

LAKE HODGES DAM  
erected by  
SAN DIEGUITO MUTUAL WATER CO.  
1918.

Directors.

W. E. Hodges  
Wm. G. Henshaw  
E. O. Faulkner  
S. C. Payson  
Ed. Fletcher, Pres.

Engineers

W. S. Post  
G. W. Harris  
E. W. Case  
Designer  
John S. Eastwood

accepted by  
W. F. Mc Clure,  
STATE ENGINEER OF CALIF.

*Handed in  
cut  
11/15/18*

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Interview with Colonel Fletcher

Water History

Feb 13/32

Tribune

The sensational articles in the papers relative to the safety of Lake Hodges dam are certainly deplorable.

The State engineer of California, Mr. W. F. McClure, inspected the foundation of each arch and gave us written permission before any concrete was poured. He had a representative here during construction, formally approved the plans before work was started and after completion formally accepted the work. Why does not some responsibility rest on the State of California if they don't like their own work?

The California Legislature has given millions to Los Angeles County for flood control, \$600,000 last year, also \$600,000 to Orange County. They are assisting a dozen other counties financially. Why should they not spend \$150,000 to \$200,000 in San Diego County and repair Lake Hodges Dam to suit themselves if they don't like it in its present condition.

Lake Hodges stood the test in 1921 when the water was 11 feet 8 inches deep going over the top of the spill way.

On February 16, 1927 the U. S. Government records show that 55,000 second feet of water was going over the top of the dam or an amount equal to one-fourth of the volume of the water of the Colorado River in flood.

As president of the water company that built the dam, during its construction, and for many years thereafter, I wish to say that,

not alone did the State Engineer of California approve of this work but the plans and job was approved by that famous engineer, John S.

Gen. Shanks

Sunday at 10 o'clock





Eastwood who designed the dam, has built over twenty of them and every one of them are functioning 100% today.

The chief engineer of the Santa Fe Railroad, in every particular, approved this dam as well as a dozen other engineers.

Lake Hodges Dam has a safety of factor of 5 to 1 as compared to the gravity arch 3 to 1.

The real trouble is the St. Francis Dam, a gravity arch similar to Barrett, Otay and Sweetwater went out with a loss of life and great damage scaring engineers almost to death. The result is that it is going to cost millions additional money to satisfy the new requirements of the state. St. Francis Dam never stood the test. Lake Hodges Dam has and is doing it today.

In closing, let me say, if you are going to spend \$100,000 on that dam you had better add another \$70,000 to \$80,000 while you are doing it, increasing the storage capacity 15 feet and adding 50,000 acre feet of water to the present supply. By so doing, you will get an additional net safe yield of 3 or 4 million gallons daily, the cheapest water the city can ever develop.

# Rough Handling

By JOHN P. STEWART,  
Road Foreman of Engines, Las Vegas, N. M.

**I**N preparing this paper I have placed myself in the position of the man who believes in and practices rough handling, and have asked myself the reason why. From my experience as a fireman, brakeman, switchman and engineer have tried to answer that question.

This is a subject that for a long time has been forcing itself forward until the time has arrived when it must be faced and solved. The subject may be classified as follows: Indifference, Thoughtlessness, Haste.

*Indifference* spells a lot of trouble for the employer and employe. The employe should be too selfish to be indifferent. Serving the railroad faithfully is really serving yourself. The next time any yardman who reads this, whether he be an engineman or a switchman, handles a car roughly I hope he instantly reflects on what caused that particular case of rough handling, and diagnoses his own sensations with respect to responsibility for it. If he finds that he is indifferent to the consequences it will pay him to make a resolution to avoid a recurrence. The man who will cut off a string of cars at ten miles an hour and laugh when he hears them collide is poorly serving his own interests not considering how poorly he is serving the interests of others. He is traveling a road to the hospital for himself, and to the rip track for the cars. "High ball" and "wash out" signals result in broken draw bars, broken air pipes, cars off center and damage to contents of cars.

Under *Thoughtlessness* comes the engineer who permits his attention to be diverted from the work in hand. This is a very dangerous habit indeed and may result in trouble that may cause dismissal from the service. Each man in charge of an engine, if only from a selfish standpoint, should school himself always to be on the alert, and, when responding to signals, have in mind safety.

