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# THE COLORADO RIVER

(THE AMERICAN NILE)

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Its Present Importance and Its Enormous Potential  
Value to the Nation as a New Field of Rich  
Agricultural Production Under an Ef-  
fective System of Flood Control,  
Water Conservation and  
River Regulation



Issued by the  
ARIZONA AND CALIFORNIA RIVER  
REGULATION COMMISSION  
LOS ANGELES  
1914



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**Its Present Importance and Its Enormous Potential Value  
to the Nation as a New Field of Rich Agricultural  
Production Under an Effective System of  
Flood Control, Water Conservation  
and River Regulation**

**I**T IS THE PURPOSE OF THE ORGANIZATION sending forth this little pamphlet, to direct the attention of those who may read it to a public work of great national importance.

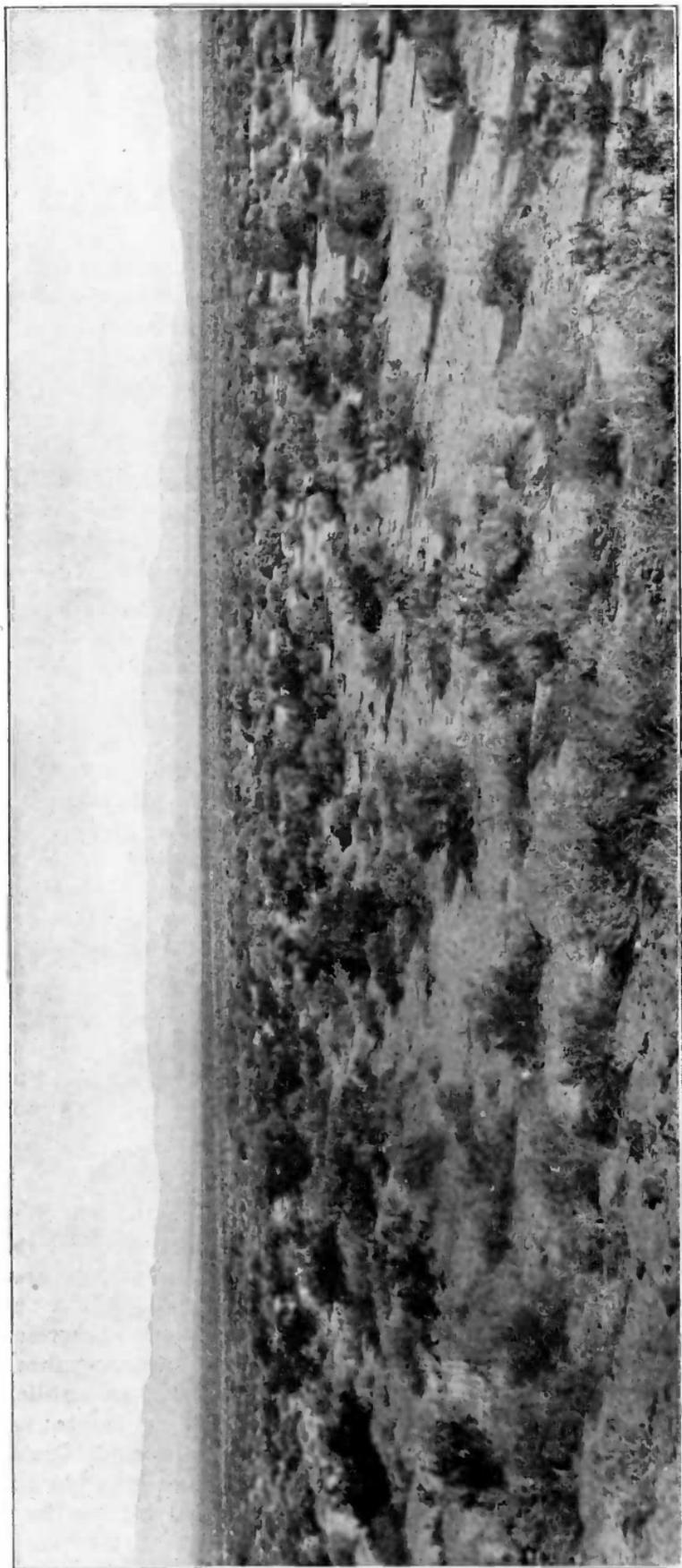
The organization itself and the members of its controlling board have no pecuniary interest whatever in the enterprise, nor would they be benefited in any way by its accomplishment except as all other citizens might be favorably affected.

The object in view is to bring into cultivation more than a million acres of extremely rich and productive land, capable of producing two or three crops a year, which is now absolutely barren and desert, thereby making homes and farms for a half million people, and adding to the national food supplies and agricultural product not less than \$250,000,000 worth annually.

The location of this great field for conservation, flood control, irrigation and reclamation is mainly in the Basin of the Colorado River, in Western Arizona and Southern California, but partially in Utah and Colorado.

