be the greatest possible single factor in bringing about the development which is necessary for the control of the river for the benefit of the lowermost acres. But I have said to myself all the time that the matter of the actual development is the second step and I have been thinking in that order. Personally, after we have arrived at a pact nothing would give me more pleasure than to enter very seriously and earnestly and honestly into a discussion, if indeed it were at all necessary for me to enter into it, as to how the river should be developed to meet all the conditions of the pact and all the requirements of all the people on the river.

MR. NORVIEL: May I ask Mr. Caldwell,- as he expresses it I don't get it,- if he has in his mind that it makes no difference whether the storage is above or below the point of demarkation?

MR. CALDWELL: My thought on that has been that it probably would make no difference in the last analysis. In the draft which I submitted I said "if storage is provided at or above Lee's Ferry." I did that for mental classification largely, to indicate that if it were above there we could easily turn it down but if it had gone down we couldn't put it past Lee's Ferry. But if that same storage were provided below as a reserve and we had the credit in the bank, as Mr. Hoover puts it, I can't see why that could not be made to operate in the same way.

MR. NORVIEL: Then it resolves itself to this; if the storage

16th-S.F.

14

is in the upper basin we are assured only of the minimum flow,- the minimum average,- whereas we possibly might receive more if the storage is in the lower basin.

MR. CARPENTER If a large reservoir is constructed at or in the vicinity of Lee's Ferry, for illustration, probably the dam in your state and the body of the reservoir in Utah, for example, that should be subservient in its power use. It would be essentially a reservoir for the delivery of water to the lower region. It could be nothing else. The same would be true of any reservoir constructed below the mouth of the Green River or the Grand. No other use could be made of it except the mere generation of power or floating of boats, and we could get no irrigation benefit from such a structure. May I suggest that that was my thought in the compact that I suggested, although I don't believe I expressed it fully enough to bring it out clearly? Whatever the losses might be they could be more than compensated,- take your own statement for example, - from the power benefits to be derived. It would accomplish first of all the saving of humanity below and the saving of property and incidentally rich benefits would run to the lower territory, which would be entirely proper. In return for this, some day, the upper territory might look to you folks for a reciprocity in the matter of the upper development,- not so immediately, however, because there is no imminent calamity threatening us. Do I make myself clear to you?

MR. NORVIEL: I think you do, but I think the reservoir dam

16th-S.F.

15

at Lee's Ferry should be under the control of the lower basin as the water will have gone beyond the control of the upper basin, if it should be considered operative, in the same manner as if it were at Boulder Canyon.

MR. CARPENTER: I agree with you in that thought.

MR. NORVIEL: And that we may use the water as we see fit. We may use it all one year or scatter it over as many yearly periods as we please and that it should not affect the minimum flow.

MR. CARPENTER: Well, of course if you controlled the lake you could thereby control the flow past Lee's Ferry.

MR. NORVIEL: We might turn it all out this year if we saw fit and next year the minimum flow must come into it.

MR. CARPENTER: No, that would hardly be fair because you ought to have a large balance to our credit in that lake.

MR. NORVIEL: But I am speaking of minimum flow.

MR. CALDWELL: In the event Mr. Norviel speaks of I think he means you take one reservoir full out and put the other in which would otherwise have gone by as direct flow. Is that what you mean?

MR. NORVIEL: I mean this; that the water will have gone beyond your control. Whether we store it at Lee's Ferry or at Boulder Canyon makes no difference to you. The minimum flow must come into that lake, - into the lake, - whether it be at Boulder Canyon or at Lee's Ferry. It must come; the minimum irreducible flow.

16th-S.F.
16

MR. CALDWELL: It will run into the reservoir naturally.

MR. NORVIEL: It must be permitted to come into the reservoir.

MR. CARPENTER: There would be no trouble on that score, I am sure.

MR. HOOVER: We have advanced that idea a little for further consideration. We might go to the point we were on when we were awaiting Mr. A. P. Davis' return, and that was some approximation of the intrinsic flow at Lee's Ferry.

MR. A. P. DAVIS: Mr. Chairman, Mr. Hooker and I spent the greater portion of the time at our disposal on mooted questions concerning losses and inflow, which occur between Lee's Ferry and Laguna Dam and he explained his method of reasoning and I explained mine and we devised a new one, worked it out together, ^{not} and/knowing what the result was going to be until we got through, agreeing on the steps as we went along. We came to the conclusion that the mean annual losses, as nearly as we can get at them, between Lee's Ferry and Laguna Dam are about a million acre feet. These check within a very small percentage of the estimates of inflow which we together checked from Mr. Grover's figures and upon which we are agreed, so that we are now in accord that the nearest estimate we can make from existing data indicates that, on the average, the losses between Lee's Ferry and Laguna Dam just about balance the average contributions. We don't know which is larger. Some years one is larger and in other years the other is larger. We know that there is loss as well as inflow between Lee's Ferry and Laguna Dam and that they are each approximately

16th-S.F.-17

on an average about a million acre feet.

The other important point we considered was how the translation of those figures from Laguna Dam to Lee's Ferry would affect the minimum and we are agreed that the loss in extremely dry years would be perhaps about normal, - increased because of the greater aridity and diminished because of the less submergence of the bottom lands in those years, - somewhere about normal, and that the inflow would be greatly subnormal, almost negligible. We believe, therefore, that a low year's measurement at Laguna Dam transferred to Lee's Ferry should be increased by at least five hundred thousand acre feet.

So far we agreed upon those things and taking those figures and those conclusions it follows that, in the long run and on the average, measurements at Laguna Dam are good for Lee's Ferry, corrected by individual years, but the mean would be about the same.

To correct for this minimum, we agreed upon adding five hundred thousand acre feet to the low years and deducting the same amount from the highest years. That keeps it from affecting the mean. The same logic applies for high years, as the tributaries would contribute more in a high year than in a low year, when the loss would be somewhere near normal.

On page five, Senate Document 142, 67th Congress, 2nd Session, "Problems of Imperial Valley and Vicinity," is the table that you are familiar with. This shows the discharge at Laguna

16th-S.F.
18

Dam. That doesn't include the Gila but does include the water that runs down to the Imperial Valley.

MR. CARPENTER: Then the table you have just mentioned is not the table or amount of water that ran by Lee's Ferry?

MR. A. P. DAVIS: No.

MR. CARPENTER: But there should be added to that amount the five hundred thousand extra for the very extreme low years?

MR. A. P. DAVIS: Five hundred thousand additional in extreme low years.

MR. HOOVER: My mind is a little mixed. In the first place, on page 5 are given the gaugings at Laguna Dam which do not include the Gila flow. Mr. Carpenter's calculation is based on the gaugings at Yuma, which I understand include the Gila and that is the difference between Mr. Carpenter's basis and the basis of the Laguna gaugings. Is that not true?

MR. CARPENTER: No, partly correct. I didn't deduct the loss in the river from Lee's Ferry to Laguna.

MR. HOOVER: I was saying the difference between your calculations and the Laguna gaugings is simply the flow of the Gila. The Laguna gaugings do include water which goes into the Imperial Valley.

MR. CARPENTER: Yes, sir.

MR. HOOVER: So that if we take the Laguna gaugings instead of the Yuma gaugings we would exclude the Gila flow.

MR. A. P. DAVIS: We would exclude the Gila flow, but we include the diversion for the Yuma project. The measurements at Yuma on

16th-S.F.

19

the other hand do not include water diverted for the Yuma project, but include the Gila. When you measure at Yuma you are measuring above the Imperial diversion and below the Laguna Dam diversion.

MR. HOOVER: The Laguna Dam gaugings include water which goes to the Yuma project?

MR. A. P. DAVIS: They do.

MR. HOOVER: So they include the whole flow of the Colorado River at that point?

MR. A. P. DAVIS: At that point, yes, sir. That is what they are intended to include, the whole flow there, which is above the Gila and of course excludes that.

MR. HOOVER: Then the problem also goes into the consumptive use in the upper basin. In order to reconstruct the river the consumptive use in the upper basin must be taken into account. Is it true that the Laguna gaugings include the Imperial Valley?

MR. A. P. DAVIS: Yes.

MR. HOOVER: The Imperial Valley diverts below?

MR. A. P. DAVIS: Yes.

MR. HOOVER: Consequently at Laguna you have the whole flow of the Colorado River at that point?

MR. A. P. DAVIS: Yes.

MR. HOOVER: Without deductions, except the Gila.

MR. A. P. DAVIS: Yes.

MR. HOOVER: And if you were to reconstruct the river you

16th-S.F.

20

must also take account of the consumptive use of the upper basin and add that to the Laguna gaugings, and ought to add also the Gila flow. Have you a rough idea as to what the flow of the Gila would be if it had not been used for irrigation, or what the consumptive use, plus the present flow is?

MR. A. P. DAVIS: I can estimate that fairly closely. The mean annual flow as measured during the last twenty years is 1,070,000 acre-feet. The areas that are irrigated there are given in this document, 142,- and we can apply a duty of consumptive use of water on that area and approximate fairly well, I believe, the consumptive use in the Gila Basin, if that is what is wanted.

MR. HOOVER: My only point on that is, does it approximate, possibly, the amount of consumptive use in the upper basin?

MR. A. P. DAVIS: Oh, no, it is smaller. The consumptive use in the upper basin is on that table I gave you.

MR. HOOVER: About two million four hundred thousand?

MR. A. P. DAVIS: In 1902 the consumptive use was about 2,400,000 acre feet.

MR. CARPENTER: That is a progressive increase from 0 up?

MR. A. P. DAVIS: Yes.

MR. CARPENTER: You would think the Gila consumptive use would be something over a million and a half feet?

MR. A. P. DAVIS: Very likely less than a million and a half. But I am not sure about that till I figure on it a little.

16th-S.F.

21

MR. CARPENTER: In other words, there might be - - -

MR. A. P. DAVIS: (Interrupting) There would be a good deal less.

MR. CARPENTER: There might be, then, a million feet to go into this calculation for translating back from Laguna gaugings?

MR. A. P. DAVIS: To include the Gila, yes. It doesn't seem like it would apply to the Little Colorado, as its contribution is offset by evaporation. There is very little outside the Gila Basin that is not thus offset.

MR. CALDWELL: Mr. Davis, just where is the Gila measured?

MR. A. P. DAVIS: There have been different points; one was at Dome.

MR. CALDWELL: Tell me where it is with respect to the mouth?

MR. A. P. DAVIS: Dome is about twelve miles above the mouth, and that was changed on account of difficulties of measurement, but not very materially.

MR. CALDWELL: This million seventy thousand you speak of is an average flow, is it?

MR. A. P. DAVIS: Yes.

MR. CALDWELL: Average annual flow over how many years?

MR. A. P. DAVIS: Eighteen years, I believe. It is all published in Senate Document 142.

MR. CALDWELL: That is near enough.

MR. HOOVER: On the table on page five, Senate Document 142, take 1920 for instance, you have 21,100,000. That is the Laguna flow.

MR. A. P. DAVIS: Yes.

MR. HOOVER: What would be added here, as a rough guess would be, the flow and consumptive use of the Gila and Little Colorado and the consumptive use of the Colorado below Lee's Ferry and above Laguna. This all comes to about a million and a half, and the consumptive use in the upper basin ^{is} 2,400,000 so it would be a credit of water to the Laguna readings of approximately a million feet, something like that.

MR. CARPENTER: Yes. If there are others, like the Virgin and other rivers, that would be still more of a reduction.

MR. SCRUGHAM: I thought the Imperial Valley had a heading somewhere at Laguna. What was all the disturbance by the Yuma people?

MR. A. P. DAVIS: They have contracted for building their canal and heading it at Laguna and have agreed to do that, but never have done it. They have never taken any water out above the Yuma project. The best use of the Gila, as I said yesterday, is in its own valley and that probably will be accomplished some day.

MR. HOOVER: Would it be possible for you to recast some figures in the light of the counteraction of deducting the Gila flow and consumption from the upper basin flow and consumption?

MR. A. P. DAVIS: The lower basin consumptive use you mean, don't you? Make some approximation of a difference in consumptive use between the lower basin and the upper basin, exclusive of the Imperial Valley, and add that to these figures.

16th-S.F.

23

MR. HOOVER: You would have to add to the consumptive use the flow of the Gila over and above its consumptive use.

MR. A. P. DAVIS: Did you want the flow of the Gila included also?

MR. HOOVER: It is a part of the drainage basin.

MR. CARPENTER: You are now revolving as I revolved at one time and I decided consumptive uses had better offset one another and took the figures as printed.

MR. A. P. DAVIS: I don't know how near they would do that. You don't mean to undertake to run that back over twenty years,- take it as it is now; is that what you mean?

MR. CALDWELL: Run it back/^{over}twenty years.

MR. A. P. DAVIS: If given time I could make an estimate that would be worth something. The present consumptive use we practically know. How that has grown is a matter of history.

MR. HOOVER: I might phrase it in another way perhaps. On page 5 of Senate Document 142 your mean flow at Laguna is 16,400,000. Now if you went into this elaborate calculation to account for the Gila consumptive use below and consumptive use above it might add a certain amount to that mean flow,- it might add between 500,000 and a million feet. That is just a guess that might be the result of such an elaborate calculation.

MR. A. P. DAVIS: That is true.

MR. HOOVER: And if you took the low years as being 500,000 more than that and the high years as being 500,000 less

16th-S.F.

24

than that, it probably wouldn't vary materially or affect the mean?

MR. A. P. DAVIS: No.

MR. HOOVER: So that you would get somewhere around 17,000,000 feet as the Lee's Ferry flow?

MR. A. P. DAVIS: Yes, 17,000,000 would be a correction in the right direction, probably not very far wrong.

MR. HOOVER: I should think for matters of discussion we could take it that the reconstructed mean at Lee's Ferry is a minimum of 16,400,000 and perhaps, with this elaborate calculation, half a million above, i. e. 17 million. Therefore we would come to a discussion of a 50-50 basis on some figure lying between 16,400,000 and 17 million.

MR. S. B. DAVIS: With all due respect to these eminent gentlemen, I am still from Missouri, I have to be shown, but I am willing to enter into a discussion on that line.

MR. HOOVER: I should think the result of the deliberations and of our advices on that matter have been to establish the 16 million as a sort of least mean.

MR. S. B. DAVIS: As the average mean at Lee's Ferry.

MR. HOOVER: Yes, and that an apportionment of a minimum would be half that sum, 8,200,000 acre feet instead of the 6,260,000 feet as suggested by Mr. Carpenter - so that this would be the question on your proposal, delivering approximately 82

16th-S.F.
25

million acre feet in 10 year blocks.

MR. NORVIEL: Is the minimum average.