He should think about the amount of slack in the cut of cars he is handling and not try to start and stop twenty cars with the same effort he would use for one. The

man who stops five feet from the car and fills the superheater with steam must expect that there will be damage as the result of his thoughtlessness. Such a case should be avoided, but if anyone should be so unfortunate as to have it occur to him he should think seriously of what brought it about and make up his mind that it will not occur again.

There was a recent case of a local engineer who thought he was backing into the house track and started to read an order. As a matter of fact, he was not backing into the house track and, instead, crashed into his train and smashed a draw bar. This was thoughtlessness and should be a warning to all.

We all admire the thoughtful man, and, therefore, he is something worth emulating from a personal standpoint as well as for the good of those with whom we come in contact. In other words, thoughtfulness is mutually profitable.

*Haste* does not necessarily mean speed. I am afraid too many of us harbor the thought that the company does not give us time enough to do the necessary work. We are prone to advance the excuse that if we do not kick or drop cars too much time will be consumed on the trip. If you are governed by such thoughts it would pay you to observe the work of the man who gets over the road or gets his yard work done promptly and without rough handling. Study his system and see if you cannot do as well or even better.

The following contribute to damage to cars and contents and should be given consideration:

Kicking cars, resulting in coupling cars violently.

Switching with long cuts of cars. Slack action running in and out is sure to cause damage to equipment and lading.

Weighing long cuts of cars. In such case the car on the scale is in the same position as the boy on the end of the line playing "crack the whip."

Allowing engines to couple hard due to improper signal, lack of signal or inattention in giving the signals.



Those of you who are concerned in the handling of cars in yards or in trains, can probably add many causes for damage. The important thing is to review these causes in your own mind and decide what you will do personally to avoid them.

#### IN REGARD TO PICTURES

When you take a good interesting picture that you like to show your friends, why not include the editor? The magazine is always anxious to publish pictures of general interest concerning the railroad business and the Santa Fe in particular. Any novel shipment, any well-known personality, photos of new construction work and especially of new methods are very acceptable.

The other day we had a long talk with a general foreman on a western division. He spent an hour in explaining his method of sinking new wells and of building concrete casings. His description was interesting and when he finished we asked him why not tell his fellow foremen and other employes of his method. He wanted to know how, so we told him:

"You have a magazine—why not make use of it? You have just finished telling me the

equivalent of a ten-page illustrated article concerning your method of sinking wells, lining them, and of unique angles of bridge building. As far as I know these methods are restricted to your division. Don't you think every bridge and building and water service foreman on the Santa Fe would be interested in learning your method? An hour's dictation and a few pictures of the work you have pointed out to me from the car window would do the work. Let the magazine do the rest."

The same idea can be applied to the mechanical department, the track department, the signal department and to office work.

Photos showing the wrong way and the right way of doing different jobs are very acceptable.