## THE BASIN OF THE COLORADO

The Colorado river is the largest stream on the Pacific Coast south of Alaska, and its drainage area of 225,000 square miles is only exceeded by the Missouri and the Columbia on the North American continent. It has its sources in the high mountainous regions of Colorado, Wyoming and Utah, assembling the greater portion of its waters from its source streams at the junction of the Green and Grand rivers in Colorado. It passes through the deeply eroded Grand Canyon of Southern Utah and Northern Arizona until it emerges therefrom a short distance above the town of Needles, California. Below the



**The Imperial Valley Before Irrigation, in 1900**

mouth of the Grand Canyon it runs through successive valleys, separated from each other by ranges of high hills and mountains, for a distance of 250 or 300 miles, until it discharges through an extensive delta into the Gulf of California in Mexico, a little more than 100 miles south of the international boundary.

The territory south of the mouth of the Grand Canyon may be called the **Basin of the Colorado**.

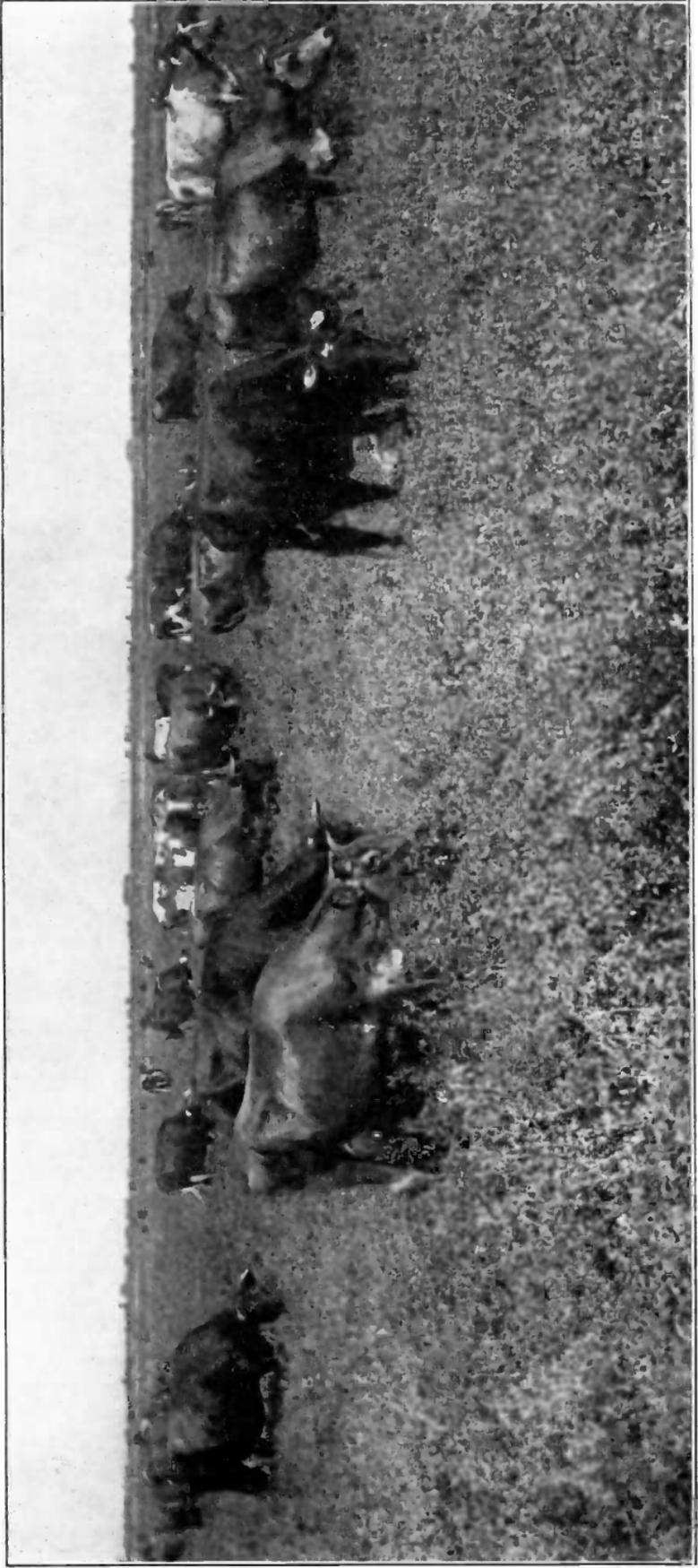
The Colorado river is technically a navigable river, and was actually navigated from the Gulf of California to Yuma and the Needles until recent years. In early days, and before the completion of the Southern transcontinental railways, most of the supplies of Arizona were brought to Yuma by steamers from the Gulf of California.

In the treaty of Guadalupe Hidalgo and the Gadsden treaty with Mexico it receives official recognition as a navigable river, and its equitable use as such by the citizens of each country is guaranteed by the government of both countries. While still under the control of the War Department as a navigable river, the dam of the U. S. Reclamation Service at Laguna, about fifteen miles above Yuma, cuts off navigation at that point, and the extensive use of water for irrigation prevents practical navigation below Yuma.