MR. HOOVER: That's the total they agree to deliver in ten year blocks. Then, just to further the discussion, if the Mexican deduction is to be borne by both sides and we take the maximum Mexican position, it would mean so far as the southern basin is concerned, their needs, as worked out by the Reclamation Service including the projects in view, are 7,450,000 feet, so that 8,200,000 covers that with a comfortable margin.

MR. A. P. DAVIS: It includes half the water to be delivered to Mexico on the basis of 800,000 acres.

MR. HOOVER: So the southern basin would be protected as to their end and still have a margin of about 800,000 acre feet.

MR. NORVIEL: That would be for possible future development.

MR. HOOVER: Or anything that may happen to you.

MR. NORVIEL: Delivered at the point of delivery.

MR. CARPENTER: Delivered at Lee's Ferry; you already have figured your evaporation on the river.

MR. NORVIEL: Not this one. We figured that for the purpose of calculation.

MR. CARPENTER: You told us that power was many times more valuable than any other use. We are letting you tear all the fire out of that water clear down to Laguna.

MR. NORVIEL: You have more miles above and the fire will already have been torn out.

16th-C.F.

26

MR. CARPENTER: It recovers itself, it's just as good; our evaporation is already taken out.

MR. NORVIEL: The evaporation is not taken out of the two million if it is to be delivered to us.

MR. CARPENTER: If we use it for power above, our evaporation is already out.

MR. NORVIEL: The evaporation has not been deducted from the million and a half acre feet that you are going to deliver to Mexico. You have to make delivery at the point of delivery, not 600 miles above.

MR. HOOVER: Mr. Norviel, you have a margin of 750,000 feet to take care of all needs all along. That's pretty liberal.

MR. NORVIEL: That makes 8,200,000 acre feet a year minimum.

MR. HOOVER: That's the total to be delivered at Lee's Ferry.

(Mr. Norviel requests time for consultation)

MR. NORVIEL (After recess) As I understand the proposition Mr. Chairman, it is to divide the water so that the lower basin will receive (including the one-half to be furnished the Mexican lands) 82 million acre feet per annum over a period of ten years average, with 4 1/2 million acre feet minimum annual flow.

MR. HOOVER: It might be worth discussion. I wouldn't want to put it in the mouth of the gentlemen from the North, that it is their proposition.

MR. CALDWELL: There is no proposition; there is recorded a "no" vote against that minimum yet.

16th-S.F.

27

MR. CARPENTER: That's a subject of discussion.

MR. NORVIEL: I thought when we retired we were to consider that on the basis of 4-1/2 million acre feet minimum annual flow.

MR. CARPENTER: From the last poll of the vote on the minimum there were 5 for and 2 against but the period was left undecided.

MR. NORVIEL: Now we are fixing the period at the greatest number of years suggested, which is ten.

MR. CARPENTER: We thought the period was left open. The minimum is for one year, an irreducible minimum predicated on no period. The low year goes regardless of period.

MR. HOOVER: Supposing I take the onus of a suggestion for the consideration of the upper states,-- the 82 million ten year block and a minimum flow for one year of 4-1/2 million.

MR. CARPENTER: If you crowd us on the minimum we will have to have a protecting clause on precipitation, because we can't control that. Nature will force us into a violation, any possibility of which we should strenuously avoid in our compact, because that would provoke turmoil and strife. The mere matter of 500,000 acre feet as the minimum is small, but it might be decisive at such a time. It is not with the idea of trying to avoid delivering the water that I am suggesting the low figure, it is to avoid that which would result from nature's forcing a minimum that we could not control; therefore we want to avoid that as nearly as we can.

16th-S.F.

28

MR. HOOVER: You are seeking protection from a shortage on precipitation beyond that heretofore known.

MR. CARPENTER: I think I am correct in saying that, when we come to consider the extreme minimum, a 20 year period is not indicative of that one year extreme minimum. We have heard engineers say it takes a 50 year record to reveal a safe extreme minimum, or likewise a safe extreme maximum, but that for general calculation of averages a 20 year record was safe. But the proposition is this, we shall make in any specific year, no matter what calamity above reduces the flow below, a delivery of so much net at Lee's Ferry. That condition will be one forced upon us by causes beyond our control. Therefore, it is not the idea of avoiding delivery so much as it is avoiding cause for conflict, the very object of the Commission. It is not to escape responsibility but to avoid an opportunity of opening the door to conflict.

MR. HOOVER: Don't you think the margins here pretty clearly cover the situation?

MR. CARPENTER: Generally speaking I think you are correct.

MR. HOOVER: Your worst contemplation on any historic basis is that it works out something over 10 million feet over the worst three years known in history and the worse one year works out at 9,500,000 feet.

MR. CARPENTER: That's the record.

MR. HOOVER: That your estimated maximum use which I don't think is final, at any time is about 4 million additional acre feet.

16th-S.F.

29

MR. LERSON: Is that the consumptive use in addition to the total?

MR. HOOVER: I assume that the question as to how much of this minimum flow recorded here was effected by consumptive use above at that time is very difficult to get at.

MR. CARPENTER: I feel this way: I am speaking for myself. That the quantity of water is a hydrographic question. The engineering members of the Commission from the upper states should take the matter under advisement and arrive at their conclusions after sufficient study of the question. I do not assume any particular knowledge in that respect. I only have certain general outlines and general principles that I have gathered from those who are familiar with the signs.

MR. CALDWELL: If the gentlemen who retired would care to offer a proposition based on the representations that have been made here, that might be desirable. May be they would not wish to do that. It would be entirely within their discretion, of course, but if they do, it might bring us one step nearer to something definite. If they don't, I should like to propose an adjournment until tomorrow sometime, but I won't propose that until after they have had an opportunity to say whether they have arrived at something definite.

MR. HOOVER: As a matter of progress, I have this personal suggestion to make. It is very difficult to ask one group or the other to make a proposal on this line and start a line of argument, because immediately a proposal is made it becomes a

16th-S.F.

30

basis of bargaining. We don't want to approach the problem on that line and perhaps, if the two groups would meet separately and communicate to me their views, each one separately, I might be of some assistance.

MR. CARPENTER: That is a fine suggestion.

MR. CALDWELL: That is one thing I had in mind when I made that suggestion. I didn't suggest that they make their proposition but if they desired to do so, there was no particular harm.

MR. HOOVER: If that is agreeable to you, I suggest we might adjourn in two groups and consider the problem from this aspect.

Thereupon the meeting adjourned to meet again at 11:00 A.M., November 15th.

Clarence C. Stetson,
Executive Secretary.

The above minutes were approved at the 27th meeting of the Commission held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

MINUTES OF THE

17th MEETING

COLORADO RIVER COMMISSION

The seventeenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Wednesday morning, November 15th, 1922, at 11:00 o'clock, A. M.

There were present:

Herbert Hoover,	representing the U.S., Chairman
R. E. Caldwell,	" Utah
Delph E. Carpenter,	" Colorado
Stephen B. Davis, Jr.	" New Mexico
Frank C. Emerson,	" Wyoming
W. F. McClure,	" California
W. S. Norviel	" Arizona
James G. Scrugham	" Nevada
Clarence C. Stetson,	Executive Secretary

In addition, there were present:

Thomas E. Campbell,	Governor of Arizona
M. C. Mechem,	Governor of New Mexico
L. Ward Bannister,	Chairman of Committee of Interstate Waters of Denver Civic Association.
Edward W. Clark,	Joint Commissioner and Advisor for Nevada.
Arthur P. Davis,	Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottomar Hamelo,	Chief Counsel, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Charles A. May,	State Engineer and Advisor for New Mexico.
R. T. McKisick,	Deputy Attorney General and Advisor for California.
R. I. Meeker,	Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan,	Legal Advisor for Arizona.
P. G. Spilsbury,	President, Arizona Industrial Congress and Advisor for Arizona.
Charles P. Squires,	Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsoe,	Advisor for Utah.

17th-S.F.-1

The meeting was called to order by Mr. Hoover.

MR. HOOVER: Judge Davis, are you spokesman for the northern group of states?

MR. S. B. DAVIS: I think I am, Mr. Chairman. The representatives of the states composing the upper basin have been discussing this matter ever since adjournment yesterday afternoon, and as is probably to be expected, there is considerable divergence of opinion between them. On the part of some of the upper states there is an opposition to anything in the form of an absolute guaranty to the lower states. On the part of all of the upper states there is a willingness to divide. There is a very earnest and deep-seated desire on the part of all of us to reach some basis of agreement in order that a pact may be entered upon.

The primary difficulty with the guaranty idea arises from the uncertainties that exist in the situation. In the first place, we have measurements only over a comparatively short period of time,- twenty years,- and the method of adjustment of reconciliation of the measured flow below the flow at Lee's Ferry, which is to be used as a basis, also introduces an element of uncertainty.

Taking the figure which was presented yesterday, of eighty-two million feet in the ten year period, it is apparent from the figures which are now available that in the first ten year period for which we have measurements, any such guaranty would have been violated. The total flow of the river for the first ten years for which we have measurements, amounted to about one hundred and fifty-five million, one half of which is seventy-seven million five

17th-S.F.

2

we feel that there must be a wide margin of safety, and we suggest, along those lines, that the figure be fixed at sixty-five million acre feet for any ten year period.

MR. HOOVER: How about the minimum annual flow?

MR. S. B. DAVIS: That was discussed, Mr. Chairman, and discussed at considerable length, and I think the feeling was that we would like to have this matter disposed of first before we get to a discussion of the minimum annual flow. I would say that my judgment is that if we reach an agreement in this matter, an agreement may be reached on the minimum feature.

MR. HOOVER: I understand this is in the nature of a minimum flow during a ten year period?

MR. S. B. DAVIS: Yes, sir.

MR. HOOVER: This does not compose the total rights of the southern states, is that the understanding?

MR. S. B. DAVIS: My understanding of this matter is that it amounts to a guaranty on the part of the upper states that that ^{water} much/will come down to the lower states; how much more water will come down, we cannot, of course, tell, but the lower states are to have what water does come down. It is a limit upon us, and not upon them.

MR. HOOVER: I wondered if you had considered the question with respect to the title of the water. In other words, to start with Mr. Carpenter's primary premise of a fifty-fifty division, this comprises a minimum, but does not compose the total under any fifty-fifty division. Is that correct?

17th-S.F.

4

MR. S. B. DAVIS: I think, and this is largely my own view on that, inasmuch as we have no machinery for measuring that flow and determining absolutely on the fifty-fifty basis, this is rather in the nature of a guaranty than in the nature of a division.

MR. CARPENTER: In the matter of the fifty-fifty basis, there is a tendency to eliminate arbitrarily the flow of certain streams like the Gila. Other elements such as spot measurements involve a realm of uncertainty. The figure arrived at is one which takes into consideration those other streams, all of which are for the benefit of the lower territory, and add to the amount passing Lee's Ferry.

MR. HOOVER: Does the sixty-five million feet comprise the equitable division with the lower states, or does it compose the minimum flow over a period of ten years, or is the equitable division phase a further matter of consideration?

MR. CARPENTER: It is in the nature of a guaranty of the amount which should come to the lower state.

MR. SCRUGHAM: The minimum flow?

MR. CARPENTER: The minimum flow to come to the lower states.

MR. HOOVER: Without any idea of the equitable division?

MR. CARPENTER: Mr. Chairman, is not your use of the words "equitable" and "legal" synonymous? They are not in fact synonymous. It is thought this shall constitute the equitable delivery at the initial point in the lower territory and that when it is added to the surplus it will afford an equitable division of the whole river. The streams tributary to the river all enter above

17th-S.F.

5

Yuma station. We now consider moving the base station at Yuma clear up to Lee's Ferry for determining what part of the Yuma flow shall pass Lee's Ferry.

MR. HOOVER: Mr. Norviel, are you the spokesman for the southern group? You represent that?

MR. NORVIEL: I don't know what Mr. McClure has to say.

MR. CARPENTER: Might I state the proposition in another way? In effect, this says that so much water shall pass Lee's Ferry, and leaves all the flow of the lower streams to the territory in which they rise.

MR. EMERSON: I would like to state the way this appeals to me, Mr. Chairman. This is a guaranty on the part of the upper states to deliver to the lower states an amount of water in excess of their requirements, both for present development and for future estimates, based upon the Reclamation figures, and at the same time I believe this figure is an expression of an equitable apportionment under the circumstances that now exist and will exist on the river, as a whole, so you have got those two things,-- equitable apportionment and a guaranty filling the lower states' requirements, as they are now estimated for perhaps any reasonable future development, and this figure of sixty-five million acre feet expresses both.

MR. MCCLURE: Mr. Chairman, I dislike to see any language used in any compact we may be able to agree upon which makes a certain minimum of delivery mandatory. I prefer an expression of permission, or non-interference. But assuming that it may be

necessary to use words which shall make it^{the}/plain duty of the upper division to deliver some minimum, I am willing to consider the figure named.

MR. NORVIEL: Mr. Chairman, taking Mr. Davis' figures as a basis, and I assume that the gentlemen from the top of the hill worked out the proposition on those figures, the use of water in the lower basin is five million seven hundred thousand acre feet per annum, and the upper basin is six million one hundred and fifty thousand - - -

MR. SCRUGHAM: Where do you get those figures?

MR. NORVIEL: Right here (indicating memorandum). Making a difference of four hundred and fifty thousand acre feet needed in the upper basin more than these figures show the lower basin's needs. Judge Davis says they are asked to assume this or that. We are not asking that. We haven't asked that. We don't now ask it. I have said before, and I say again, it is the upper states that made this proposition, and we are not asking anything. If they can submit something that is an equitable apportionment of the water we are certainly willing to discuss it, and if it is shown to us it is an equitable apportionment, we will accept it, and it will not take us long to do it. But now, the proposition they present this morning, - assuming our needs are very nearly the same, and my good friend Mr. Emerson says it is a very fair proposition, - now the proposition is a division at Leo's Ferry of six and a half to the lower basin and ten to the upper basin. The six and a half to the lower basin must take care of our present

17th-S.F.

7

and future needs in the lower basin. The ten to the upper basin only includes a future use above. I like to be moderate in my statement, but I think that is certainly an unfair proposition, and feeling that way about it at this time I certainly must reject it.

MR. HOOVER: Judge Davis' estimate of your ultimate needs are five million seven hundred thousand.

MR. NORVIEL: And the upper needs are six million one hundred and fifty thousand, making a difference of four hundred and fifty thousand acre feet.

MR. CARPENTER: The surplus of which would come down to you.

MR. S. B. DAVIS: And anything in excess of that you would get.

MR. NORVIEL: I think, Mr. Chairman, if that is the attitude that must continually be assumed by the upper division we would better try out some other proposition, because it would be utterly useless to take this proposition back to our state and expect to have it ratified by the legislature. I don't like to stultify myself and put myself in a position where we accept one-third of the water, when two thirds of it is kept above for future use, excluding present use of water.