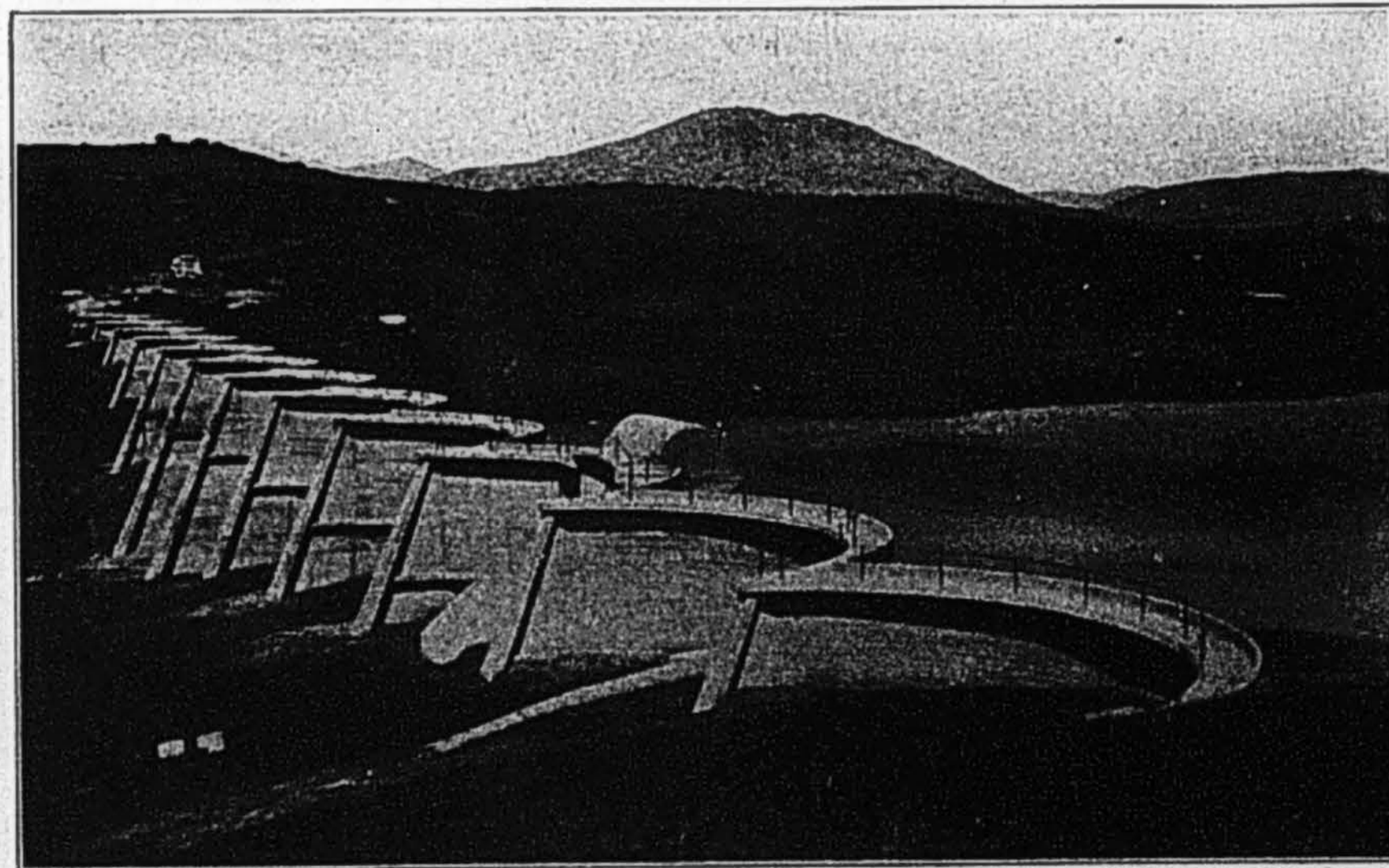
Don't hesitate to send in your snapshots. Let us look them over any way.

#### A. W. O. L.

The new boarder sniffed at the contents