Navajo

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Memorandum

on Irrigation and Water Development in the Navajo, Papago, and Pueblo countries.

For many generations the Navajo Indians have evidently been a pastoral people and depended upon their flocks for their subsistence.

Their reservation lies in northwestern New Mexico and in northeastern Arizona, in a country which, while vast in area, is so imperfectly supplied with water that even for grazing it often proves not satisfactory.

Within the last few years the Indian Service has undertaken to aid the Indian not only in pastoral pursuits but also in the line of agriculture. It has undertaken the construction of what is commonly called the Hogback canal a canal taken from the north side of the San Juan river, passing down the river and above the present agency school.

This is a project of considerable magnitude, as up to the first day of July, 1913, $173,981.10 had been expended. It is confidently expected that when this canal is once finished, it will be utilized and be a great benefit to the Indians. It is expected from their past record

that they will undertake farming and will make a success much greater than some other Indians have heretofore accomplished.

At Shiprock School, which lies under this canal but which has its own water supply, enough work has been done to demonstrate what may be expected in this section. There is now between four and five hundred acres of the best farm land about this school that exists anywhere in the Indian Service; and while in the past considerable expense has been necessary to maintain a water supply for this school, it is now expected that by some not expensive changes water can be obtained for farming at a much less cost, and the continuance of the highly successful operations be assured.

Ganado.

Farther to the west, near a little stream (the Ganado), another dam is being built to give the Indians more irrigable land. Here the scheme is somewhat different, because it not only requires diversion but also requires storage, and $60,000 has already been appropriated for carrying this small project to completion. The principal features of the project consist of a storage reservoir requiring a dike about twenty feet high, the construction of a small diversion dam and feeder canal to the reservoir, and the construction of the necessary distribution

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canals and laterals, with the necessary structures. This work has been under construction during the past year, and it is expected to be finished withinathe present fiscal year. This will add a few thousand acres of good soil and from the past operations of the Indians in that section it is expected that they will farm this with considerable skill and add to their resources. This, together with their stock, will lessen the danger of future trouble.

Underground Development.

The only running water on the Navajo reservation is the San Juan river along the northern boundary, which always has a bountiful supply of water. On the southwestern boundary is the Little Colorado, which has a flow during about 75% of the year. Besides these, there are a few springs, but the country is generally so barren and the rainfall so scanty and so badly distributed that it becomes necessary, in order to take advantage of the many acres of grazing, to develop the underground water.

During the past two years not only the Navajo country but the Moqui country which adjoins it, has been studied by a geologist whose special knowledge of conditions similar to those of this country has made his service of great value and following his studies and reports,

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investigations have been made with drilling machines for the purpose of securing water. In not every instance has water been secured in sufficient quantities to be of much value, but enough successful wells have been bored to demonstrate their usefulness, and the area available for stock raising is constantly increasing, and the plan seems to be one that will prove of almost untold good to the Indian stock raiser.

Not only have the wells been dug and modern machinery installed for the purpose of raising water, but springs which furnished small quantities but which were in a very insanitary way have been repaired and put in shape so that they serve not only stock but also serve for domestic water without being a menace to health. It is confidently stated that the Navajo Indians' condition has been greatly benefited during the last two or three years by the activities of the Indian Service along irrigation lines and water development for stock purposes.

Papago.

From scraps of history of the old missions in the Southwest, it is probable that the first irrigation on the Papago reservation was undertaken by the Jesuits about the

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year 1732, in the vicinity of what is now known as the San Xavier Mission. Later on, from 1768 to 1822, there was probably greater activity, and perhaps the greatest activity, in the irrigation line that have ever taken place on this reservation. The quantity of land then in irrigation is not known, and today it is impossible to tell exactly, yet thereiis no doubt that somewhere between one and two thousand acres was in a high state of cultivation at that time. Since that, however, the erosion of the river bed has lowered the water level, making it constantly more difficult to secure water and divert it upon the lands, and the irrigation has therefore been decreasing.

As an illustration of the difficulties of obtaining this water, it can be stated that two years ago a thousand day of labor was required in order to divert the water upon the lands, and then after this great expenditure of energy, a summer flood destroyed a large part of the work and caused an almost total failure of crops, owing to the absence of water during the latter part of the season. Since that time, about eighteen months ago, an appropriation of $5,000 was made and a well was sunk, a pumping engine installed and a section fo canal constructed to connect up the new with the old work. During the last irrigation season this was in use, and while the quantity of water was small, the Indians used it to the fullest extent and

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raised enough crops under it to lessen the privations they would otherwise have had to undergo.

While the Indian has been losing water and his acreage has been becoming smaller, owing to the difficulty of securing water, the white man has been encroaching upon his rights, and developing water both above and below the reservation until now the Indian stands a fair chance of losing the rights which he has held for centuries, unless the Government comes to his aid and appropriates sufficient water to put him back in the place occupied centuries ago.

The Indian Service has recommended for years in succession the appropriation of a sum sufficient to begin the work of developing water and rehabilitating the irrigation system, but both last year and this Congress has not seen fit to make the appropriation, and therefore only such funds as can be expended from the appropriations available for work of this kind can be used to aid these Indians, therefore without a greater appropriation they will certainly suffer.

Pueblos.

What are known as the pueblos of New Mexico consist of eighteen tribes living in twenty-four towns and villages along the Rio Grande in New Mexico. The Indians occupying the soil irrigate their lands from the streams

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by the use of the same ditches that were in use when Coranado's expedition first reached them in 1541-1542, and there is no history to show how long prior to that date these same ditches had been used.

Very little has been done by the Indian Service in the way of changing the irrigation structures or the methods of irrigation of these Indians, who seem to be satisfied to live the life of the past and do not desire any modern innovations. In a few instances it has been found practicable to aid them by protection works where the river was eroding and threatening danger to their lands and canals, and occasionally a structure such as a gate or culvert has been built by the Indian Service.

Considerable thought has been given to the matter of furnishing proper aid to these Indians, but they have apparently been so self-contained that they resented any great strides toward more modern methods, and preferred to utilize the old ditches and the old methods: therefore such work as has been done has been carefully thought out and done with the view of not arousing opposition of the Indian and of not destroying his desire and ability to make his own living. Therefore, while it is understood that conditions could be changed, there is considerable

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hesitancy about making changes faster than the Indian changes in his life and habits, otherwise injury might be done instead of good.

As the Indian advances in civilization, the Indian Service will aid him, but it is not policy at the present time to make any radical changes in his methods of irrigation, for fear injury may be done him.

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