MR. CARPENTER: Mr. Norviel, I fear you are losing sight of another feature in this proposition. We anticipate you will make much larger encroachments upon the river than you are now making, by reason of greater use of the water of the main river in the lower territory and all of that should be added to this Lee's

Ferry delivery, even up to the point of total absorption of the streams which are tributary to the lower river. This figure leaves you the privilege of absorbing the tributaries in your country, and also of receiving this additional amount of water. If you confine your mind merely to these figures as the total supply for the lower territory, your objection would be good, but all of your lower streams are left to you completely, - something that is being denied to us above. It leaves to your territory the use of those streams. You are unfettered in the entire absorption of the lower streams, to the extent of absolute dominion thereof, while there is imposed upon us the burden, whether an abundance of water is supplied by Nature or not, of meeting this guaranty. The burden of saying that we will do such a thing, and if we fail, then we violate the compact, leaves upon us the burden of opening our structures, and perhaps utterly depriving ourselves of water, to comply with the contract.

MR. HOOVER: Judge Davis has estimated the needs in the southern basin, from the Colorado River, at five million seven hundred thousand.

MR. S. B. DAVIS: Mr. Chairman, if I may,- is there any reason, on the part of the upper states absolutely guaranteeing the lower states, irrespective of precipitation conditions, that they shall have enough water for their needs? It seems to me they must take their chances the same as we. And Mr. Norviel, on the basis of that,- not that I want to get into a debate between you and myself,- there is nothing unfair in the idea that, if we are

17th-S.F.

to guaranty a certain amount of water, we should take the lowest recorded figures that we have for a ten year period and apply to those figures a certain margin of safety, is there?

MR. NORVIEL: I don't want to put the upper states in the position of guaranteeing anything at all,- I am not asking that,- I would rather get away from it, but if you insist in putting yourselves in that position, then, any reasonable guaranty would be acceptable to us.

MR. S. B. DAVIS: All right, we don't like the idea of a guaranty any better than you do, but it seems the sense of this conference has been that there should be some sort of a guaranty and that is what we are trying to work out, and we are perfectly willing to agree with them that the guaranty should be a fair guaranty,- we are perfectly willing to agree that the guaranty should be fair so far as your needs are concerned, and we are perfectly willing that the guaranty should be fair to you so far as our resources are concerned. We don't want to guaranty more than we can furnish, and we don't want to guaranty more than you need, of course. It seems that on the general principles we are more or less together. Now, take the Colorado River for the low ten year period,- half of that record for the first ten years is, roughly, around seventy million feet.

MR. NORVIEL: What about the last ten years?

MR. S. B. DAVIS: The last ten years are not the low years.

MR. NORVIEL: Let us take that.

MR. S. B. DAVIS: No, we are guaranteeing, and when you are

guaranteeing you have got to guaranty in the face of the low records.

MR. NORVIEL: Those records are gone by.

MR. S. B. DAVIS: May they not reoccur?

MR. NORVIEL: I don't know.

MR. S. B. DAVIS: Neither do we. That is why we are compelled to use the first ten year period, the period of the lowest flow. There was only that amount of water in the river at that time, and we are guaranteeing you a certain amount of water, and we must have a margin of safety on our guaranty, - we have no assurance that the next ten years may not be drier than that.

MR. SCRUGHAM: Mr. Chairman, I suggest that we abandon the the discussion of that six million five hundred thousand acre feet per annum which would be out of the question for the lower states to accept. We are so far apart that it does not seem that we will get anywhere if this figure is not changed.

MR. S. B. DAVIS: No, I don't think that is quite correct; they are saying they will not demand, - or that we shall not be compelled to turn down, irrespective of weather conditions, more than six million five hundred thousand acre feet, but we all know if there is more than that amount in the Colorado River it will go down below. This is not a division, - we are not dividing the waters, we are guaranteeing water.

MR. NORVIEL: Mr. Chairman, in reply to a few suggestions made by Mr. Carpenter, I remember, in his beneficence he allows us to take the use of the waters in our own rivers, or those which

rise in our state. We are grateful to him for that, but it has been definitely settled, I think, here that all of the inflow below Lee's Ferry within our state, or adjoining California or Nevada is wiped out by the fact of the scorching rays of our southern sun. Also there is no calculation made in the tabulation, from which they worked as a basis, for any acreage along, or to be irrigated by the Gila River, and I am sure there is abundant acreage to take care of every drop of water that may come down the Gila. If that is to be considered, that land should be added, and the tabulation revised to take care of that. Then our needs would run far above the needs specified for the upper basin on an equal division,- and as I considered that, with a consumptive use, revised to include the Gila, our consumptive use would be quite enough, more than enough, to make a proper consumptive use equal to and greater than that above. Then to come to us with the statement that they had divided the water six and ten at Lee's Ferry, with no compensation below for the inflow of any stream, and this six to cover all of our present as well as our future needs, and the ten above to cover only their future needs, is absolutely unfair so far as I can see.

MR. S. B. DAVIS: Mr. Norviel, in order that we may know how far apart we are in this matter, would you state what you do consider a fair amount to be guaranteed to you at Lee's Ferry?

MR. NORVIEL: I think, inasmuch as our needs are practically even, we will accept the burden of the losses below Lee's Ferry, and take a reconstructed river on an even basis at Lee's Ferry.

MR. S. B. DAVIS: Will you state that in acre feet?

MR. NORVIEL: Tell me what the acre feet are and I will.

MR. S. B. DAVIS: You know, I don't know.

MR. SCRUGHAM: It would be between eight and nine million
a year.

MR. S. B. DAVIS: Let us have it specifically.

MR. NORVIEL: I will go back to the proposition made to us
yesterday. We will accept eight million two hundred thousand
acre feet, on a ten year basis with a four and a half million
minimum, while on a five year basis a four million minimum
annual flow will be acceptable.

MR. CARPENTER: What is that last, again, on a five year
basis a four million annual minimum flow?

MR. NORVIEL: Yes.

MR. CARPENTER: I don't quite understand the five year basis.

MR. NORVIEL: It is your proposition, that we first fix a
ten year average flow, and we will split it in two, but if we have
a shorter period of average, we will accept a four million annual
minimum flow. We understood that was the proposition made to us
yesterday and agreed to.

MR. ELLERSON: What is that?

MR. McCLURE: I did not understand that it was agreed to.

MR. NORVIEL: So far as we were concerned, I think we agreed
to it.

MR. CARPENTER: That is, for any five year period there is
to be a minimum of four million acre feet per year?

17th-S.F.

13

MR. CARPENTER: You put that as an alternative to a ten year period?

MR. NORVIEL: For the ten year period, four and a half million is half.

MR. HOOVER: What Mr. Norviol means is for any one year the minimum shall not be less than four million for a five year period, or less than four and a half a year for a ten year period.

MR. S. B. DAVIS: The difficulty with eighty-two million, as I have said, is that we already have experienced ten years in which it would have been impossible for us to comply.

MR. HOOVER: The difficulty is in guaranteeing in the face of an unknown quantity?

MR. S. B. DAVIS: Yes sir.

MR. HOOVER: When you go to guaranteeing something, you want to be sure you can comply with the guaranty.

MR. EMERSON: Mr. Chairman, I can't conceive of any plan that will not amount to a guaranty, and if we have any guaranty it is going to be up to the upper states to deliver what is agreed on.

MR. HOOVER: It is an understanding, not a guaranty.

MR. EMERSON: Well, an undertaking amounts to a guaranty or it would be of no value.

MR. HOOVER: If you undertake to give more than forty or fifty per cent it is not a guaranty.

MR. EMERSON: Suppose we don't give what we agree to give under this compact, what happens? In effect it seems to me a guaranty to do either thing.

MR. HOOVER: Yes, but a percentage is not an undertaking as to a fixed quantity.

MR. ELLERSON: It is a percentage which will result, in the final analysis, in a quantity.

MR. HOOVER: Only as the quantity appears.

MR. NORVIEL: Judge Davis, in your ten year period, you have suggested that only fifty percent of the flow shall pass Lee's Ferry, that is only seventy-seven odd million. Keep in mind that seventy-seven million must supply the whole use in the lower basin.

MR. S. B. DAVIS: During the first ten year period there was a very small use, I assume.

MR. NORVIEL: I don't know about that. Anyway, your proposition seems to desire a future use of the water, and then try to give us something less than half of what you can't use.

MR. S. B. DAVIS: No I don't agree with that statement.

MR. NORVIEL: You have used all the water you could, and of what has gone down the river you don't even make a fifty-fifty division, but you put it way below that in order to make your uses more secure.

MR. S. B. DAVIS: What I said was this, if we are guaranteeing eighty-two million feet, and if the experience of the next ten years should turn out to be as those first ten years for which we have measurements, even if you add to those measurements an amount for use in the upper states, we would violate the contract.

MR. NORVIEL: And if you didn't use it, then we would get it.

MR. S. B. DAVIS: Assuming in the first ten years of use, we were using the same as at present,- around two million feet,- and add on seventy-seven million more, you would only have seventy-nine million. While your suggestion is only eighty-two million, we would still be guaranteeing three million more than we have.

MR. NORVIEL: You must consider the other seventy-seven million that went down the river.

MR. S. B. DAVIS: Sure, that is your half

MR. NORVIEL: Not only our half, but any half of the full amount over and above the amount you propose to give us. You use all you can and send down one hundred and fifty million acre feet. Now then, you are afraid to guaranty, or you decline to guaranty, eighty-two million feet out of one hundred and fifty million acre feet.

MR. S. B. DAVIS: Considering, if we did make such a guaranty, we would be guaranteeing more than half.

MR. NORVIEL: After you got through with it. The eighty-two million acre feet - -

MR. S. B. DAVIS: Even then, it would allow no margin.

MR. NORVIEL: Allowing you can use the difference between that and seventy-seven million.

MR. S. B. DAVIS: With no margin to allow for a period drier than that first ten year period.

MR. NORVIEL: Seventy-seven million acre feet in ten years, all to take care of the consumptive use and exclusive of the dry years.

MR. S. B. DAVIS: You are excluding future development.

MR. NORVIEL: Yes, I say, to take care of us, exclusive of any new use.

MR. S. B. DAVIS: It seems that we are about seventeen million acre feet apart on that basis.

MR. CARPENTER: Seventeen million acre feet for a ten year period, or one million seven hundred thousand acre feet per annum.

MR. NORVIEL: Where do you get that figure?

MR. S. B. DAVIS: Sixty-five from eighty-two.

MR. EMERSON: The figures submitted by the upper states is a guaranty by them that they will furnish sufficient water for the lower states' requirements, both present and as estimated in the future by the Reclamation figures. I don't know why the lower states should consider it unfair, if we guaranty their requirements, plus actual safety.

MR. NORVIEL: If this was to be revised each year we probably could agree to it, but it is not possible to revise it each year. If you will guaranty upon the same sort of basis, that when our needs require more you will give more for our needs, I suggest we could agree to that.

MR. EMERSON: We have agreed upon the principle, - the plan of revising this at the end of a reasonable time so that the matter can be reconsidered.

MR. NORVIEL: But we are just considering the present and future needs out of the river up to a certain limit.

MR. HOOVER: Isn't there any hopes that the upper basin would accept the whole Mexican burden?

MR. CARPENTER: None at all.

MR. HOOVER: The difficulty that strikes me at the moment in the sixty-five million guaranty is that it does not cover the needs of the southern states. Including the Mexican burden you estimate the needs of the southern states at about seven and a half million, whereas you guaranty six and a half, so that it cannot be said to cover the needs.

MR. CARPENTER: The underlying thought is that our diversions shall not diminish the flow below a certain point. That is expected as a guaranty. In this way we undertake to do certain things, and failing so to do, we would violate the compact. Any violation would be a breach of the guaranty. The word "guaranty" is unfortunate, but the upper states have no disposition to get so close to the margin line of hazard as to be in danger of a breach. To approach that border line too closely would be to court the very condition we are trying to avoid by this margin of safety which will prevent a breach. It is our desire to have a safe margin so that there never will be any friction. Just as we were debating the minimum the other day,- it is not from our desire to pinch down the lower states,- it is our desire to avoid the occurrence of an event which would create a breach between the two divisions of the basin.

MR. HOOVER: Assuming the needs of the southern states is one half of the flow, which of course, Nevada thinks is too low, or

seven million four hundred and fifty thousand, which approaches seven million five hundred thousand, instead of six million five hundred thousand,- it would be very difficult to enter into a contract in the face of those figures. I don't see how the northern states can properly undertake to guaranty that, because they would obviously be guaranteeing something very difficult to deliver during a dry cycle of years. The primary difficulty is whether the northern states would be secure in guaranteeing enough to cover the needs of the southern states.

MR. BIERSON: It seems to me, Mr. Chairman, we would go a long ways if we guaranty a full amount for present requirements and enough for a reasonable future development, and add to that the Mexican requirements, which would probably never be reached. In that way we would put ourselves in the position of absolutely guaranteeing that amount, and we should take into consideration the facts of the inaccuracy of the data, the vagaries of that river, and other matters of that kind,- we are taking the chances absolutely. And if we now give a guaranty of the requirements of the lower states, and add to that the ultimate possibility of a greater amount than the requirements as estimated in Mexico, it seems to me we are going a long ways. There is no guaranty on their part, it is all on ours, we are taking the chances and they are taking none.

MR. CALDWELL: Of course I have not been in the habit, as you know of thinking of this thing in just the way you have insisted on discussing it, that is, in proportion to our needs, or

even the fifty-fifty proposition, so these figures have not been so interesting to me as they have to some members of the Commission, perhaps.

I think that very probably the figures insisted upon for the upper states are quite a long way from accurate or proper. We have four million acres, according to the Reclamation Service estimate, up there to irrigate in the basin, and they say an acre foot and a half is enough for an acre of land. That gives our requirements as six million. Now, ultimately that may be what we will require, but there is a very great chance, Mr. Chairman, that our requirements will not be on that basis. A fairer proposition would be to prepare, in each basin, a diversion estimate that will be necessary, in which event we would need to divert up there at least three acre feet per acre, which instead of giving us a water requirement of six million, would make it twelve million. If we could divert all of that water at once, our requirements would be twelve million, except that we have some return flow now set up. If we could divert all of that water at once, we would divert twelve million acre feet on the four million acres of land, and then, when the return flow is set up we would get back a part of that amount, but until it does set up we would need to have water parceled out to us on the basis of that diversion. Just what our actual needs are no one is able to say. The Reclamation Service can't say, we can't say, but it is down to the irreducible minimum when it is made an acre foot and a half per acre. Perhaps ten million acre feet may

be said to be a minimum, perhaps eight, but certainly not six.