of his coffee cup and set it down.

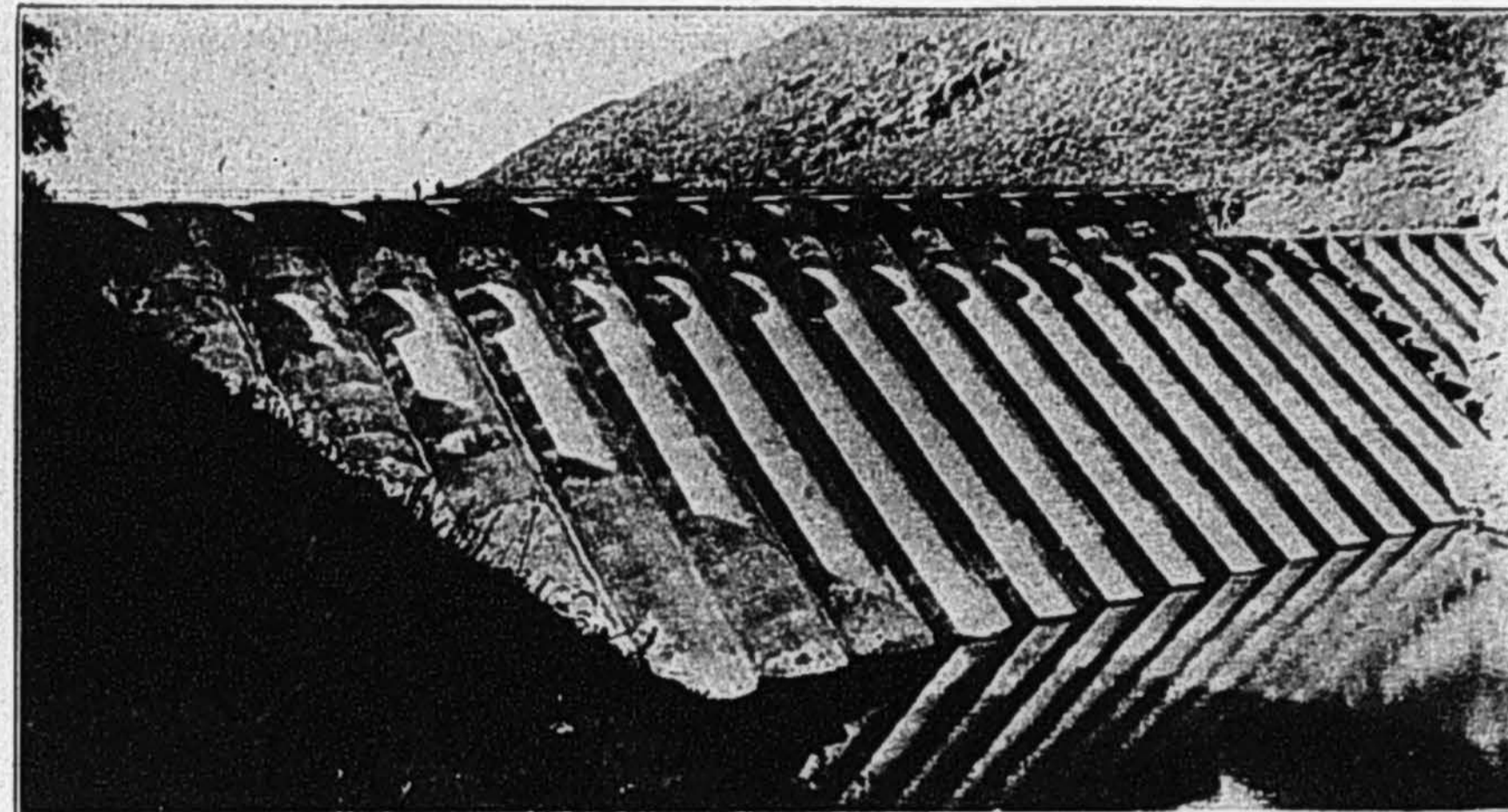
"Well," queried the landlady in a peevish tone, "have you anything to say against the coffee?"