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### THE AMERICAN NILE

The Colorado river has not inaptly been called, "The American Nile," its conditions being in many respects similar. There are a series of long, narrow valleys, like those found in Upper Egypt, a great delta plain at the mouth of the stream, and an annual rise in the early summer with inundation of marginal lands, and semi-tropical climate; a great river rising in the interior mountain regions and flowing to an inland sea, all resembling the conditions of Egypt to a striking degree. The heat is a dry, intense heat, but not more exhausting than that of latitudes farther north in the Eastern States. Sunstrokes are almost unknown. The winters are mild and pleasant. The enormous quantities of silt carried by the stream are of high fertilizing quality, and lands irrigated by the water from this river improve in quality rather than degenerate. The amount of silt deposited by the river is estimated to be **sufficient to cover fifty-three square miles one foot deep, with dry, rich alluvial soil each year**. It has been sufficient, spread over the delta in the course of time, to cut off in the process of its deposit the northern end of the Gulf of Cali-



Dairy Cattle in Alfalfa Field—Imperial Valley—1913

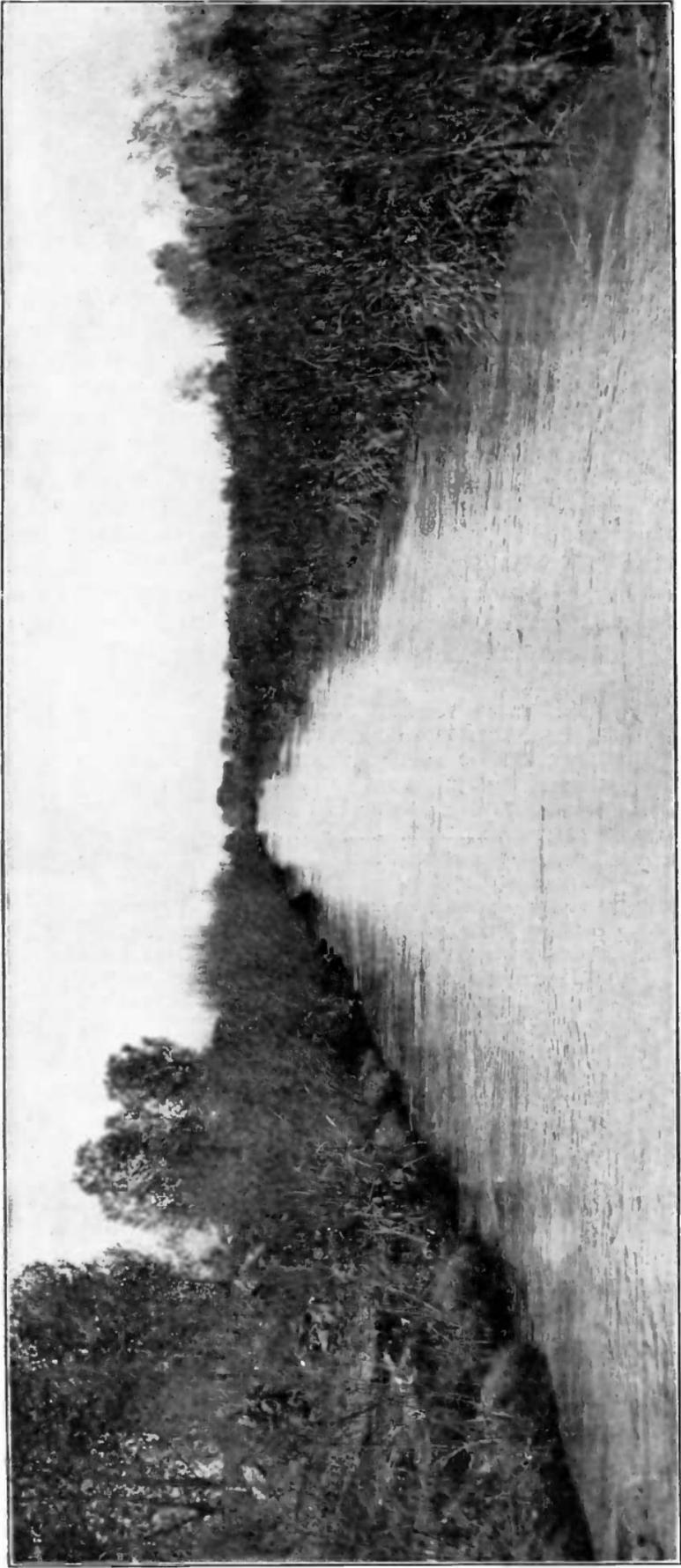
ifornia, which now constitutes the Imperial Valley and the Salton Sea, nearly all below sea level, the greatest depression being 285 feet.