MR. NORVIEL: Mr. Chairman, I am glad to hear Mr. Caldwell express himself. And that is one of the things I have had in mind all the time. No matter how the guaranty was made to the lower states,- given the continued statement of one of the upper members that the excess would come to us anyway as it is impossible for them to use it all,- we now have one of the members of the upper states saying that their needs will approach seventy-five percent of the flow of the river, that it is their wish and desire, perhaps, to approach and to use every drop that is not guaranteed and that we have a perfect right to anticipate that that condition will continue. Therefore we must protect ourselves in some sort of way on this proposition to have an equitable and not an inequitable apportionment apportionment/to begin with.

MR. SCRUGHAM: Mr. Caldwell's statement merely confirms the statement I made a few minutes ago. If the upper basin will only guarantee sixty-five million acre feet per year we might as well abandon the discussion.

MR. S. B. DAVIS: I think we could say the same thing of the lower states. If the lower states are set on eighty-two million, we might as well abandon the discussion.

MR. NORVIEL: That was your own suggestion, coming not from us but from you, and we accepted that proposition. It didn't come from us.

MR. S. B. DAVIS: I think, Mr. Norviel, no proposition was made along the line of eighty-two million acre feet.

MR. NORVIEL: I heard -

MR. S. B. DAVIS: You heard the Chairman's statement applying those figures, but I think you heard no statement from any representative of a northern state making a proposition of eighty-two million acre feet.

MR. NORVIEL: Don't attribute it to us.

MR. S. B. DAVIS: I don't attribute it to you. Now, you said you could accept eighty-two million feet, and whether you call it an acceptance is a matter of language.

MR. HOOVER: Of course, the business of the Chairman is to find a medial ground. So I am wondering if the northern states will make it seven million five hundred thousand.

MR. S. B. DAVIS: If that is a suggestion for consideration by both divisions, I presume it would necessitate further caucus.

MR. HOOVER: And again you reach the question of the annual minimum.

MR. CARPENTER: We might fix the amount for ten years, and modify it to reach the minimum later.

MR. HOOVER: I think the two things are almost indissoluble aren't they?

MR. CARPENTER: Oh yes, but you would not need to accept or reject anything until both have been determined upon, but I believe you would better take them up one at a time, if I may suggest that. If that be the suggestion from the Chair it seems to me something could be considered, probably more rapidly considered, in recess.

MR. NORVIEL: I would like to say I don't like a ten year period of average flow. It is too long a time.

MR. CARPENTER: Mr. Norviel, it is dangerous to take a lesser period. It forces the upper states into the position of reducing the guaranty for the term, if it is less than ten years.

MR. NORVIEL: I would like to have Mr. Carpenter work out a plan for that guaranty.

MR. CARPENTER: I see no way to do that. I feel, Mr. Norviel, that all of us wish to avoid any elaborate terms. The simpler the plan the more perfectly it will work, and if we know the principle in simple terms, the details will work out automatically. There is no need of injecting cumbersome machinery. In the final analysis, when time has passed, the river will automatically take care of itself, in the matter of supply and demand. There is no desire to see how much we may reduce you. The spirit of the whole meeting has been to provide a compact which we can fulfill.

MR. NORVIEL: I presume, inasmuch as I am older in years,-- I would suggest, our needs, in the upper and lower divisions, are practically the same. Since the tabulation made by Mr. Davis excludes the Gila, and the low lands on the Gila, our uses out of the main Colorado and your uses out of the Main Colorado are practically the same. Then, in arriving at your suggestion again bear in mind the needs are about the same, come as near to that as you can.

MR. CARPENTER: We will submit no further proposition now. I suggest a recess to entertain the suggestion of the Chair.

MR. EMERSON: Just one phase of that question. The Chair has stated that in his opinion Mexico will not be allocated an amount equal to three million five hundred thousand, so it seems to me a sliding basis should be established when we consider the needs of Mexico.

MR. NORVIEL: I don't think we need take that into consideration.

MR. CARPENTER: The factor of hazard is all on us. By eliminating the Gila and the Little Colorado and other streams, the factor of risk lies in the allocation of the Mexican burden. We are willing to bear our share of the Mexican burden but the sacrifice should be mutual.

MR. HOOVER: Suppose we recess - -

MR. NORVIEL: Before we recess, perhaps, I might state another little proposition and let them give it consideration if they care to.

The State of Arizona proposes to allocate the waters of the Colorado River between the proposed upper and lower divisions upon a fifty-fifty division as follows:

The river is to be reconstructed annually by measuring the flow at or near Lee's Ferry in Arizona and by adding thereto the consumptive use of water in the upper basin, the total amount of water thus found to be the basis for an equal division between the two divisions, each division contributing equally to the amount that may hereafter be allotted to Mexico by international agreement or otherwise. In the event that the upper division

17th-S.F.

24

should in any year exceed its percentage and thus deprive the lower division of its percentage the deficiency shall be compensated for during the next two succeeding years.

MR. CARPENTER: I understand that would be above Leo's Ferry and not Yuma. May we recess?

MR. CALDWELL: May I ask a question?

MR. CARPENTER: I withdraw my motion.

MR. CALDWELL: Just how would you determine the consumptive use in the upper basin?

MR. NORVIEL: It is to be determined each year.

MR. CALDWELL: Just a minute. Would you predetermine the consumptive use in acre feet,-- or would you use the actual consumptive use?

MR. NORVIEL: It would have to be measured.

MR. CALDWELL: It would be very difficult, impossible practically.

MR. NORVIEL: I think I said so in the beginning of our meetings.

MR. CALDWELL: I think it would be impossible.

MR. NORVIEL: Practically.

MR. HOOVER: We will recess until three o'clock this afternoon.

Thereupon the meeting adjourned to meet again at three o'clock

P. M. November 15th.

Clarence C. Stetson,
Executive Secretary.

NOTE: The caucus continued the afternoon and evening of November 15th, the Commission resuming executive sessions Thursday, November 16th, at 10:00 A.M.

The above minutes were approved at the 27th meeting of the Commission held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922,

17th--S.F.

25

MINUTES OF THE

18th Meeting

COLORADO RIVER COMMISSION

The eighteenth meeting of the Colorado River Commission was held at Bishop's Lodge, Santa Fe, New Mexico, on Thursday morning, November 16th, 1922, at 10:00 A.M.

There were present:

Herbert Hoover,	representing	the U. S., Chairman
R. E. Caldwell,	"	Utah
Delph E. Carpenter,	"	Colorado
Stephen B. Davis, Jr.,	"	New Mexico
Frank C. Emerson,	"	Wyoming
W. F. McClure,	"	California
W. S. Norviel,	"	Arizona
James G. Scrugham,	"	Nevada
Clarence C. Stetson,		Executive Secretary

In addition there were present:

Thomas E. Campbell,	Governor of Arizona,
James F. Hinkle,	Governor-Elect of New Mexico
Merritt C. Mechem,	Governor of New Mexico
L. Ward Bannister,	Chairman of Committee of Interstate Waters of Denver Civic Association.
Edward W. Clark,	Joint Commissioner and Advisor for Nevada.
Arthur P. Davis,	Director, United States Reclamation Service, Department of the Interior and Advisor to Federal Representative.
Ottomar Hamele,	Chief Counsel, United States Reclama- tion Service, Department of the Interi- or and Advisor to Federal Representa- tive.
C. C. Lewis,	Assistant State Water Commissioner and Advisor for Arizona.
R. T. McKisick,	Deputy Attorney General and Advisor for California.
R. I. Meeker,	Deputy State Engineer and Advisor for Colorado.
Richard E. Sloan,	Legal Advisor for Arizona.
P. G. Spilsbury,	President, Arizona Industrial Congress and Advisor for Arizona.
Charles P. Squires,	Joint Commissioner and Advisor for Nevada.
Dr. John A. Widtsoe,	Advisor for Utah.

18th-S.F.

MR. HOOVER: After discussion yesterday between the different groups, we arrived last evening at a series of rough principles upon which we felt we had secured agreement and which should comprise the basis of a compact. I would suggest that I should read the memorandum in the final form in which we left it paragraph by paragraph and see if we are now broadly, in agreement. We all understand that this is subject to drafting, that the statements here are in many cases rather crude, but so long as they convey our ideas, that is a sufficient statement. It does embrace the primary ideas upon which we are in agreement.

The first paragraph is:

"The Colorado River Basin shall be considered as embracing all of the territory to which the waters of the river and its tributaries can be beneficially applied."

I think we might proceed by way of a motion on these clauses.

MR. McCLURE: That is not clear to me.

MR. NORVIEL: At least we should confine it to the United States - "embracing all of the territory within the United States."

MR. EMERSON: Why the use of the description "beneficial application of the water." The basin includes a wide area of territory upon which water cannot be used at all.

MR. HOOVER: We are seeking for an expression which would cover our ideas.

MR. CARPENTER: The lines conform to the technical drainage of the river?

MR. HOOVER: Yes. This is not the final draft. When we get

18th-S.F.

the draft of the compact itself, then we can work over the details, so long as this expresses our general ideas.

MR. CARPENTER: The idea of this memorandum is to express our general intent.

MR. HOOVER: Our general intent.

MR. CARPENTER: I move the adoption of the paragraph as amended to include "all of the territory within the United States of America."

MR. NORVIEL: Wouldn't it be just as well to say ^{"within} the United States after the word "applied"-, "beneficially applied within the United States."

MR. HOOVER: Yes, that will be the same thing. Do you accept that amendment, Mr. Carpenter?

MR. CARPENTER: Yes.

MR. SCRUGHAM: Is the wording, "within the United States" at the end of the sentence?

MR. HOOVER: Yes.

MR. SCRUGHAM: I second the motion.

MR. HOOVER: Is there any further discussion on that paragraph? If not, those in favor of its adoption say "aye." Those opposed "no." It is carried unanimously.

MR. CARPENTER: The paragraph will be read with the amendment?

MR. HOOVER: "The Colorado River Basin shall be considered as embracing all of the territory to which the waters of the river and its tributaries can be beneficially applied within the United States."

MR. EMERSON: The drafting committee, I had hoped, would say something like "The Colorado River Basin shall be considered as embracing all of the land drained by the Colorado River and its tributaries, and in addition -

MR. CARPENTER: We understand

MR. EMERSON: It is all right if you understand these things.

MR. HOOVER: It would be useful to have Mr. Emerson's remarks in the record.

MR. CARPENTER: I interrupted you, Mr. Emerson, before you finished. I beg your pardon.

MR. EMERSON : Your apology is accepted.

MR. CALDWELL: I understand that this doesn't mean merely applied to the lands, but that it can be used for any purpose within the meaning of the compact.

MR. EMERSON: I believe there should be a limitation there upon the character of the use. We wouldn't want water diverted from the Colorado Basin for power purposes.

MR. HOOVER: Under the provisions here, of priorities I should think it would be possible for agricultural and domestic uses, to stop power uses that interfere with agricultural and domestic uses. If there is nothing more on that paragraph, we will go on to the next.

"2. The Basin is divided into the Upper and Lower Divisions at a point immediately below the mouth of the Paria."

MR. NORVIEL: I suppose everybody knows what the Paria is?

MR. HOOVER: I suppose the drafting committee will know.

18th-S.F.

MR. NORVIEL: Depends on who it is, I guess.

MR. CALDWELL: I move the adoption of that article.

MR. CARPENTER: I second the motion.

MR. HOOVER: It has been moved and seconded that this paragraph be adopted. Is there any further discussion? If not, those in favor say "aye." Opposed "no." It is carried.

The third paragraph reads:

"This compact shall be in force until _____ and thereafter shall continue until a notice shall be given by two governors or by one governor and the President of the United States to the other governors in the basin states of the desire for a new commission to equitably apportion the waters of the river then unappropriated, and upon receipt of such notice this compact shall terminate and it shall be the duty of the governors of the several states and of the President of the United States each to make provision for representation on such commission. Such commission may be created by the mutual consent of the seven states and the Federal Government at any time."

I should like to suggest that we leave that date until we get through the agreement. If we adopt the paragraph with the date in blank, we only have two points in this paragraph of wider discussion.

MR. CARPENTER: While we are on that paragraph, it has occurred to me, that the date of termination might become important and therefore should be fixed as nearly as we can. The giving of the notice might involve more or less conflict. My

18th-S.F.

thought is that the time of forwarding of notice should decide where the rights under the compact should become fixed. It might be thirty days or ninety days or some such figure, after such notice.

MR. NORVIEL: I understand this to mean that when one governor and the President, or two governors, agree to revise the matter and notify the other governors, that this compact shall cease operation instantly thereafter.

MR. SCRUGHAM: No. It is after the date of termination of the contract, as I understand it.

MR. HOOVER: Well, this notice can't be given until after we give this date.

MR. CARPENTER: Is it the intent to say "that when the notice is given the compact shall terminate and no rights shall attach after the date of that notice?"

MR. HOOVER: It states here, "upon receipt of such notice this compact shall terminate."

MR. CARPENTER: Why not have it read "as of the date of notice" and not "of the date of receipt" because the receipt might be on one day with one governor and three days later by another governor, etc., and if the date of receipt is to control, it should be the date of the last to receive.

MR. HOOVER: It will be the date of the dispatch them, instead of the date of receipt.

MR. SCRUGHAM: And on the date of dispatch instead of the receipt of the notice.

MR. HOOVER: Is that agreeable then?

MR. CARPENTER: I think it is, yes.

MR. SCRUGHAM: I think Mr. Carpenter's point is well taken, it should be a definite date.

MR. HOOVER: Make it then, ten or twenty days after dispatch.

MR. SCRUGHAM: What do you suggest, Mr. Hoover?

MR. HOOVER: I would suggest ten days.

MR. SCRUGHAM: "Ten days after date of dispatch of such notice."

MR. NORVIEL: Where will we put it in? After the words "unappropriated and" -

MR. HOOVER: Yes, "ten days after dispatch of such notice."

MR. CALDWELL: I think that article should have the thought connected with it that is in Article 5; in order to think about it clearly I think it ought to be referred to. It should say "subject to the provisions of Article 5." That will probably come out in the draft.

MR. HOOVER: We have a difficult legal point here to settle. That is the difficulty of a contract with a continuing force.

MR. EMERSON: Wouldn't it be better to use the word "suspend" instead of "terminate". "Terminate" is rather a strong expression.

MR. HOOVER: That affects every subsequent clause in this memorandum.

MR. SCRUGHAM: Leave that to the attorneys when they draw up the pact.

MR. CARPENTER: The idea, I take it, is this: That up to the date fixed for the dispatch of the notice, this compact controls and is the law of the land as to all rights that may vest within each division upon the river.

MR. HOOVER: Yes, within the compact.