"Not a word," he answered. "I never speak ill of the absent."



SAN DIEGUITO DAM AND RESERVOIR, NEAR SAN DIEGO

Built by the Santa Fe as a diverting reservoir to impound the water from Lake Hodges. From here the water is carried in concrete pipes to the Coast for irrigation purposes. (See page 47.)



CLOSE VIEW OF LAKE HODGES DAM FROM THE LAKE

This dam is 156 feet in height from bedrock and reinforced concrete multiple arch construction was used throughout. The dam is 750 feet in width and 101,900 barrels of cement were used in its construction.

## Santa Fe Completes Multiple Arch Dam in California

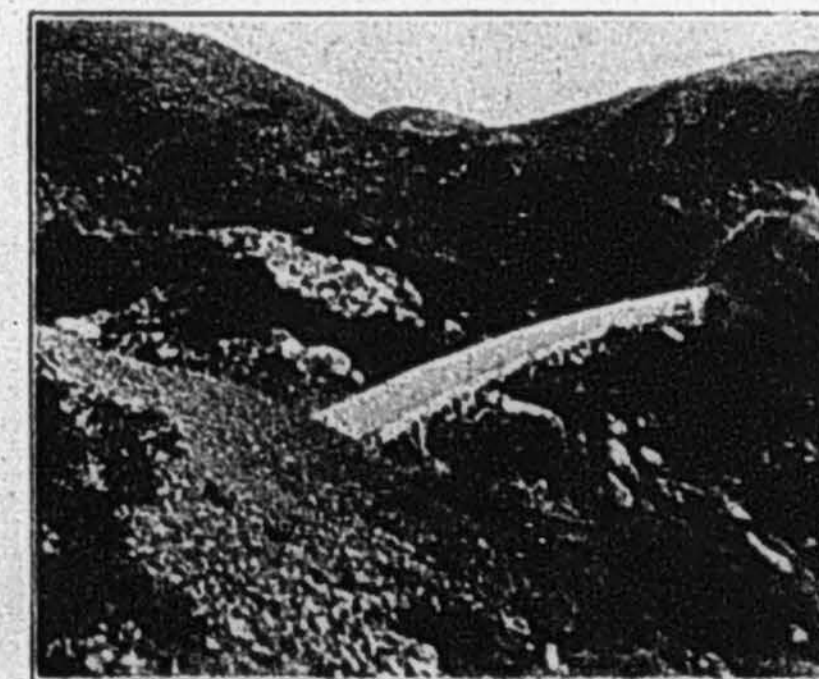
It has been said that Southern California without water is comparable only to fruit without flavor, or a Romeo without a Juliet.