## TRANSFORMATION OF IMPERIAL VALLEY

In the year 1900 what is now known as the Imperial Valley, was a barren desert. Not an acre was under irrigation or cultivation, nor did any human being live therein. Shortly thereafter the first irrigation project from the Colorado river was put in, and the work of reclaiming the land commenced. At this writing, in January, 1914, there is a population of 40,000 in Imperial county, with a county government, handsome county and school buildings, churches and banks. In 1909 the assessed valuation of property for purposes of taxation was \$9,000,000; in 1912, \$19,000,000; and in 1913, \$21,000,000, while the actual value of property in the valley is not less than \$50,000,000. In 1912 the production of the valley, shipped out, aggregated \$10,000,000. For the twelve months ending October 31, 1913, the output was \$12,926,925, distributed as follows:

Hay, 52,540 tons.....	\$788,100
Barley, 231,600 sacks.....	289,500
Corn, 132,000 sacks.....	165,000
Cotton, 22,000 bales.....	1,530,000
Cattle, 1300 carloads.....	1,137,000
Poultry .....	225,000
Hogs, 540 carloads.....	697,600
Sheep, 342 carloads.....	225,200
Horses and mules.....	1,800,000
Butter, 5,000,000 pounds.....	1,500,000
Cantaloupes, 3419 carloads.....	2,136,875
Watermelons, 474 carloads.....	106,650
Grapes, 119 carloads.....	119,000
Alfalfa meal, 930 tons.....	18,600
Honey, 470 tons.....	56,400
Asparagus .....	32,000
Other fruits and vegetables.....	100,000
Products for home consumption (estimated) .....	2,000,000
Total.....	\$12,926,925

It is predicted—and the prediction does not seem extravagant—that the population and the product will be trebled or quadrupled within the next ten years. These things are mentioned to illustrate the marvelous results from the application of water for irrigation to these Colorado basin lands, both in Arizona and California, and below the national boundary in Mexico.



Irrigation Canal from Colorado River—Imperial Valley—1913

## FUTURE POSSIBILITIES

Mr. J. B. Lippincott, the well known hydraulic engineer, places the areas under canals in the Colorado River Valley at the present time and the areas capable of irrigation as follows:

	Now under canal, acres.	Total irrigable area, acres.
Needles .....	5,000	40,000
Parker and Palo Verde .....	25,000	220,000
Yuma .....	90,000	750,000
Pecache .....		15,000
Imperial Valley .....	307,000	500,000
Pumping within 100- foot lift (exclusive of Yuma) .....		230,000
Mexican land in Lower California (under California development canal) .....	50,000	200,000
	<hr/> 477,000	<hr/> 1,355,000

It thus appears that there are 477,000 acres under canals (but not all under present cultivation), and a total capable of irrigation of 1,355,000 acres, not including the areas close to the line in Sonora, Mexico. These are placed by some authorities as high as 300,000 acres.

There is no doubt, therefore, that a million acres capable of producing two or three crops a year and not now under irrigation, and therefore entirely unproductive, in the Colorado river basin, may be brought under high productive cultivation by a proper system of reservoir conservation of the flood waters of the Colorado.

The reason why a system of great reservoirs is necessary is that at the lowest stage of the natural flow of the Colorado river the present appropriation and use of water for irrigation leave little if any margin for increase.

At the same time the amount of flood water in the river at its higher stages, if conserved in great reservoirs, would be more than ample to irrigate every