MR. CARPENTER: And that the compact controls those rights that are so vested thereafter and forever; but that from the day of that suspension or termination, then anything occurring thereafter must come under a new agreement or situation and this compact shall no longer apply as to such, but shall apply to all that went before.

MR. HOOVER: This compact sets up the machinery for a new compact. If the new compact ends, the rights acquired under this compact continue.

MR. CALDWELL: I may be permitted to say at this point that I would prefer that in each case where notice is given, the President of the United States be connected with it. I don't think I would stand on that, but I would like to say that I think I prefer it.

MR. HOOVER: I can visualize conditions under which the Federal Government might refuse to give the notice and it would - under that plan - take it outside of the power of the states to create the new situation. In other words, that would give the Federal Government a veto over whether a new compact could be discussed.

MR. McCLURE: Not only not desirable, but objectionable, I think.

MR. NORVIEL: My understanding of Mr. Caldwell's statement was that the President only should be notified. If the two governors notified the President and the other governors, that terminates the compact.

MR. CALDWELL: It isn't worth discussing, as far as I am concerned.

MR. SCRUGHAM: What do you mean?

MR. CALDWELL: What I mean is that what I say is not so important to me that I am going to stand on my objection.

MR. ELLERSON: I infer, Mr. Chairman - On line 6 of the copy before us, after the word "unappropriated" I would like to see an expression something like this, "or unallocated according to the provisions of this compact."

MR. HOOVER: I do not see any objection.

MR. SCRUGHAM: "Or unallocated?"

MR. HOOVER: Yes, "or unappropriated."

MR. SCRUGHAM: Is there such a word as "unallocated?"

MR. ELLERSON: It is a new coinage for this purpose.

MR. HOOVER: Say then, "unappropriated or unallocated under the terms of this compact, and ten days after dispatch." Is there any further suggestion? If not, will somebody move the adoption of this paragraph.

MR. McCLURE: I move the adoption

MR. SCRUGHAM: I second that motion.

MR. HOOVER: It has been moved and seconded that paragraph three be adopted.

18th-S.F.

9

"This compact shall be in force until _____ and thereafter shall continue until a notice shall be given by two governors or by one governor and the President of the United States to the other governors in the basin states of the desire for a new commission to equitably apportion the waters of the river then unappropriated or unallocated under the terms of this compact and ten days after dispatch of such notice this compact shall terminate and it shall be the duty of the governors of the several states and of the President of the United States each to make provision for representation on such commission. Such commission may be created by the mutual consent of the seven states and the Federal Government at any time."

MR. EMERSON: At any time?

MR. HOOVER: Yes.

MR. EMERSON: Tomorrow, if you wanted to.

MR. HOOVER: That is a reiteration of what all have the power to do even without specific authority. All those in favor of that paragraph please say "aye." It is carried.

The fourth paragraph reads:

"The appropriation of water shall be considered as its actual application to beneficial use and such beneficial use shall rank in priority first, to agricultural and domestic purposes; second, power, third, navigation; and appropriations shall, as a class, have preference with each division and between the two divisions in the right of use in the water in the order stated."

MR. SCRUGHAM: I am of the opinion that mining, and milling

uses are sufficiently important to include in the compact in addition to those listed. They should rank with power, and be allocated in the same grade. It is conceivable that they might become important factors in future years.

MR. HOOVER: It ought to come in so far as metallurgical uses are concerned.

MR. CALDWELL: I think, Mr. Chairman, we have left out a class of rights there which should be determined by some general clause, giving those rights some priority over navigation. That is to say, we haven't named all of the rights or of the uses to which water can be put, and a general clause ought to be put in there after "power", other uses of the water, or other beneficial uses could come in there.

MR. HOOVER: Before navigation?

MR. CALDWELL: Yes.

MR. S. B. DAVIS: What particular uses have you in mind?

MR. CALDWELL: What I have in mind is trivial in a way, of course. We have manufacturing which may consume some water, manufacturing of various things. We have milling which sometimes consumes a little water, and we have stock-watering purposes which consume a little water, an inferior amount, it is true, but I think the right should be mentioned.

MR. SCRUGHAM: They might all be classified with "domestic purposes."

MR. CALDWELL: It might be defined as such, but up our way we don't define it that way.

MR. CARPENTER: Manufacturing is considered to be synonymous with power. In the constitutions where it occurs, it is placed in an inferior classification.

MR. SCRUGHAM: Except in a mining state, where such uses are frequently placed in a superior classification.

MR. CARPENTER: I think Mr. Caldwell has in mind that border line between domestic and agricultural uses, which in my draft I termed "municipal." My terms were broad. We might say "agricultural, domestic and other similar purposes."

MR. HOOVER: You could narrow it to manufacturing purposes.

MR. CARPENTER: There will be street sprinkling, irrigation of lawns and similar uses which would come in somewhere between domestic and agriculture.

MR. SCRUGHAM: Just put in "industrial processes" to indicate what we mean. I submit that as an amendment. I move that the term "industrial processes" be included in the first classification. Such a priority would be important to the respective communities which might develop from the establishment of industries.

MR. HOOVER: If there are no objections, we will put in the words "and industrial processes" after the word "purposes."

MR. EMERSON: Why not irrigation instead of agriculture

MR. CARPENTER: Agriculture is a broader term than irrigation.

MR. HOOVER: I think we might give instructions on this point to the drafting committee. There are two points, one of which gives me a little anxiety. The intent of the first two

lines of this paragraph are to base the classifications of the water on beneficial, agricultural and domestic use, not contingent upon storage or the accumulation in reservoirs of the water. On the other hand, the wording as it stands, might jeopardize the small appropriator who takes a considerable period before he arrives at beneficial use from the date of his appropriation. In other words, the difficulty here is in terminology. And I suggest we instruct the drafting committee to work out the ideas freely along that line for us, rather than that we should attempt to work them out. Another question arises also on this, and that is the concurrent importance of certain amount of power for irrigation purposes. It should have an equal rank with agriculture itself - because much irrigation is dependent upon the use of power. If we, perhaps, leave those ideas to the drafting committee to try to work out we will get along better.

MR. CARPENTER: Navigation should be made subservient to the other uses throughout the entire basin. But, with the exception of navigation, divisional provisions will automatically care for everything else, unless it be the construction of upper reservoirs for the benefit of the lower territory. The relation of other uses should be intra-divisional, leaving the divisions themselves to work out their destinies in that respect. Power development in the upper territory for example, would naturally develop in harmony with local conditions. Whether regulations should apply to the entire basin, or be confined to divisions, is a matter for discussion. Regulations respecting agriculture

and domestic uses must be entirely intra-divisional and also involve the application of local law within each state. It is my thought to confine the preferential uses (if I may use that term) to intra-divisional matters except as to navigation, which would naturally spread all over the entire territory, upon the theory that uses above might be said to interfere with navigation below.

MR. HOOVER: Would not the power also fall in that line. I can conceive a situation where, if you had a purely intra-divisional priority, that prior rights might be established in one division and interfere with agricultural rights in another division.

MR. CARPENTER: No, with the exception of a reservoir to be constructed within the upper division for the benefit of the lower division, as at Lee's Ferry or any point below the mouth of the Green. With that exception, the agreement for delivery at Lee's Ferry automatically takes care of the upper situation and the burden is upon the upper territory to make the delivery; and in making that delivery, the burden and duty is upon the upper division, to control the uses above. The duty of delivery at Lee's Ferry automatically solves the question of claims from the lower as against the upper division. Below Lee's Ferry the problem becomes intra-divisional with respect to the lower territory.

MR. HOOVER: I want to follow Mr. Carpenter's thought a minute. We have based this compact on the division of water for

agricultural beneficial use, and we have made use of a quantitative basis. If we give to power an intra-divisional right, we endanger the whole quantitative basis of right. For instance, we have seven and a half million feet of established right under present conditions in the upper basin, based on agricultural use. Supposing that the upper basin committed itself to ten million feet of the flow for power purposes, the southern basin would have no protection, and vice-versa.

MR. CARPENTER: At first thought it sounds possible, but I am not yet prepared to answer definitely. My own thought, in that respect, is to avoid collision. More mature thought will probably clarify the whole situation.

MR. HOOVER: There is one point you made. I dislike the word "priority." "Priority" doesn't convey what we are intending to convey. What we want to convey is the meaning embraced in the word that you used.

MR. CARPENTER: "Preferential."

MR. HOOVER: "Subservient."

MR. CARPENTER: "Subservient."

MR. HOOVER: Subservient rather than prior. I think that is more the meaning that exists in your mind.

MR. CARPENTER: To follow that line of thought - to make one right inferior to another merely implies that the higher use may condemn the lower. My thought is that by the use of the word "subservient" there would be a servient right of use for power with dominant uses superior to and controlling it, in which

event the dominant estate could always come in to its own without compensating or condemning the servient interest, even though the servient use is long prior to the dominant use.

MR. NORVIEL: I think so; but there is one other thought, perhaps, before we leave this question, which occurs to me, and that is that we have placed navigation in the lowest point of uses. Navigation is controlled by the Government of the United States, and is paramount to every other right in the whole basin.

MR. HOOVER: Except by legislative action under the pact.

MR. NORVIEL: Yes, except that. And I am just wondering what some of our Congressmen may say to us when it comes up to them.

MR. HOOVER: They will say that there has been no ship able to get up the river for the last fifteen years.

MR. NORVIEL: They will say that you attempt to stabilize the flow of the river, and they may then require all of the further use of the water to cease in order to make a navigable stream. We don't know what the future may hold.

MR. CARPENTER: I would like to have the last part of Article read:
4/"with each division" left out. See how that would sound.

MR. HOOVER: "And appropriations shall, as a class, have preference between the two divisions in the right of use in the water in the order stated." That would take the preference beyond the area within a division and would only make it interdivisional.

MR. CARPENTER: I was just suggesting that for consideration.

MR. ELMERSON: On that point of navigation, Director Davis informs me that the army engineers have given it up and refused to recommend any river improvements, so there isn't much danger of Congress resenting the removal of navigation from the field.

MR. CALDWELL: A situation, Mr. Chairman, with respect to this other matter is conceivable to me which if you don't object, I would like to point out. We want to encourage power interests in the upper division, and I would say also in the lower division. If they know they are secondary in right within a division, there might be conditions under which they would hesitate to go ahead. It is to be remembered that the irrigation development which would hinder them may not take place within 50 years. They may suppose it would take place in ten years and it may not actually take place in 50. In the meantime, if it had been developed it would have created value to pay for itself, and the country would be that much better off, whereas it is now hindered entirely by the mere fear that it may be interfered with. As it stands now power development may go ahead with absolute assurance of its priority in our division over everything,- subject only to proceedings by eminent domain.

MR. HOOVER: If you adopt that line of reasoning, that line of thought, you are going to destroy the entire priority of agriculture over power throughout the basin, because power rights are going to be fixed far earlier than agricultural rights all the way down the line.

MR. SCRUGHAM: That leaves it open to the objection, that otherwise power will limit the agricultural uses.

MR. HOOVER: That will elicit the whole agricultural opposition to the pact.

MR. CARPENTER: For illustration and to further your thought, we all agree that some great control must be placed upon the river. In order to make control effective for floods the capacity of the reservoir must be greater than the minimum annual flow of the river. Now in order to obtain repayment of the monies expended in that construction, the energy of the water must be utilized and converted into power. Flood control must be provided at an early date to avoid disaster. If built in the lower basin and the power titles are such that we, above, have to condemn them, the power monopoly would control agricultural development for all time in the upper basin. That is abhorrent to the whole theory of equitable division.

MR. HOOVER: Yes, it will go further than that because if you erect a dam at Boulder Canyon, which is both a control dam and a storage dam for conserving the high years, it will mean that at a certain season of the year, of each year probably, it will have no discharge at all. There are certain seasons of the year, especially in a period of dry years, when it would be desirable to hold the entire flow of the river for perhaps months and, if a power right had priority, it would mean that there must be a continuous discharge of the reservoir throughout the year. If the agriculture has priority then the reservoir need not be

controlled in such a fashion. Now, from the point of view of the upper states and all states it is undesirable that there should be any super power rights over that reservoir, or any other right which compels discharge of the water at such season of the year as cannot be applied to beneficial use in agriculture.

MR. CALDWELL: In Colorado have agricultural rights had this preference over power which we are now providing?

MR. CARPENTER: By the Colorado Constitution uses of water of the streams for beneficial purposes are defined in the following order; domestic, agricultural and manufacturing, and it is also said that they shall have preference in the order mentioned. Our courts have held that provision to mean, that a domestic right is a higher use, or more necessary use than agriculture. For example, when a city wishes to obtain a domestic supply it can take water even to the detriment of established agricultural rights but it must condemn those rights and pay for them. The same rule applies as between agriculture and power.

It was probably the thought of the framers of the Constitution, at least with those with whom I^{have} conversed, that domestic uses should have a superior right. In fact, a reservation in perpetuity to such an extent that domestic requirements might take water as necessity demanded, but the courts have modified that original intention by a different interpretation of the constitutional provision. In other words, the framers of the constitution had in mind the very thing we wish to accomplish and the language in this compact should be of such a character as to clearly signify that the agricultural or domestic use is not only superior but dominant, and that the other interests or

uses are servient, and that there is in legal effect a reservation running through the entire fabric of the law respecting this basin by which the agricultural or domestic interest may later come forward and claim its own whenever it is in readiness to use the water, without compensation to the servient and inferior user.

MR. CALDWELL: Mr. Chairman, I think I see something there that may be of importance, but it isn't as yet sufficiently well developed for me to discuss it here, and it would be a waste of time for the commission. I may find an opportunity to discuss my idea with the drafting committee, or some member of it, and see if I can't develop it. I am sure that if we had proceeded on the theory up in the upper states that a power right was subservient in the sense that an irrigator may at any time interfere with it because he is an irrigator and that the power man merely produces power, we would have hindered our development in our state very very much. But if you merely say that the power is a lower order of use than agriculture and that it is subservient in the sense that it may be condemned and bought out, that would permit development.

MR. SCRUGHAN: I agree with that point of view.

MR. HOOVER: You are setting up very dangerous ground for the North in connection with the development in the South.

MR. CALDWELL: I say I am not taking this stand very strongly, but I do want to develop it and think about it.

MR. CARPENTER: To assume his line of thought, imagine for

example, a development in the lower territory, in Arizona or the Imperial Valley, that may come into being as soon as finances may be arranged and repayment of the cost assured. The people of the upper country, in the pressure for more land and for the production of more crops would be compelled to use more water and thereby to deplete the flow. Would they not find themselves, 20 years from now, in the position of having to condemn the power right at Boulder Canyon, before they could expand their agricultural development.

MR. SCRUGHAM: You are defining quantity of water for both basins.

