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THE WATER'S WORK

How It Has Cut Large Channels Through the Imperial Valley

All Danger of Flood Forever Removed, and Excellent Drainage Provided. Present Conditions and Future Outlook Clearly Stated.

One of the most interesting of the many things that have taken place in this Valley within the past eighteen months has been the erosion of the channels of New river and Alamo.

At the time the pioneer settlers came to this country neither of these channels presented any serious obstacle both of them being comparatively shallow and easy to cross. The Alamo channel in fact had a very imperfectly defined course for much of the distance through the Valley, while New river was easily crossed at almost all points along its course. But the celebrated Mexican intake was cut in the fall of 1904 and by the first of March, 1905, it had begun to divert a quantity of water from the Colorado river that was in excess of that required by the people of this Valley. So there began to be a surplus flow which was turned out through the New river and Alamo channels. During the entire season of 1905 the hydrographic branch of the Reclamation Service maintained stations in the Valley and the flow of both New river and Alamo as measured every week. These measurements were published in the PRESS each week and careful track kept of the gradual increase in the volume of water coming to this Valley.

It will be remembered how the amount of water diverted by the Mexican intake gradually increased as compared with the total flow of the river.

Beginning first at about 5 per cent. it slowly rose to 8, then 10, 12 1-2, 15, finally reaching 20 per cent. just as the extreme height of the summer flood was reached last year. There was a total discharge into Salton Sea, according to Mr. Hardy's measurements, on July 8th, 1905, of 17653 cubic feet of water per second and there was a channel crossing Water company No. 6 carrying several hundred second feet that he could not measure. These amounts of water coming down such small and imperfect channels as New river and Alamo then afforded soon overflowed their banks in places and threatened to inundate considerable farming land. However, as there were not then any waste gates into the Alamo channel from Sharp's heading most of the water went out that way and the Alamo was the problem that worried people. The conditions presented on that stream caused the California Development company to abandon the idea of damming the stream and taking water from its channel for delivery to Imperial Water company No. 5 and to construct a main canal for that purpose from the Alamo channel above Sharp's heading. The volume of water that found its way down the Alamo threatened great damage to the level lands about Mesquite Lake basin where the river has no banks of consequence. So a new channel was decided upon which should prevent the Alamo from entering Mesquite Lake at all. The work of keeping the Alamo in its new channel and compelling it to erode a runway for itself outside of

Mesquite Lake was entrusted to "Scotty" Russell. It was about as strenuous a fight as anyone has had with a river in these parts for many a day and for a long time the issue was in doubt, but finally the man triumphed. Since then the water has eroded a channel of sufficient capacity to make everything safe. This Alamo channel has also cut its way back to Sharp's heading and presents a perfect safeguard against floods for the East side while also furnishing ample drainage. Since the completion of the structures at Sharp's heading the amount of water turned down Alamo river has been regulated by the big 80 foot waste gate and has never been enough to further erode the banks or do any damage.

In fact, there are now three good wagon bridges over the Alamo in addition to the bridge on the waste gate at Sharp's heading. While the Alamo was the interesting stream and the one presenting the critical features in 1905 that stream is now under complete control and has been all this season. It is the New river that has been giving us the most concern during the present season and that now presents the problems that are to be solved. It will be remembered that when the volume of water in the Colorado decreased last year the proportion of the water diverted by the Mexican intake increased until on Oct. 7th, 1905, the entire flow of the river was diverted and the old channel became dry. But at that time the total flow of the river was only 6000 cubic feet per second, which was much less than had been diverted previous to that time when the river was at flood stage. The cut in the bank for the diversion of the Colorado in Mexico was made and the first water turned through it on Oct. 7th, 1904.

On Oct. 7th, 1905, just one year to a day, the entire flow of the river was diverted, and that too, despite the efforts made to control it. Well, the surplus water arriving in the Valley was mostly turned through the waste gates into New river so that stream was kept up at a pretty good flow during the periods of low water in the Colorado last winter. But this flow of water was causing the channel to erode just the same. The river cut out the banks at Brawley and beyond carrying out the flume to Number Eight first and then washing away the bridges.

For nearly or quite a year past the only means of crossing the river at Brawley or reaching Number Eight has been by means of an aerial cable stretched across the river from which a cage was suspended in which the passengers traveled back and forth across the seething flood. Not only did the No. 8 people do all their visiting across the river by this means but they sent all their crops to market in this manner. Grain, cantaloupes, hogs and cattle have been sent to market over the wire cable and latterly since the failure of water in Number Eight the settlers have transported their teams, wagons and household belongings over the

same wire. When the erosion of New river channel carried away the flume by which Number Eight had been supplied the farmers quickly remedied the loss by building a canal to tap the New river at a point above where the erosion had reached. But as time went on and the flow of the water continued the erosion kept up, creeping slowly back up New river and rendering more and more difficult the work of conveying water to No. 8. So when Mr. Rockwood announced that he would not be able to close the Mexican intake and return the Colorado river to its old channel till after the annual floods of this summer it became apparent that great changes would certainly take place in the geography of this Valley within a very short time.