MAP SHOWING COLORADO RIVER  
AND  
POSSIBLE RECLAMATION  
PROJECTS

As Per Map on Opposite Page

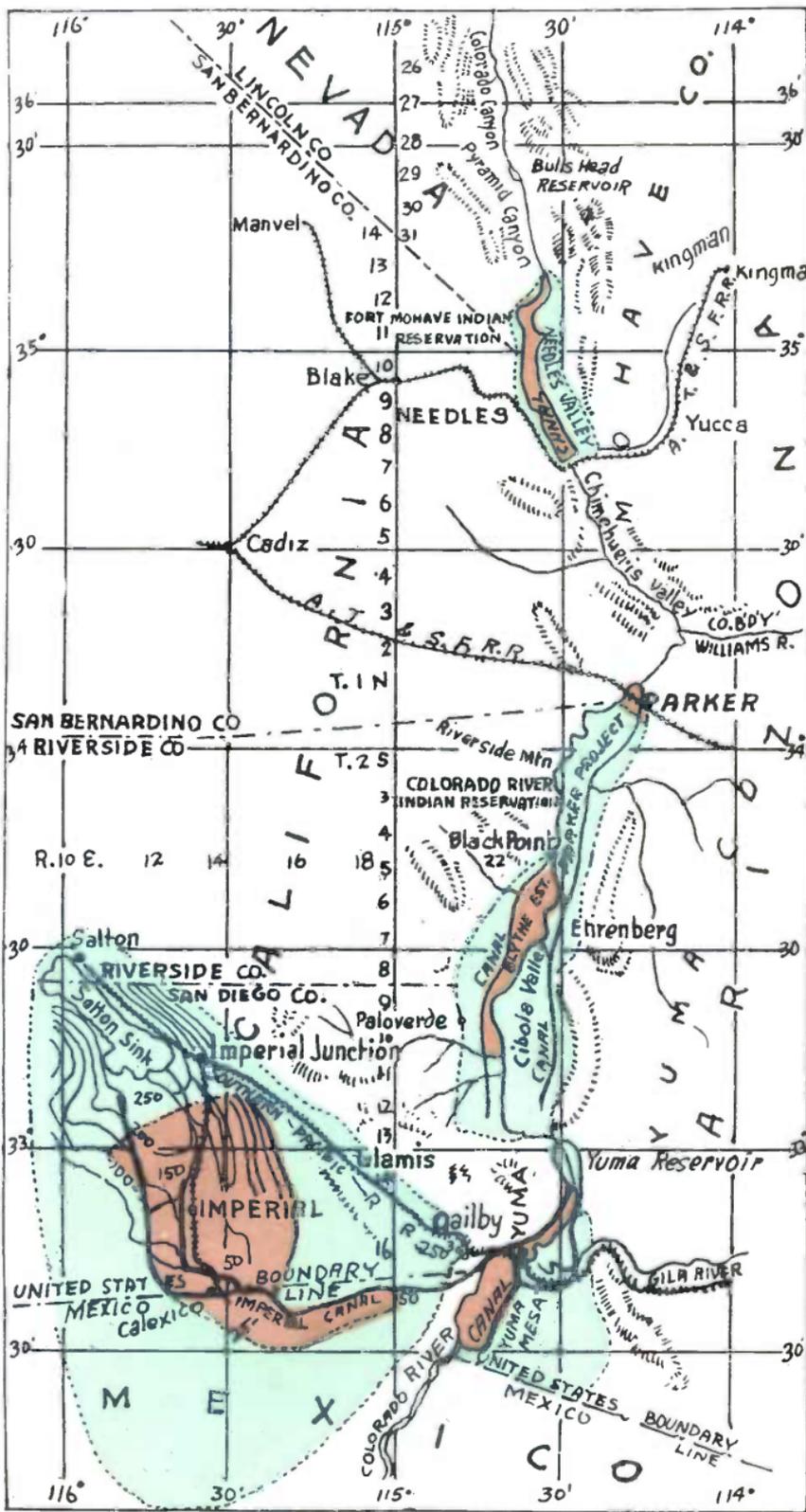
AREAS UNDER CANALS ON THE LOWER  
COLORADO RIVER IN 1913

Needles - - - - -	5,000 acres
Parker - - - - -	5,000 "
Paloverde - - - - -	20,000 "
Yuma - - - - -	90,000 "
Imperial - - - - -	307,000 "
Mexico - - - - -	50,000 "

ULTIMATE IRRIGABLE AREAS