MR. CARPENTER: That is why I say the regulation should be intra-divisional. Right on that line, the lower power development will naturally be first because of the necessity of avoiding calamity in the Imperial Valley. That power use, in turn, should not be able to reach up the river and prevent the construction of later power plants above. There should be no inter-divisional priority between the lower power and the upper power. This and other reasons lead me to believe that power control should be intra-divisional.

MR. SCRUGHAM: Inter or Intra?

MR. CARPENTER: Intra, and that the dividing line at Lee's Ferry, with the delivery of water at that point, gives to the lower territory a supply to be depended upon for power and all other purposes, and no lower river claim should attach above Lee's Ferry.

MR. SCRUGHAM: That is all right.

MR. CALDWELL: It seems very clear to me that as between the divisions it should mean just what we have been thinking all the time - that agriculture should be dominant - absolutely dominant as between the divisions.

MR. CARPENTER: In the final analysis we must leave this preferential development and utilization within the control of the states themselves.

MR. SCRUGHAM: That should be agreed upon in the pact.

MR. HOOVER: I think it reads just as strongly for interdivisional control as it does ^{for} intradivisional control, because I can conceive a situation where power action in the upper states in priority to agriculture may be disastrous to the lower states just as easily as I can conceive one in the lower states that may be disastrous to the upper states.

MR. SCRUGHAM: I will reserve any further discussion of this paragraph until the drafting committee have drawn up the wording intended to cover the point under discussion.

MR. HOOVER: Suppose we leave it to the drafting committee to formulate the ideas in that paragraph.

MR. SCRUGHAM: I regard this as one of the most important paragraphs of the entire pact.

MR. HOOVER: How would it do for us to adopt this paragraph provisionally, subject to revision?

MR. SCRUGHAM: I move that the paragraph be adopted, subject to revision in the final pact.

MR. CALDWELL: I move we adopt it in that form.

(Thereupon, the motion of Mr. Scrugham, having been duly seconded, the same was unanimously passed).

MR. HOOVER: Paragraph five "During the term of this compact appropriations may be made in either division with equality of right as between them, up to a total of 7,500,000 acre feet per annum, for each division. If, upon the expiration of such term, appropriations in one division shall aggregate more in quantity of water than in the other, there shall be vested in the one having the lesser appropriation a continuing and prior right to appropriate further waters until the appropriations in each division shall equal 7,500,000 acre feet."

MR. SCRUGHAM: In quantity.

MR. HOOVER: In quantity.

MR. CALDWELL: Annually.

MR. HOOVER: Yes. To clarify this let's reread this second sentence,- "If upon the expiration of this compact appropriations in one division shall aggregate more in quantity of water than in the other, there shall be vested in the one having the lesser appropriation the continuing and prior right to appropriate further waters until the appropriations in each division shall be equal but neither shall exceed 7,500,000 acre feet annually." (Continuing to read) "All waters in excess of such amount shall be equitably apportioned at the expiration of said period among the states by the commission to be created as above provided."

MR. SCRUGHAM: I move the adoption of that paragraph.

MR. CALDWELL: Mr. Chairman, just a word on that. The compact will provide that seventy-five million acre feet be delivered in ten years. This provides for seven million five hundred thousand acre feet annually. It may be necessary to make a distinction there so as not to get into any difficulty on the compact, because during one year, for instance, we may only get four million acre feet down the river, whereas they may claim that priority of right attaches to seven million five hundred thousand under this wording, during every year.

MR. HOOVER: The intention is to cover that with equality of right. That was the intention of those words in the beginning of the paragraph.

MR. CALDWELL: If that covers it, it is all right.

MR. HOOVER: Is there any other comment? If not, all those in favor of the paragraph as it now stands please say "aye."

(Thereupon, the motion of Mr. Scrugham, having been put to a vote, the same was unanimously carried.)

MR. CARPENTER: One moment, I beg your pardon for coming in out of order. Do I understand this to mean, Mr. Chairman, that the equality of rights mentioned in the second line of the first sentence means an equality of right as between people in the two different divisions? As far as the intra-divisional rights are concerned, it doesn't apply to them?

MR. HOOVER: It says "equality of rights as between them," referring back to either division. Of course that may be cleared up.

MR. CARPENTER: There may develop this thought; that certain development may proceed above seven million five hundred thousand at the hazard of those making such development, in which event there might be balancing as to such excess.

MR. HOOVER: That is a matter for the new commission. If anybody has invaded the excess over the apportionment he has gone into water on which the new commission might disallow him. He may have established a moral position in front of the commission, that is all.

MR. CARPENTER: I think your idea is right in that respect.

MR. HOOVER: The fifth paragraph now stands adopted as follows: "During the term of this compact appropriations may be made in either division with equality of right as between them up to a total of 7,500,000 acre feet per annum for each division. If upon the expiration of this compact appropriations in one division shall aggregate more in quantity of water than in the other, there shall be vested in the one having the lesser appropriation the continuing and prior right to appropriate further waters until the appropriations in each division shall be equal but neither shall exceed 7,500,000 acre feet annually. All waters in excess of such amount shall be equitably apportioned at the expiration of said period among the states by the commission to be created as above provided."

(Unanimously adopted)

Paragraph six. "At the expiration of the period above stated all rights to beneficial uses for agricultural and domes-

tic purposes within the limitation herein expressed shall vest and be established."

MR. SCRUGHAM: Should that be "agricultural, domestic and other purposes," or is it specifically intended that power rights shall not vest?

MR. HOOVER: We do not know what the power rights are on the river, and it was not intended here we should venture into that ground.

MR. SCRUGHAM: How about industrial processes? Should that right vest after a certain period?

MR. HOOVER: Yes, it should vest, industrial processes with agricultural and domestic purposes. Any further comment?

MR. NORVIEL: You didn't add "industrial" did you?

MR. HOOVER: We decided before to include with agricultural and domestic purposes the expression "industrial processes." Let us add after the words "domestic purposes" the words "and industrial processes."

MR. CARPENTER: It isn't the thought, I take it, that, as within any state or within any division the rights will not have established as they will have proceeded, but it is merely the thought to be expressed in this paragraph that when this time has arrived the rights then existing are fixed as to future uses.

MR. HOOVER: Yes. This paragraph 6 now reads as follows:

"At the expiration of the period above stated all rights to beneficial uses for agricultural and domestic purposes and industrial processes within the limitation herein expressed shall vest and be established."

MR. SCRUGHAM: I move the paragraph be adopted as just read.

(Thereupon, the motion of Mr. Scrugham, having been duly seconded and put to a vote, the same was unanimously passed.)

MR. HOOVER: At this time I would like to raise a point which Mr. Norviel brought out last evening regarding the inclusion of another paragraph to the effect that all present rights to beneficial use in agriculture, industrial processes and domestic purposes are hereby confirmed. The value of such a provision is purely psychological because if they are rights, they are rights, and they exist, and they are fixed now. On the other hand, the question always comes up in the mind of every possessor of such right as to whether this pact interferes with him, and we could allay any such questions by inclusion in the compact of some such provision.

MR. SCRUGHAM: In conformity with the laws of the states in which they are located. That is the understanding.

MR. HOOVER: If they are rights, they must conform to the state laws.

MR. SCRUGHAM: It would be variable of course. What would be claimed under riparian rights in California would not apply further up. How about that Mr. McKisick? California recognizes riparian rights, the other states do not. Is there any difficulty which would be brought up through such a wording as embodied in this paragraph? Water appropriation in the other states is based upon the doctrine of appropriation.

MR. MERSON: Riparian rights don't apply very much to the Colorado River.

MR. McKISICK: Of course, they do not extend beyond the California limits anyhow.

MR. MERSON: That could be a part of that same paragraph, could it not, a part of that same sentence?

MR. HOOVER: If we have the idea, the drafting committee can work it out.

GOVERNOR RECHEN: You mean to insert a new paragraph?

MR. HOOVER: Or insert an extension in this sixth paragraph so as not to disturb our number.

MR. CARPENTER: If it means confirmation of rights within the states, and does not leave an open gate, as it were, through which the states may later be brought into collision, on the presumption of something now existing, I see no objection to it. Any rights of the lower division, for example, will attach only to the quantity of water allocated to that division and are a preferred claim on the quantity of water to pass Lee's Ferry and which will flow in the Gila and other lower rivers. But we would not wish to stipulate that the present rights below could come in later and claim that they now have a servitude upon the upper river, notwithstanding and in addition to this future delivery at Lee's Ferry. We admit the psychology and think it wise, providing it is properly confined, and when you confine it, you may destroy the psychology.

MR. CALDWELL: It should be provided that the aggregate rights

18th-S.F.

so vested should not be without the limits of this compact.

MR. CARPENTER: And should attach as a preferred claim upon the water set apart to the division. For example, in the upper territory, there are present conflicts between two states which are being settled separately. Our people would not approve of a compact which would recognize existing rights thus to be settled in a different manner and by a separate compact.

MR. NORVIEL: That is the purpose I had in view, that all rights now established within the basin should remain unaffected by this compact.

MR. HOOVER: If you are going to introduce the words "now established" I think you make a limitation on it that might solve all questions now raised.

MR. CARPENTER: I hesitate to express a final opinion on any such clause, Being desirous of accomplishing the objective of psychology suggested by the Chair, suppose we adopt this clause subject to a direction to the drafting committee that they shall consider and present to us a further expression in respect to the confirmation of all established present rights.

MR. EMERSON: I think it is desirable to have that kind of a clause in. Another thought carries me back to paragraph five,- that there should be incorporated in that paragraph a definition or a stipulation that this right to make appropriations, to the extent of seven million five hundred thousand acre feet per annum, should include existing rights as well as the rights that will be established.

MR. HOOVER: Your seven million five hundred thousand is in addition to present rights?

MR. ELLERSON: It is not so expressed in the present language.

MR. CARPENTER: In other words, in both territories, what we are doing is allocating enough water to take care of the now existing conditions, and future developments.

MR. HOOVER: Yes, I think that needs careful safe-guarding and drafting. We can leave that at that point, and go on to paragraph seven. "During the term of this compact the states in the upper division shall not deplete the flow of the river (at the point of division) below seventy-five million acre feet for any ten year period, or below a flow of four million acre feet in any one year. Provided, however, that the lower division may not require delivery of water unless it can reasonably be applied to beneficial agricultural and domestic uses; and the upper division shall not withhold any water which may not be applied within such division to beneficial agricultural and domestic use."

MR. ELLERSON: Just for information, I would like to ask the opinion as to when this ten year period would start, at what time. Would it start immediately upon the adoption of the compact by the acts of the legislatures and the Congress, or will we make provision that it shall start at a certain definite time of the year? That is rather an important consideration in my mind, because the upper states could possibly make up deficiencies if the year ended at a certain time in a better manner than they could if it ended at certain other times I know of.

MR. HOOVER: What would be the most favorable situation, July or January?

MR. EMERSON: As I think of it now it would be toward the end of the flood water season and before the low water season, and our flow would be limited. That is if we have to face the conditions where we must turn an extra amount of water down we can do it better when we have reserves than we can when our water supply is depleted by nature.

MR. HOOVER: I should think it would be more suitable to the southern states, as well, to make it July, because any water after that date doesn't do them much good for storage.

MR. CARPENTER: That might be said to begin on the first day of a certain month following the final ratification.

MR. HOOVER: And it is inclusive of the nine previous years.

MR. CARPENTER: Yes, it is a progressive ten year period.

MR. NORVIEL: Mr. Chairman, I can't get away from the idea that the figures are too low. While there is in it an element of a guaranty it is lower than the lowest ten year period we have any knowledge of and it is also after the division is made,— after the whole use in the upper division is taken out and would include the total use in the lower division. In other words, it is the excess over and above what the upper states have not heretofore used, and, then, it is less than half of the lowest ten year period that has ever existed.

MR. CARPENTER: That we have any record of.

MR. NORVIEL: Yes, and I rather think that former years, if they had been measured, would have shown perhaps a worse condition, so I can't think that that is a fair division over a ten year period, nor one which gives the fullest protection.

MR. HOOVER: In our discussions yesterday we got away from the point of view of a fifty-fifty division of the water. We set up an entirely new hypothesis. That was that we make, in effect, a preliminary division pending the revision of this compact. The seven and a half million annual flow of rights are credited to the South, and seven and a half million will be credited to the North, and at some future day a revision of the distribution of the remaining water will be made or determined.

An increasing amount of water to one division will carry automatically an increase in the rights of the other basin and therefore it seemed to me that we had met the situation. This is a different conception from the fifty-fifty division we were considering in our prior discussions.

MR. NORVIEL: If this includes reconstruction of the river, then, I concede it is a more nearly fair basis. But if it does not, - if it is a division of the water to be measured at the point of demarkation, I still insist that it is not quite fair, because it is simply dividing what remains in the river.

MR. HOOVER: We are leaving the whole remaining flow of the basin for future determination.

MR. NORVIEL: What I am getting at is this: That the upper basin takes out and uses a certain amount of water, and then, as

this reads, it proposes to divide the rest of it, seven million five hundred thousand acre feet per annum.

MR. HOOVER: No.

GOVERNOR CAMPBELL: That is inclusive, Mr. Norviel.

MR. NORVIEL: It reconstructs the river?

GOVERNOR CAMPBELL: Yes, in effect, as I understand it.

MR. NORVIEL: Well, if it does that, then my objection will be removed.

MR. HOOVER: Any other comment? If not all those in favor of this clause seven as read please say "aye."

(Thereupon a vote having been taken upon the paragraph numbered 7, the same was unanimously passed.)

We will now consider paragraph 8 which reads: "The duty and burden of supplying water from the flow of the Colorado River to the Republic of Mexico shall be equally apportioned between the two divisions and deducted from the amount above stated."

MR. McCLURE: I should like to omit the words "duty and" and add after the word "burden" the words "if any." I should also like to eliminate the words "and deducted from the amount above stated."

MR. HOOVER: With Mr. McClure's suggestions paragraph 8 would read: "The burden, if any, of supplying water from the flow of the Colorado River to the Republic of Mexico shall be equally apportioned between the two divisions." Any further discussion on that section? All those in favor of that section please say "aye."

(Thereupon a vote having been taken upon the adoption of the paragraph numbered 8, the same was unanimously adopted as amended)

18th-S.F.

Paragraph 9 reads as follows: "A technical commission shall be established which shall continuously collect data upon water consumption, water flow, etc." I might mention that paragraph contains no explanation of the machinery. I think it might be desirable to have some little discussion of this machinery so that the drafting committee may have some instructions on this point. So far as the section itself is concerned, it is simply an indication that something of this kind will have to be created. I suggest that such commission, - let us change the word "commission" to "committee",- should be comprised of the state engineers, or of the state water commissioners, together with the Director of the Reclamation Service or his delegate, and that it should be the function of that committee to secure gaugings at Leo's Ferry and to collate and prepare data annually for the instruction of the various states on the technical phases of development of the basin.