The recurring floods of last winter and early spring soon made it clear that practically the entire flow of the Colorado would be discharged through this Valley into Salton Sea. And the control held over the Alamo channel by the splendid structures at Sharp's heading made it clear that this immense volume of water must go through New river. The water rose and flooded all the lands south of the main canal in Water company No. 1. The people turned out and worked on the canal, turning its bank into a levee. Still the water rose and the levee was built higher and higher. Soon it became apparent that the volume of water would be so great that levees could not hold it. It was then decided to turn attention to assisting New river in excavating its channel. The river had cut back to a point about five miles northwest of Silsbee before this work was undertaken. It was then pouring over a hard clay formation which appeared to be almost too hard to wash away. However, a few well directed shots with dynamite removed the hard formation and started the river on its wild career. The progress made and the enormous work done by the water since that time has been truly wonderful. Not only has the river eroded a channel averaging more than a quarter of a mile wide and perhaps fifty feet deep for a distance of at least 25 miles up-stream from the point where the first blasting was done but the immense volume of water discharged through this means has further eroded the channel below that point till in many places it is 100 feet deep and one half mile wide. With the cutting out of this channel the possibility of getting water into the canals of Water company No. 8 vanished and the abandonment of that thrifty and enterprising settlement became inevitable. Meantime before the cutting back process had reached a point to afford relief the entire area of Imperial Water company No. 6 was inundated except about three sections of land where the farmers erected levees for their protection.

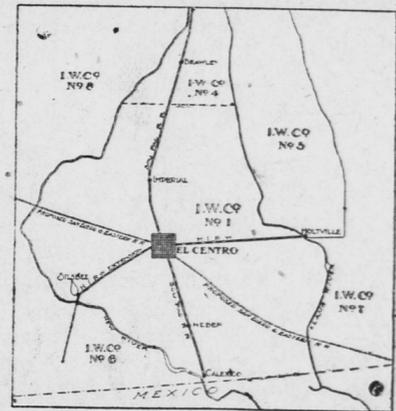
The flood destroyed their canal system when it overflowed their land and now although the cutting back of the channel of New river has drained the water off their lands it has also cut off their means of water supply by enterprising its immense channel across their canal system. There is also another channel which has cut its course across Number Six. This channel joins the main channel of New river just south of Silsbee and runs around by Signal mountain, crossing the Mexican line 5 or 6 miles west of Calexico. It is not known just how far back into Mexico this channel has progressed but the fact that it is discharging as much water as the main channel is pretty good evidence that it is drawing from the same flood and cutting rapidly. In its

progress in cutting back the main channel the floods carried away a portion of the main canal at the Evergreen heading and turned Brawley and a large part of Number One without water for several days. The promptness with which this break was repaired and the comparatively small amount of damage that resulted is a good evidence of the virility and alertness of Mr. Cory and the present management of the California Development company. The work of the river in carrying away Mexicali and threatening Calexico has been a sight to attract the people for miles and has been visited by many Valley residents. There has been illustrated the thing that is happening all along the river channel. After the water has eroded its channel to such a depth that the water surface is 20 to 30 feet below the land level then erosion is all the more likely to occur. The formation is likely to be sandy and soft below the water level and thus be quickly washed away. The removal of this underpinning leaves the great tall bank without foundation and it breaks off and tumbles into the river. As the river lowers its course it is liable to cut out bends for itself in order to produce the proper grade on which that volume of water should run. In this way vast amounts of earth is cut out and washed away. The experience of Mexicali is being repeated at dozens of places in the desert solitude. The cutting back in New river channel is progressing rapidly, the overpour being now at least one mile beyond Mexicali and apparently taking a "bee line." The cutting back of this channel and of the one that joins it near Silsbee has now become the point of interest to our people. The immense volume of water which has been discharging through New river has all come down across Mexico from the Mexican intake. The fact that no more water has reached Sharp's heading than could be safely cared for argues that the rest of

this great volume has been carried off by the New river. And the further fact that the amount of water arriving at Sharp's heading has lessened, while the volume carried by New river has increased indicates that the means by which the water is conveyed from the Alamo channel above Sharp's heading to the New river above Calexico has been improved within the past two months. On May 3d last, in company with Messrs. Schee and Bothwell of the directorate of Imperial Water company No. 5 we visited Sharp's heading and examined the Alamo channel from that place to the Mesa in Mexico. The water was then just ready to overflow the banks and nothing but the prompt work of the California Development company in building a levee across the five miles reaching from the Number Five heading to the Mesa saved the Eastside from a destructive flood. At that time, May 3d, the Colorado river was discharging about 45,000 cubic feet of water per second, all of which was coming to this Valley.

On last Saturday, June 30th, Messrs. Schee and Chaplin, of Number Five, again visited Sharp's heading and examined the Alamo channel along the same route traveled by Mr. Schee and myself on May 3d. Mr. Schee informs us that the water level in the Alamo channel five to seven miles above Sharp's heading is at least six inches lower and the current much more sluggish on June 30th than it was when we were there May 3d. The total discharge of the Colorado river on June 30th was more than twice as great as it was on May 3d and fully twice as much water was reaching this Valley. The fact that the amount of water reaching Sharp's heading was decreasing has been noticed by Mr. Walker, the zanjero of the California Development company for Water companies No. 5 and No. 7. It has also been noticed that the amount of water

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