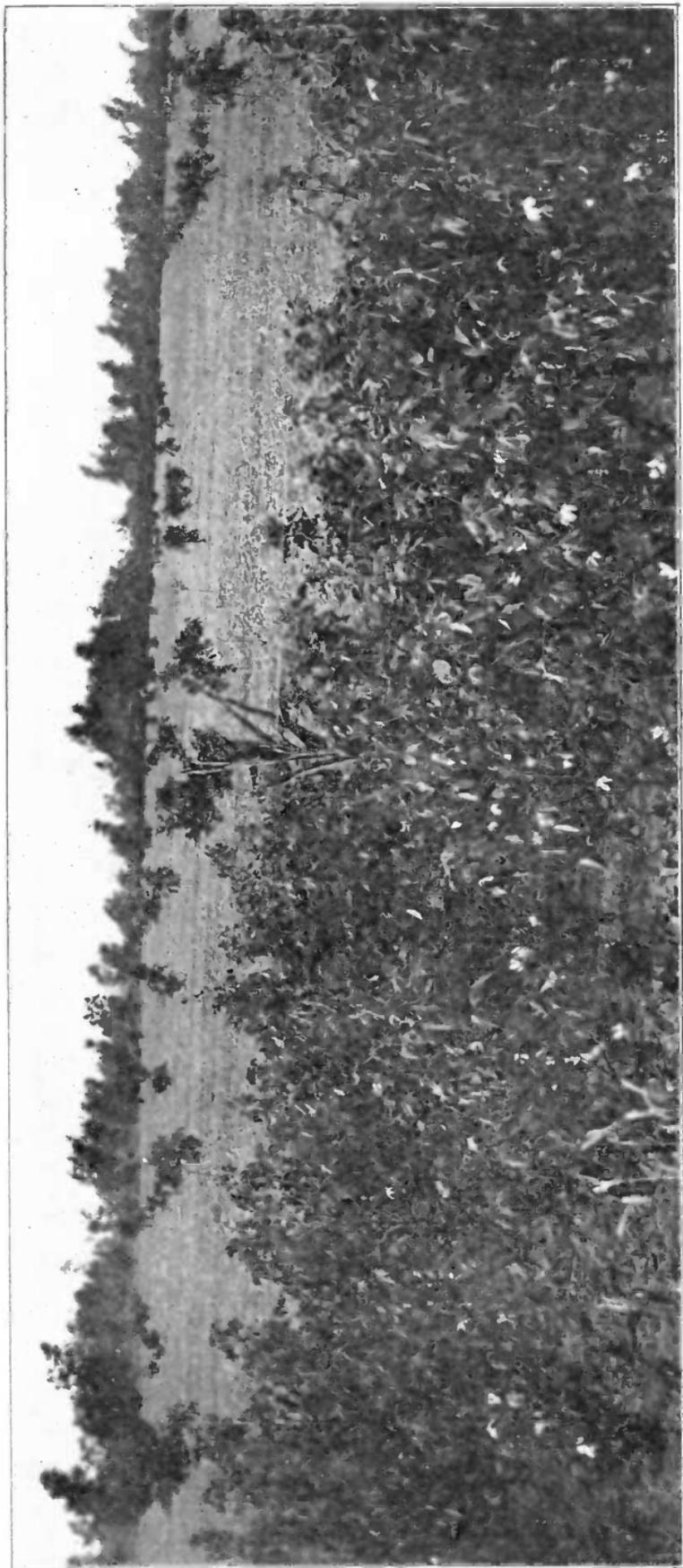
Needles - - - - -	40,000 acres
Parker and Paloverde	220,000 "
Yuma - - - - -	150,000 "
Pecacho - - - - -	15,000 "
Imperial Valley - -	500,000 "
Pumping, 100 ft. lift, exclusive of Yuma,	230,000 "
	<u>1,155,000</u> "
Mexico, Lower Cal. under Cal. Dev'l Co.	200,000 "
Sonora—Indefinite	
Grand total	<u>1,355,000 acres</u>