MR. CARPENTER: Your theory being, I take it, that through this instrumentality the states would proceed in units and then the units collaborate for the compilation of the final data?

MR. HOOVER: Yes, each unit would collaborate in order to make the data systematic and comprehensive.

MR. ELERSON: I would suggest the United States Geological Survey in place of the Reclamation Service as that bureau is more concerned with the measurement of water.

MR. HOOVER: On the other hand, there is a great deal of data in connection with consumption and other matters of importance that is within the purview of the Reclamation Service.

MR. NORVIEL: Under this paragraph I understand the committee is to be charged with the reconstruction work?

MR. CARPENTER: Simply to ascertain the facts.

MR. NORVIEL: What kind of facts?

MR. HOOVER: As to flow, consumption,--

MR. NORVIEL: I would like to know exactly what it means.

MR. HOOVER: The intention was that the committee should collect facts as to water consumption and water flow. It should collate the work of the different states and direct the preparation of such data as may be of use to the second commission when it assembles. In a word, we should have a careful coordination of data on the river generally and on the conditions at Lee's Ferry particularly.

MR. CARPENTER: In other words, as far as this compact is concerned, the work is for the distant future, except at Lee's Ferry, which has annual significance.

MR. HOOVER: Yes, I take it that during a long period there will be an enormous acquisition of technical data which ought to be formulated in comprehensive shape under the direction of such a committee. This would enable the reconstruction of the river in accordance with Mr. Norviel's wants. If data were available the river could be reconstructed by most anybody.

MR. CARPENTER: Your suggestion meets with hearty approval from my state. Placing these additional duties upon a department of state government already created will be looked upon with favor but the creation of anything in the line of new appointees, new commissioners, or new departments, will meet with objection.

MR. EMERSON: This committee is a clearing house for information and has no particular powers.

MR. HOOVER: Except it will make a determination of the gaugings at Lee's Ferry. I would suggest this committee should embrace both the Reclamation Service and the U. S. Geological Survey.

MR. CALDWELL: This committee would have no determining power as to the fact, it is just for the collection of data. That is what you mean?

MR. HOOVER: It will determine the fact as to the flow at Lee's Ferry, or that would be done under its direction.

MR. CALDWELL: It would have no official capacity which would bind the parties to this compact?

MR. HOOVER: No, none whatever. If that sense of the paragraph is agreeable, all those in favor of adopting it in the following form say "aye." "A technical committee shall be established which shall continuously collect data upon water consumption, water flow, etc." (Passed Unanimously)

MR. HOOVER: We now come to paragraph 10. You will recollect paragraph 10 has already been a stumbling block. It reads;-"Where water may be advantageously or economically diverted from the Colorado River in one state for use in another state, or where proper development within the basin requires that water be stored in one state for use in another state, such diversion or storage shall be permitted."

MR. CARPENTER: With the addition of the words "with previous

consent of the other states" there would be no objection to it.

The consent of the state is usually given through its legislature.

MR. CALDWELL: Mr. Chairman, whoever drafted this article, it seems to me, may have had some specific thing in mind which, if it were stated, might help to clarify it somewhat.

MR. HOOVER: Shall we call upon Judge Sloan?

MR. SLOAN: I have had something to do with the suggestion that paragraph 10 be incorporated in the tentative draft. I conceived that the original suggested draft was wholly inadequate to cover all contingencies and I had in mind the suggestion of a line or two in addition and the reshaping to some extent of the whole article. I suggest that the Commission consider the paragraph as follows: "Where water may be advantageously or economically diverted from the Colorado River in one state for use in another state, or where proper development within the basin requires that water be stored in one state for use in another state and such diversion or storage may be made without prejudice to any beneficial use of such water that the latter state may properly make, such diversion or storage shall be permitted."

MR. CARPENTER: That leaves an open question respecting what will or will not disturb. If the consent of the servient state is first, that of itself will determine definitely.

MR. SLOAN: The objection to that, in my judgment, is that such provision would be of no effect,-- no use. I apprehend that such consent, if had, would answer every requirement of this provision, but if that consent be withheld, there would be no expression in

this compact which would make it the legal or moral obligation of the other state to grant such consent.

MR. HOOVER: Have you any specific case in mind, Judge Sloan, that will illuminate this proposal.

MR. SLOAN: Yes sir, two or three cases. Mr. Norviel will perhaps be able to illustrate those better than myself, but for instance if a dam shall be erected at or near Lee's Ferry, storage would necessarily extend into Utah very extensively. It is probably true that such storage would not interfere in the least with the proper use of the Colorado River by the State of Utah, yet, for some reason or another that consent might be withheld. The purpose of this, in respect to that particular situation, would be that there be here now expressed the consent of the State of Utah. The same is true, perhaps, at Boulder Canyon. The dam there and the storage there would be largely in the State of Nevada, while the works themselves would be partially in the state of Nevada and partially in the State of Arizona. There are two or three other places within our state that may require such consent in order to remove friction and difficulty of development in the future. Mr. Norviel could give those instances, if they are desired.

MR. CARPENTER: There are many instances that may occur in the future and of varying types, as varying as the prismatic colors and more so. Each will involve its own local and surrounding conditions and should be left to conditions as they develop. Such a provision would meet with immediate opposition I know in our

state. Our law specifically declares that no such right shall exist or be fastened upon our territory. This law was brought about by a series of unfortunate past events which the present generation has not forgotten. But, with the proper adjustment in the first instance, all possible friction may be avoided. In fact, I suggested in the draft that I submitted that no such easements should ever exist until consent had first been obtained. This was for the^{very} purpose of carrying into effect the underlying reason for the creation of this Commission,- the establishment of a regular order of doing things and not a method of acting first and quarreling afterwards.

MR. HOOVER: Would this draft of Judge Sloan's be cured in your mind if it stated such consent should not be unreasonably withheld.

MR. CARPENTER: No, that leaves still open the question as to what is unreasonable?

MR. HOOVER: That could be determined by the courts.

MR. CARPENTER: It is for the local legislatures of the states to determine the matter of reasonableness. As said by Justice Holmes in the case of Hudson Water Company vs. McCarter, a state may have reasons that do not appear to the layman or to a technical man. And what she has, she may withhold and ask no man to reason for her will. Collision / will be invited. It may be invited by the incorporation of such a provision in this compact. These matters usually arise from a feeling of unnecessary and unusual burdens without any compensation to the areas affected.

I can imagine (but I could not seriously conceive), for example, the state of Utah arbitrarily withholding its consent to the building of a structure at Lee's Ferry, although treated equitably in the whole transaction. But it certainly would have a right to have some consideration before the consent is given. Unless the broad principle will apply over the entire drainage it appears dangerous.

MR. NORVIEL: That is the reason why I think it ought to be in this compact. Then it covers the whole basin. Just as Mr. Carpenter says to go before the legislature with a specific instance to ask for such a thing as we suggest in this paragraph, would probably meet at once with a refusal. We can see his standpoint,-- seated as his state is on the top of the hill where there is no drainage into the state, all drainage out of the state, and, as he says where his state has a specific law preventing anyone from interfering beyond their state line in just such cases as this. Yet we can see perhaps how it would be better for all of the other states and wouldn't hurt Colorado if this very provision was incorporated within this pact. In fact, I think it is a very important bit of legislation that should be included in the pact and accepted. I see no reason why it should not be accepted by Colorado.

MR. EMERSON: Mr. Chairman, as long as this paragraph is mandatory as it now is by the phraseology, it wouldn't stand any possible show of being adopted by Wyoming, and would defeat the entire compact. It seems to me, the main purpose would be served,

18th-S.F.

if we adopt some plan for authorization whereby the state engineer or other proper official in any state would be authorized to consider an application for the diversion within his state although the use might be in another state, and whereby he would have the privilege of using his discretion as to whether or not the proposed use of water would be detrimental to the public welfare. Under such plan he would have discretion to act upon the application according to the interests of his state.

I have in mind the reciprocity agreement now existing between the State of Wyoming and the State of Utah, whereby either state engineer is authorized to receive applications for interstate use and to consider them upon their merits. Wyoming would not be willing to go any further. For instance, we have a series of lakes at the head of the Green river, at the very headwaters of the Colorado. The State of Wyoming would not want to be in a position whereby she would have to allow the use of those lakes as reservoir sites for the use of water upon the Snake River. I might also apply a situation we have upon the Snake River. I have, during my term of office, granted two permits for the conservation and storage of water in Wyoming for use in Idaho and I have been subjected to very considerable criticism by reason of allowing those permits. It is simply prejudice against anything of that kind. Unfortunately it does exist. So that while we might incorporate the reciprocity measure so to speak, in this compact, and authorize the proper official of any state to give fair consideration to an application, I do not believe that we can go any further. We certainly cannot agree to a mandatory

18th-S.F.

clause.

MR. NORVIEL: Wouldn't it be better for you providing you were to remain State Engineer of Wyoming for all times, if you had such a clause as this? You would not then be subject to criticism when giving such permission.

MR. CARPENTER: The consent of a state may be granted either by specific legislation directed to one structure or one item, or it may be granted through general legislation giving to some official the right to exercise a discretion. Now, that matter will work itself out as time proceeds and the danger of coming into collision should be avoided, it seems to me, by language the very opposite of this provision and requiring that very concurrence. For example,, take Flaming Gorge Reservoir,-Mr. Norviel's state may be eliminated for the time being. The State of Wyoming might well say to the State of Utah that while the damsite is in Utah the great body of the reservoir is in Wyoming and in the matter of claim to some part of the power from that reservoir we feel we should be treated equitably; it is in part our resource. Proceeding upon the same theory the Federal Power Commission, with respect to public lands, may withhold certain lands and make certain conditions running with the grant to use those lands. Both States might wish to be considered in the distribution of financial returns, electric energy and many other items involved in the erection of a dam between here and Arizona, and it becomes merely a localized problem in which there are two states involved and it is up to those two states to work out their differences in

their own way. It is not in the power of one of the states from the North to go down and regulate the situation between Arizona and Nevada. Neither should it be within their power to come up and tell Wyoming and Utah what they shall do at Flaming Gorge, All can be handled either by specific legislation on each item or by general laws such as obtain in most states, but not in my own.

MR. NORVIEL: Let me ask a question. Suppose the engineer of this state should request of your state, Colorado, permission to go above the state line on the Animas River five miles in order to divert the unused water from the Animas River and to take it out upon certain lands that would be impossible of irrigation without such diversion. It would be necessary then to go to your legislature for a permit.

MR. CARPENTER: It would at this time, yes, but I anticipate -

MR. NORVIEL: (Interrupting) And would your state be interested enough to take the matter up, if there was any objection on the part of the State Engineer of your state to take it up and make such grant.

MR. CARPENTER: Our state would naturally give due consideration to the argument presented by the State Engineer, but to say what the legislature might or might not do would be too prophetic. This is true, Mr. Norviel, that as the comity between the states is built up rather than torn down all these things will come to pass in their proper order. We are now proceeding upon the big problem of building up a comity. The minute we get into matters of refine-

ment and detail we are getting into trouble. As comity is established, this great proof of a result of comity will grow and be encouraged in specific localities as between two or more states. I am informed, for example, that Utah would look with great favor upon the Lee's Ferry site. I am informed that the Wyoming people look with great favor upon the Flaming Gorge site. Hence, any structure put in the position of such as those would naturally meet a receptive mind, speaking legislatively, but it is up to those states, after all, to work out that individual problem, localized in its influences and its effects.

MR. HOOVER: This particular question is raised by the/^{State} of Arizona. Its relations are solely between them and the States of Utah and Nevada. I am wondering whether, if those three states were to get together and formulate something for the compact that is agreeable to them, such plan would be objectionable to the other states as long as it did not apply outside the area of those three states.

MR. CARPENTER: I would rather suggest, if these three states wish to agree, they may agree now among themselves, and submit their separate pact. Even though ultra vires at this time, if approved by their legislatures, it would become binding. But to here inject a clause for a specific case might open the door for clauses for other specific cases. I know of none at present. We have no objection (unless it is an opening of the door) to these three states agreeing on anything they may wish, so long as it does not destroy the general plan or interfere with the machinery here provided.

MR. NORVIEL: There is this point,- that if it is an agreement between the three states, then the legislatures of the three states might object to the whole pact on account of that particular clause.

MR. CARPENTER: It had better be segregated.

MR. CALDWELL: I might say I never have any objection to discussion or else I think I never could have been a member of the Colorado River Commission, but I don't see any hope for paragraph 10, nor for the pact if paragraph 10 is attached to it. There might be some reason that I can see right now why we would wish to have an article of this kind in this pact if I considered it appropriate. We are going to take the White River out of Colorado - I did not mean to tell Mr. Carpenter that,- but we have a scheme already on foot.

MR. CARPENTER: Our scouts have your every footstep marked.

MR. CALDWELL: We don't have any desire to take the White River away from Colorado regardless of any rights that Colorado may think they have.

MR. NORVIEL: If you confine your remarks to what this intends, it does not take away any right at all from the other state.

MR. CALDWELL: Well, may be I am all wrong. But anyway it would seem to me to have an application in that case. Utah does not have any desire to get power from the Flaming Gorge site, for instance, by jeopardizing or demanding any rights the State of Wyoming may have with respect to its territory in that site. Utah, I think, would be very much pleased if Arizona would build Lee's

Ferry dam and back the water up into Utah, because we think it would probably create about \$37,000,000 of value to us in the southeastern section. But notwithstanding that, I believe that I have no right as a member of the Colorado River Commission to compact upon anything more than water rights. The State Engineer is empowered to do certain things in the State of Utah with respect to water rights; he might entertain an application for water of the Colorado River to be stored in Utah, but as to the right of way for that storage I think it is entirely out of my province as a member of this Commission. Conceivably that storage site may be all privately owned and, if I understand the intent of this paragraph 10, it might give Arizona the right of condemnation at least, whereby those private citizens might be dispossessed of their property for a consideration. I am sure that the legislature would not desire such a thing as that intermixed with this pact and if any agreement is to be had on that matter it should be separately done between the states.

MR. SCRUGHAM: Between the specific states interested.

MR. CALDWELL: Outside of the pact.

MR. HOOVER: That brings up a matter which I had intended to mention this morning and perhaps this idea might be worked into it. It might be desirable in this pact to prepare the machinery for interstate discussion within divisions, or between any two states. This pact obviously does not establish any basis for action within the groups on questions which may come up between two states, and it would make for peace in the basin perhaps if we went no further than to establish the machinery. In other words, if we had a

provision in this pact by which, upon the application of any state to another state, it should be mandatory upon each to appoint a delegate for discussion, it might result in pacts that would avoid further litigation.