Without a bountiful supply of water, secured from large storage dams in the mountains and from underground reservoirs by pumping, Southern California could not produce 50,000 or 60,000 carloads of citrus fruits annually; 10,000 carloads of cantaloupes, and many thousand cars of deciduous fruits and vegetables, which mature in the winter months, when prices are high and with the whole United States as a market.

The Santa Fe Railroad has had many opportunities, from Chicago to San Diego, to assist in the development of wa-

ter along its lines, but it was the needs of San Diego County, Cal., from Oceanside to Del Mar, twenty-two miles along the coast, as well as the needs of San Diego City, that prompted the Santa Fe company to finance the San Dieguito Mutual Water Company by the construction of two reservoirs and the bringing of water from the mountains to the sea, the largest single water development that has ever been consummated in San Diego County.

The main line of the Santa Fe from Los Angeles to San Diego traverses the coast between Del Mar and Oceanside, where the water from this system is being placed. The rainfall along the coast is about nine inches annually, and the most salubrious climate that can be



CONDUIT OF THE SAN DIEGUITO MUTUAL WATER COMPANY



found in California. Dry farming methods for the last thirty years have failed to produce satisfactory crops, and the country has not developed on that account. But with water, what a revelation!

The water system has been completed the last year, and land that formerly would hardly pay to farm at a rental of \$1 per acre per annum for dry farming, is now paying \$25 to \$30 per acre, cash rent, with the tenant or owner paying for the water in addition, and it is no unusual thing to get

\$400 to \$600 per acre gross for winter crops of vegetables, such as peas, string beans, tomatoes, chili peppers, eggplant, and so forth, which can be planted in August and September and harvested in January and February, and it is these practically frostless lands that make it possible. Two full crops, and sometimes three, can be raised each year, owing to the possibility of securing water at the proper time for irrigating purposes.

The Santa Fe Land Improvement Company owns 8,500 acres of land under this water system. It is under the management of Colonel Ed Fletcher of San Diego, who



CONCRETE WALK IN DAM

is also president of the San Dieguito Mutual Water Company. The Santa Fe Land Improvement Company is actively clearing the land and putting it under irrigation.

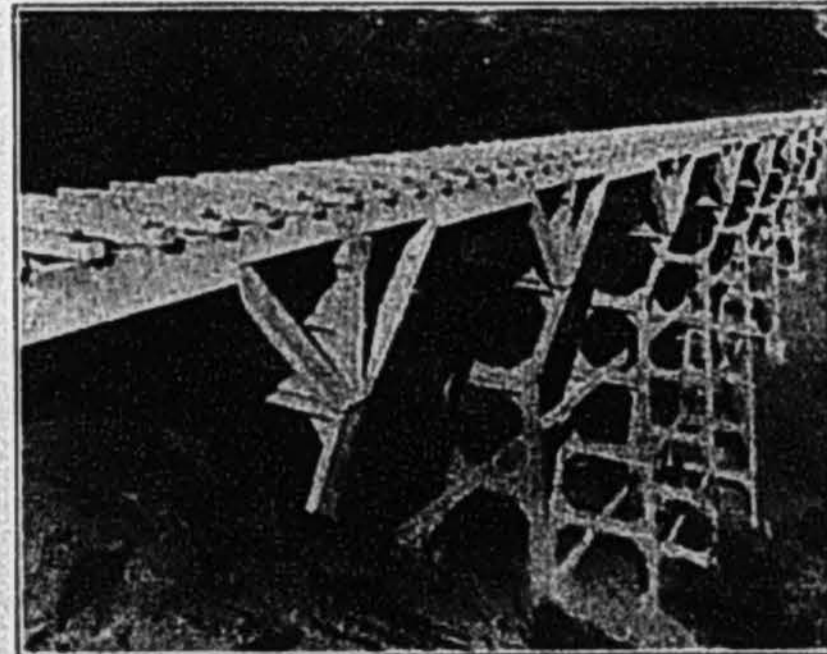
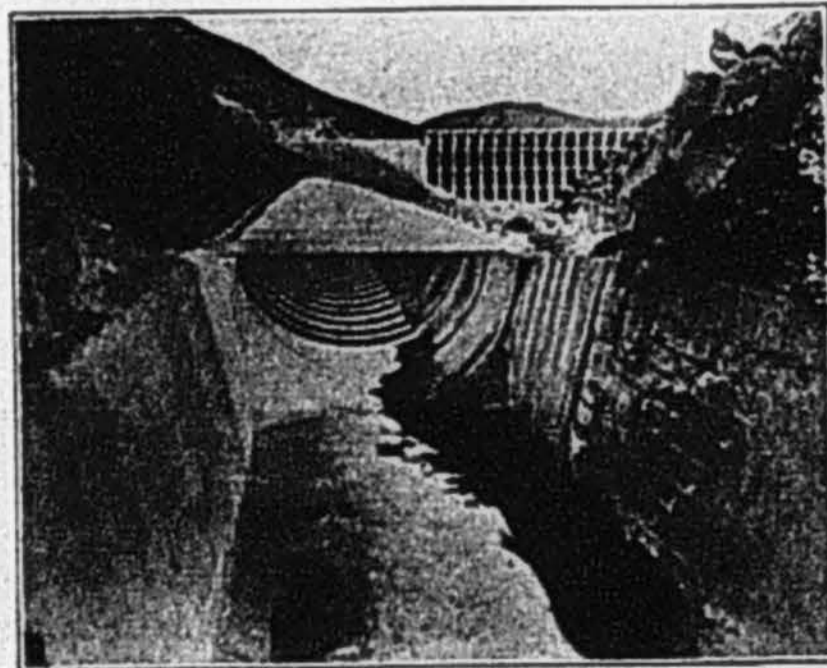
When Colonel Fletcher called Vice-President Hodges' attention to the possibility of the Santa Fe Railroad joining hands with William G. Henshaw in the construction of the San Dieguito Mutual Water Company system, and the placing of over 20,000 acres of land under irrigation and intense cultivation, all adjacent to the