January, 1914



SCALE 0 10 20 30 40 MILES

ULTIMATE IRRIGATION
 
 PRESENT IRRIGATION



Cotton and Orange Trees—Imperial Valley—1913

available acre of land along the Colorado in the United States, and also in that small portion of Mexico between the international boundary and the mouth of the river, within which our treaty obligations and international equity require some consideration upon our part.

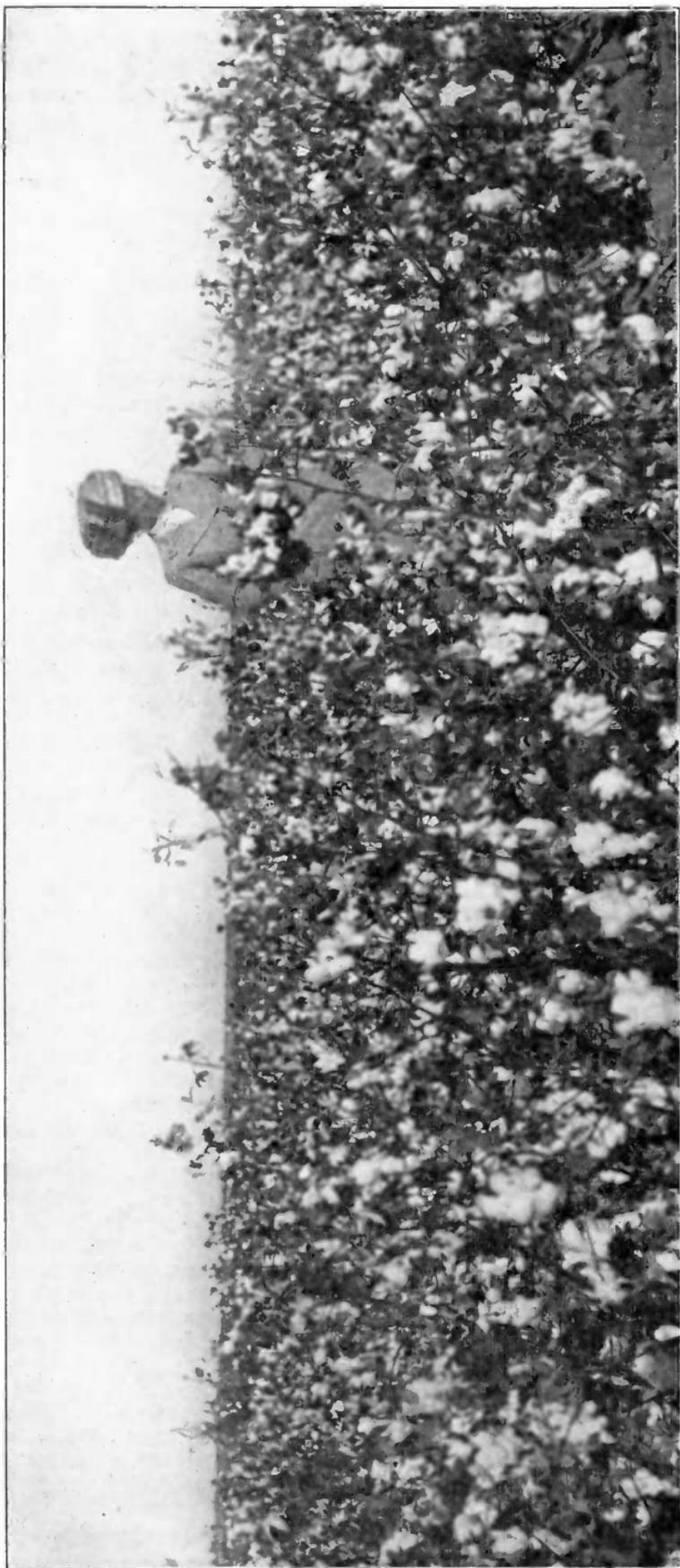
## DESTRUCTIVE OVERFLOWS

The Colorado is like the Mississippi river in that in seasons of high water it overflows its banks and levees with very destructive results. In 1904 and in 1906 the water broke through the banks, and, entering the Salton basin, 200 feet or more below sea level, formed an inland sea of large dimensions, and threatened the entire destruction of the Imperial Valley by permanent overflow and a new outlet to the Gulf of California. The break was finally repaired and the river turned back into its old channel, but at heavy cost and an immense loss of crops and property. The actual extent and possible results of this disaster may be estimated by the following extract from the message of President Roosevelt to Congress on the subject, on January 7, 1907:

"If the river is not put back and permanently maintained in its natural bed the progressive back cutting in the course of one or two years will extend upstream to Yuma, as before stated, and finally to the Laguna dam, now being built by the Government, thus wiping out millions of dollars of property belonging to the Government and to citizens. Continuing farther, it will deprive all the valley lands along the Colorado river of the possibility of obtaining the necessary supply of water by gravity canals.

"The great Yuma bridge will go out, and approximately 700,000 acres of land as fertile as the Nile Valley will be left in a desert condition. What this means may be understood when we remember that the entire producing area of Southern California is about 250,000 acres. A most conservative estimate after full development must place the gross product from this land at not less than \$100 per acre per year, every ten acres of which will support a family when under intense cultivation. If the break in the Colorado is not permanently controlled the financial loss to the United States will be great. The entire irrigable area which will be either submerged or deprived of water in the Imperial Valley and along the Colorado River is capable of adding to the permanent population of Arizona and California at least 350,000 people, and probably 500,000. Most of the land will be worth from \$500 to \$1,500 per acre to individual owners, or a total of from \$350,000,000 to \$700,000,000."

The foregoing statement of President Roosevelt, based upon official reports and advice of the U. S.



Cotton Field in Imperial Valley—1913

Reclamation Service and the U. S. Corps of Engineers, graphically illustrates, from a national standpoint, the vast possibilities of the Colorado River Basin as well as the conditions, similar to those in the Lower Mississippi, for enormous damage by reason of seasonal floods and overflows.

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### HOW CONDITIONS MAY BE MET

Here are two great public benefits to be accomplished, of sufficient magnitude to justify national consideration and action:

**FIRST**—The protection of the Colorado River Basin of Arizona and California from destruction by seasonal floods coming from the States of Colorado, Wyoming and Utah.

**SECOND**—The reclamation of a million or more acres of land, now desert, but capable by irrigation, of remarkable productivity of early and high value horticultural and agricultural crops, capable of sustaining a population of a half million people.

The addition of so large an area to productive agriculture, whereby the food products of the nation may be largely increased, is a proper and impressive national consideration.

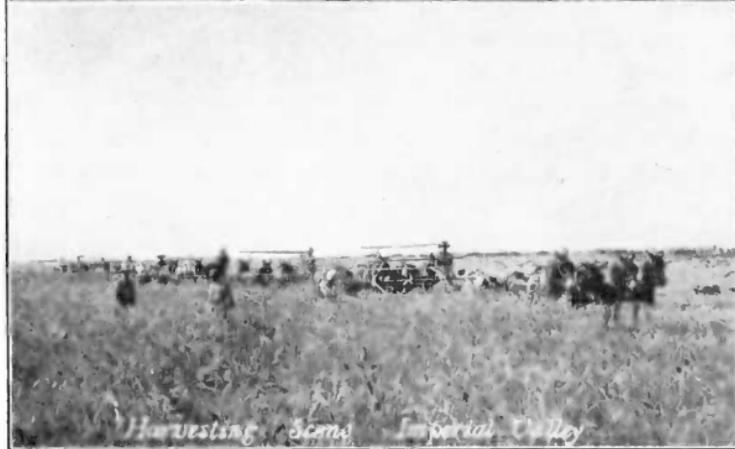
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### ONE REMEDY FOR BOTH CONDITIONS.