MR. CARPENTER: That should be stated in the negative, and some such provision as you made might be incorporated, in order to avoid necessity of legislation/ⁱⁿeach specific case. Time, energy and expense is consumed in legislating and organizing an interstate compact commission. We have, between New Mexico and Colorado, an interstate compact commission respecting one of the interior streams of the Colorado River Basin. That required specific legislation.

MR. HOOVER: To even establish the commission.

MR. CARPENTER: The commission itself. Now if it is provided that this shall not occur except by consent and then make it mandatory that a commission be appointed, we force diplomatic relations between the states and exhaustion of that method of procedure before further action. The plan contemplated is simply this,- that upon application of one state to another, the Governor would, by virtue of confirmation of this compact, have authority to appoint commissioners. It would be obligatory on them to appoint delegates for such diplomatic discussion, but would involve no obligation of confirmation or conclusion. But they will get together and discuss the question involved. It would set up a diplomatic and arbitration relationship, and many such questions would be brought to conclusion in that way which otherwise might linger to the point of conflict.

MR. EMERSON: What would be the objection to the plan I suggested? Each state has an official now that is charged with guarding its water resources and part of his duties are to consider matters just of that kind. Right now, as I stated, Wyoming has a reciprocity agreement with Utah whereby we do consider matters of interstate diversion. There is an official now created in each state who has matters of that nature in charge. Of course I recognize the need of removal of the obstacle that now exists, as I understand, by virtue of the statute of Colorado.

MR. HOOVER: We have many states in which they do not have the relationship which this would in effect provide.

MR. EMERSON: Why wouldn't a clause be proper, then, that would permit of the consideration by each state of an application that may come from the proper official in another state upon a matter of interstate diversion and use of water?

MR. HOOVER: If you appoint a delegate to consider such application you have done that same thing.

MR. EMERSON: You are setting up additional machinery and that to my mind would not be necessary.

MR. NORVIEL: Still we wouldn't get anywhere unless we had reciprocal relations.

MR. CARPENTER: A provision of that kind in this compact, if adopted, would become the law, and it would be the law to the same degree as any reciprocal and specific legislation. In our state we have been somewhat unfortunate at times in the personnel of our State Engineers. Our legislators know such to have been the

case and they would not care to delegate a matter of this kind to any given official. Secondly, it might involve many factors upon which the State Engineer would not be informed so that, this suggestion, you have made, is much more elastic and permits the exercise of a sounder discretion in each particular instance. But reciprocal laws may be passed in the future by each legislature as they may be advised and we can not force them to pass specific legislation.

MR. HOOVER: My only thought was if you had such a machinery the revolution of that machinery would ultimately bring out recommendations to the legislatures and would carry with it a specific formulation of the problem that would expedite settlement.

MR. CARPENTER: It would be a most pronounced step in interstate relations respecting rivers. I refer to two or more states.

MR. SCRUGHAM: (Addressing the Chairman) Will you suggest a wording?

MR. HOOVER: I think this requires a little thought for formulation. What I had in mind was that in matters of dispute between any two states over questions of water supply, then upon the application of the Governor of any one of the states to the Governor of the other, a special commissioner shall be appointed by both Governors to consider and, if possible, agree upon recommendations to their respective legislatures for settlement of such questions.

MR. SCRUGHAM: Special delegates, instead of commissioners.

MR. HOOVER: Yes, special delegates is better than commissioners.

MR. CARPENTER: Disputes respecting water rights or interstate servitudes.

MR. SLOAN: Isn't the term "water rights" a little too narrow there?

MR. HOOVER: We might put in establishment of interstate water surplus, storage or diversion.

MR. NORVIEL: This reaches further than I had anticipated. The specific instance I have in mind and have had in mind is this. A group of our people in Arizona have for many years been trying to change the head of the ditch in another state and they have at times made their application for this matter and while about 90%, or between 75 and 90% of the lands are in Arizona, the others are in New Mexico, and they were simply told that they must eliminate all Arizona lands before consideration would be given to the matter at all. We have been held in that condition for a number of years and I had hoped we could have some sort of relations established in this matter that would reach throughout the basin.

MR. S. B. DAVIS: I think that is a very good reason for eliminating the article because it becomes apparent at once that the commission is trying to lay down rules applicable to only two states. I will be very glad to get together with Mr. Norviol and try to settle the matter.

MR. HOOVER: What does the commission think of the question of providing here specific machinery for consideration of interstate compacts.

MR. NORVIEL: I think there should be a paragraph of that kind written into it.

MR. HOOVER: Would that not go a long ways toward settlement of the question you have in mind?

MR. NORVIEL: If properly drafted, I think it would.

MR. HOOVER: It can be drafted in a form that makes no commitment to a state to give up anything.

MR. NORVIEL: No, the only thing to give up is to give and permits/ properties the right of way or something of that kind. That is all there is to do. It isn't taking any water or water rights or anything of this kind, but a right of way.

MR. S. B. DAVIS: The difficulty comes in, that it is a change in the affirmative law of the particular state and the minute we attempt to do that we are going to have trouble with our legislatures.

MR. HOOVER: Not the thing I propose.

MR. S. B. DAVIS: No, not the thing you propose, but Mr. Norviel's idea.

MR. SCRUGHAM: I move the suggestion made by the Chairman be adopted as Paragraph 10 in place of the paragraph as now written.

MR. S. B. DAVIS: I second the motion.

MR. NORVIEL: It goes a good deal further, of course.

MR. EMERSON: The only difference between my plan and Mr. Hoover's is my plan gives the engineers a job.

MR. HOOVER: We could overcome your trouble by specifying

that they appoint the State Engineer or some other delegate.

MR. NORVIEL: In our specific case we have had the case up with the State Engineer a long time and have always been turned down flat.

MR. HOOVER: Questions may arise between California and Arizona. The least we can do is to set up a piece of machinery by which they can get together instead of fulminating in the newspapers. When brought together, there is always an inherent pressure on men to find a solution. The very fact that men are compelled to meet and discuss is a very forward step. Perhaps we could adopt this idea so far as to direct the drafting committee to formulate something for our further consideration. Would that be agreeable to you Mr. Emerson.

MR. EMERSON: Surely.

MR. HOOVER: I take it that is in substitution of Article ten.

That completes the consideration of the principles except in one particular and that is the determination of a date for the termination of this agreement. On the date question there can be much argument from the point of view that the southern states hope to enter on large development which will require large finances; it would seem to me desirable that the date should be sufficiently extended from that point of view to cover such periods. It would seem to me also there is a physical fact underneath all this, for as I pour over all the various projects proposed in the upper and lower divisions and the views of the Reclamation Service upon them, I am impressed with the fact that

18th-S.F.

we are not likely to see the completion of even the enumerated projects before 40 and 50 years. We should have a period of complete stability during this time of development. My own inclination, therefore, and I only make that suggestion to both states is that this period should be fairly long.

MR. SCRUGHAM: In order to get the matter before the Commission I move a period of 50 years be adopted.

MR. S. B. DAVIS: I second it.

MR. NORVIEL: That is entirely too long as far as I am concerned. How about forty years?

MR. SCRUGHAM: I am willing to accept 40 years as an amendment.

MR. CARPENTER: The 50 year period would tend to equalize construction on the upper river so that there would be less shock on the stream than there would be occasioned by the hasty development forced by a shorter period.

MR. SCRUGHAM: What is the argument for a less period?

MR. NORVIEL: I feel that the lower division may fairly reach the limit that is given them in this amount of water within the period of 40 years at most, and that anything beyond that is a hazard and that the matter should be again taken up at that time.

MR. HOOVER: I would suggest this thought. If you should succeed before the period of 50 years in utilizing seven and a half million acre feet, progress will, no doubt, be such that your citizens will continue to develop and will be willing to take the hazard, especially from their knowledge of the upper basin,-

for they will realize that the water is still going to come down. This will result in what might be called some "Class B" water rights which have no immediate foundation. When, however, the new commission considers the situation there will be a moral position in favor of this class of rights.

MR. NORVIEL: We don't know how people will look at matters of that kind at that time but at this time it would be almost impossible to finance a hazardous water right.

MR. CARPENTER: You will have seventy years recorded flow at that time. You will have a forty or fifty year record, whatever the term may be, at Leo's Ferry.

MR. NORVIEL: Yes, but I see no reason for putting it off any longer.

MR. SCRUGHAM: Stability.

MR. NORVIEL: I question that stability. When you have used up all you are entitled to as a first-class water right, and then you undertake to do anything beyond that and finance it, that is an unstable situation.

MR. HOOVER: From January 1, 1923, which will soon be upon us, fifty years would take us to 1973, forty years would take us to 1963.

MR. NORVIEL: I suggest a forty year period.

MR. McCLURE: I move that June 30, 1963 be the period.

MR. NORVIEL: I second the motion.

MR. SCRUGHAM: I withdraw my motion.

MR. HOOVER: We might take a poll on this.

(Thereupon a poll having been taken upon the above and Mr. Caldwell, Mr. Carpenter and Mr. Davis having voted "no., the Chair declared the motion to have been lost.)

MR. SCRUGHAM: Now, may I substitute the motion for a fifty year period?

MR. HOOVER: Yes, we will take a vote on the fifty year period, June 30, 1973.

(Thereupon a poll having been taken upon the fifty-year period, the result was as follows: Ayes: Mr. Emerson, Mr. McClure, Mr. Carpenter, Mr. Scrugham, Mr. Davis, Mr. Caldwell. Nays: Mr. Norviel.)

You might try an even number here, 1970, and see how that will go.

MR. NORVIEL: I can't think beyond forty years.

MR. S. B. DAVIS: I think it ought to be settled.

MR. HOOVER: There is one argument in Mr. Norviel's favor. That is, there are a lot of people who will think a shorter period will mean more rapid procedure.

MR. S. B. DAVIS: I move, Mr. Chairman, that a date between the two dates already considered, be determined by the Chair and accepted by the members of the Commission.

MR. SCRUGHAM: I second the motion.

MR. CALDWELL: Mr. Chairman, this may be a matter of nothing more than psychology. The State of Arizona has kept that matter of psychology pretty continuously before us. We haven't made much of a point up our way of psychology and we have conceded the sit-

18th-S.F.

uation in Arizona, but for the matter of the modification of any agreement that we may enter into here, I have discussed with many people the period of fifty years and if fifty years can be agreed upon, it will help the matter through our legislature very much indeed, and inasmuch as there is one negative vote here to that period, perhaps that much might be conceded by Arizona,- a matter of five years if it is left to the Chairman.

MR. NORVIEL: Mr. Chairman, I think we have conceded on every point up to date. I feel we have been borne down at every stage of the game to a minimum and I don't think we should be asked to concede anything more. If we do, we are very liable to go to a point where I myself could not go before my legislature and say I am satisfied with this pact.

MR. SCRUGHAM: Would you be willing to leave it to the compact committee to recommend some definite date and later discuss it.

MR. NORVIEL: If they eliminate Mr. Carpenter and Judge Davis.

MR. HOOVER: I don't feel that there is any difference in either date. So long as it is over forty years and under fifty, it is very immaterial. I think they are worrying about a period that is somewhat immaterial. Mr. Emerson had this in mind when he voted in favor of both periods.

MR. CARPENTER: I agree with you.

MR. S. B. DAVIS: I suggest my motion be put.

MR. NORVIEL: What is the motion?

MR. S. B. DAVIS: That the Chair fix the date as between

forty or fifty years at some intermediate period. In other words, we are apparently deadlocked. Let's have arbitration.

MR. SCRUGHAM: I second the motion.

MR. HOOVER: How about you, Mr. Norviel.

MR. NORVIEL: I think the Chair has expressed himself too much.

MR. HOOVER: If left to the Chair he would obviously be obligated to make it 1968, and I wonder if Mr. Norviel wouldn't come to that.

MR. NORVIEL: Well, I have had in mind, thirty years and can't get away from it. But, in order to get together with these high-up people, I have gone up.

MR. CARPENTER: We have come down from a hundred.

MR. NORVIEL: (Addressing Governor Campbell) Do you think we can get by with that, Governor, forty-five years.

GOVERNOR CAMPBELL: I think so.

MR. NORVIEL: We will agree on forty-five years.

MR. HOOVER: Is that agreeable to everybody? (The answer was in the affirmative.) June 30, or 1st?

MR. S. B. DAVIS: Thirtieth.

MR. HOOVER: Now we have one other point, the one Mr. Emerson raised, that is as to when the ten year period calculations should have a specific beginning. I am wondering whether we could make it June 30 for that as well.

MR. EMERSON: It sounds all right to me.

MR. SCRUGHAM: I move such date be adopted.

MR. HOOVER: All those in favor of June 30 as the calculation period on the ten-year annual flow -

MR. SCRUGHAM: At the expiration of June 30.

MR. HOOVER: All those in favor of fixing the fiscal year as the year of calculation in water flow, please say "aye."

(Thereupon a vote having been taken, the motion was unanimously passed.)

MR. CARPENTER: I vote "aye" with the understanding that it may appear advisable to change the date later. I don't want it to be concluded, but it is a forward step.

MR. HOOVER: I have one other point to bring up. I think we ought to appoint a Drafting Committee and that committee should furnish us with the paragraphs as they draft them, and that the commission should meet to consider the paragraphs one by one, so that we may get along so that we may have no delay. If the Drafting Committee can get us out a preliminary draft we will probably cut it up a lot and send it back. If it is agreeable to the whole Commission, that we should have a Drafting Committee, then the question arises as to how it should be appointed.

MR. SCRUGHAM: I move that the Chairman appoint a Drafting Committee.

MR. ELLERSON: I second the motion.

(Thereupon the motion having been put to vote the same was unanimously passed.)

MR. HOOVER: I will appoint at once, Judge Davis, Judge Carpenter, Judge Sloan, Mr. McKisick, and Mr. Hamole, as a Drafting Committee.

MR. CARPENTER: I move you that it be the express wish of the Commission that the Chairman be an ex-officio member of that committee.

(Thereupon the motion of Mr. Carpenter having been duly seconded and put to vote, the same was unanimously passed.)

MR. HOOVER: We might set a date for the Drafting Committee to meet. I suggest the Drafting Committee start at 3:00 o'clock and use this room. They will have stenographic help and everything furnished to them.

Thereupon the meeting adjourned to meet again at 11:00 o'clock, A.M., Friday, November 17th.

Clarence C. Stetson,
Executive Secretary.

NOTE: The Drafting Committee continued its work during November 17th and 18th, the Commission resuming executive sessions Sunday, November 19th, at 10:00 a.m.

The above minutes were approved at the 27th meeting of the Commission held at Santa Fe, New Mexico, Friday afternoon, November 24, 1922.

18th-S.F.
59