Santa Fe Railroad, Mr. Hodges immediately saw the possibilities and is entitled to the credit for convincing Mr. Ripley, our late president, of the value, not alone to the Santa Fe, but to San Diego County, of assisting in this notable water development.

Lake Hodges Dam, so named by President Ripley, built entirely of reinforced concrete, is, without doubt, one of the largest multiple arch dams in the world. Its present capacity is approximately thirteen billion gallons, and by an expenditure of \$50,000 it can be raised to a height sufficient to hold twenty-two billion gallons of water, or approximately 66,000 acre feet, suffi-



LAKE HODGES AFTER COMPLETION OF THE DAM



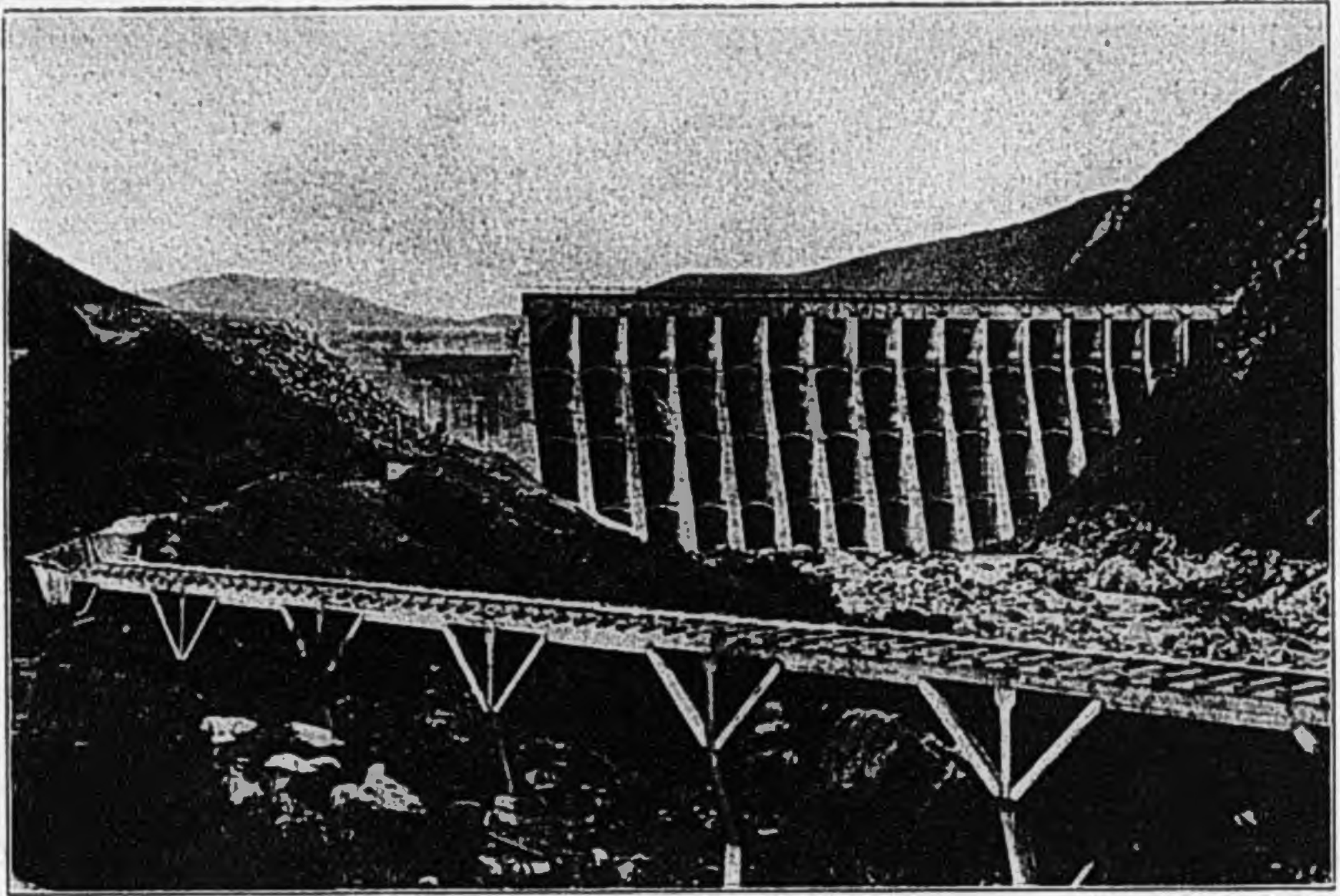
DETAILS OF CONSTRUCTION WORK

The photograph on the right shows a reinforced concrete trestle and on the left an interior view of a concrete conduit



LAKE HODGES DAMSITE BEFORE CONSTRUCTION WORK WAS UNDERTAKEN





REAR VIEW OF DAM

cient water to cover 66,000 acres one foot in depth. Lake Hodges Reservoir when full is 7.4 miles in length. It is at present over six miles long, and, nestled among the mountain peaks its natural attractions are enhanced by the beautiful rugged cliffs and here and there numerous forests of live oak trees.

The magnitude of the project can be better appreciated when it is known that this system will irrigate more than twice as much land as was being irrigated in San Diego County by storage dams before this system was built. This is probably the largest water system in the state of California which has been constructed wholly of concrete, not alone the dams, but the distributing system as well. This means for permanency and is a credit to San Diego County and to the owners.

The water from Lake Hodges Dam is conveyed to the coast, first through a cement conduit and pipe line, the concrete siphons being 42 inches in diameter. The conduit and pipe line are built through a rocky gorge four or five miles in length, where it is later on emptied into a diverting reservoir, known as San Dieguito Dam, also constructed of reinforced concrete. From the last named reservoir, concrete pipe

lines carry the water across mesa and valley through the San Dieguito ranch and to the coast.

The water company has also secured San Elijo damsite and reservoir site, and when the system is fully developed over 20,000 acres of land will be reclaimed.

The Lake Hodges Dam has a watershed of 196 square miles, the highest elevation being 4,000 or 5,000 feet, with an average rainfall of thirty to forty inches annually. San Elijo reservoir site has a watershed of forty-eight square miles, with an average annual rainfall of approximately twenty inches.

In the construction of this system, it will take several years to construct the distributing lines, clear the lands and put all of this section under irrigation. The lands are particularly adapted to the growing of oranges, lemons, figs, and deciduous fruit of every kind, including peach, pear, prune, apricot, and so forth.

This is an ideal section for a home in California, and the possibilities are that later on the Santa Fe will dispose of its holdings in small tracts to future settlers. Anyone desiring to do so can get further information on this subject by writing to Colonel Ed Fletcher, San Diego, Cal.

# Ed Fletcher Papers

1870-1955

MSS.81

Box: 47 Folder: 12

**Business Records - Water Companies - Volcan  
Land and Water Company - San Dieguito System  
- San Dieguito Mutual Water Company - Carroll  
Dam (Lake Hodges) - Articles and interviews**



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