There is really only one method by which both of these great objects can be accomplished; that is, by **conserving, controlling and regulating the flood waters of the Colorado.**

This may be done by the construction of great dams at points which have already been chosen by the U. S. Reclamation Service, above the mouth of the Grand Canyon of the Colorado, within which may be impounded large lakes of the flood waters which come from the melting snow and heavy rainfalls in the Rocky Mountains. Such impounding would not confine ALL the flood waters, but it would hold back a sufficient quantity to take off the "peak load" at the period of highest water, thus easing the pressure upon the levees in the Lower Colorado and greatly diminishing, if not entirely eliminating, the danger of damage and destruction by overflow.

The second and not less important result would be that at the annual lowest stages of the Colorado, when the flow is hardly sufficient to furnish the necessary amount of water to lands already under irrigation systems depending upon the river for their supply, the water impounded in the great artificial lakes could be released at will, thus enormously in-



Scenes in Imperial Valley—1913

creasing the irrigating capacity of the river. There is high authority for the statement that such a system of conservation and practical water storage would render it possible to irrigate every acre of available agricultural land along the Colorado in the United States, and there also would be sufficient to fulfill our national obligations to Mexico, within the territory of which country is the lower 100 miles and mouth of the Colorado. Such conservation by means of great reservoirs would also serve to determine questions between residents of the Upper and Lower Colorado River, growing out of diversions from the source streams of that river, now threatening serious legal controversies.

### HYDRO-ELECTRIC POWER

We have made no mention of the possibilities of generating hydro-electric power; but they are vast. If used for commercial purposes it will doubtless in time pay an amount equal to the interest on the investment and go far to liquidate the principal required for the construction of the reservoirs.

### A NATIONAL UNDERTAKING

This is an undertaking of too great dimensions to be attempted by individuals, and it would not be in accordance with good public policy to entrust it to corporations with the concessions which would be essential to induce corporations to construct the great system of restraining dams. **The entire Colorado river from sources to mouth should be embraced in one great reclamation system** in order to render it effective—and no such vast control could be given to a corporation.

The Federal Government could and should carry out this great work in behalf of the whole people. It could recoup itself for the outlay from the rich lands that it would reclaim, sufficient time at a low rate of interest being given to the settlers on such lands to meet the outlay of the Government. The present system of the U. S. Reclamation Service is a just one; but more time and easier payments should be allowed the settlers than is accorded under the present law.

We are urging the National Government to consider and act upon the following facts:

1. **That the development of the irrigable lands on the Colorado river south of the Grand Canyon has reached a point that requires practically all the waters in the natural flow of the river at its lowest stage.**



2. That the water which runs off during the high stage of the river is dangerous to property and a terrible economic waste.

3. That adequate reservoir storage is available in the headwaters of the Colorado river of a sufficiently adequate character to provide irrigable waters for all of the lands of the Colorado river and at the same time prevent dangerous and destructive run-off in the flood season.

4. That there are a number of private irrigation projects of one character and another along the line of the Colorado river, all of which have interests more or less opposed and all of which will become involved in expensive and destructive litigation in the event that there is not water enough for all.

5. That the Department of the Interior should make a complete hydrographic investigation and survey of the drainage basin of the Colorado river, which shall include the volume of water available at different points and at different seasons of the year and stages of water, and also the storage capacity of available reservoir sites, with the view of formulating a comprehensive policy for the utilization of the river.

6. That the legal and equitable rights of Mexico in the waters of the Colorado river, for either the purpose of navigation or irrigation, should be settled at the earliest possible moment.

These are points about which there is substantial agreement between departments of the Government that have direct dealings with the problems of the Colorado river situation—the Corps of Engineers and the U. S. Reclamation Service—the commercial organizations of the Southwest, and the private engineers in interest.

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## THE NEWLANDS BILL

The Newlands River Regulation Bill is a broad measure, which treats this vital subject of flood control and river regulation in a comprehensive way, taking into account all sections of the country. The questions of the Colorado are essentially the same as those of the Mississippi, and the Newlands Bill provides for the Colorado as well as for the Mississippi and other large river problems.

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## MAP AND ILLUSTRATIONS

The map and illustrations in this pamphlet are not inserted for the purpose of “booming” or advertising

any section, but to give a graphic idea of the great benefits to be derived from the conservation policy advocated.

The map is accurate, and shows in one color the territory now under irrigation, and in another that which may be brought under irrigation.

The illustrations are intended to show the contrast between the country in its desert state and the present prolific character of the same country under irrigation all brought about in a period of less than fourteen years.

We cordially invite all to whom this leaflet may come to give this great constructive and conserving plan which has been outlined herein, their thoughtful consideration. Its object is to **change the character of the present seasonal floods from an engine of destruction and desolation into harmless lakes, afterward to be drawn upon for the beneficent purpose of watering the lands now desert and useless, and converting them into rich agricultural fields and happy and prosperous homes for American farmers.**

ARIZONA AND CALIFORNIA RIVER  
REGULATION COMMISSION,

WILLIS H. BOOTH,  
Chairman Advisory Board.

F. Q. STORY,  
President.

H. Z. OSBORNE,  
Vice-President.

FRANK WIGGINS,  
Secretary.

