Proposed scheme to Arrest Encroachments of the Moqui Wash and Tributary Arroyas on the Farming Lands of the Moquis, by a Series of Dams.

The series of arroyas cutting through the farming lands of the Moqui Indians are, on account mainly of the soft nature of the soil, fast ruining some of the best farms. These arroyas are in most places 15 to 25 feet deep and only carry water in times of heavy rain. The rains during the past two seasons have been exceptionally severe, and as a consequence during that time a great deal of damage has been done.

I found upon making an examination (guided by some of the old Moqui men) that these arroyas converge in several places, as shown in the rough sketch-map appended: and the most feasible plan of arresting the excessive scour now going on appears to be to construct good solid weir dams at these points. Then in time of freshets the water -- which holds an immense quantity of sand and soil in solution -- would gradually deposit this behind the dams, and so tend to fill up the arroyas.

The dams would however serve for another purpose in addition to this; inasmuch as they would retain a great quantity of water in the ground in the neighborhood of the farms, instead of letting it run to waste, as it now does, on the alkali plains below. This point is insisted upon by the Moquis themselves, and I noticed -- and indeed they pointed the fact out to me -- that in many places they had tried to construct rude dams of earth and brush, with a view to retaining as much of the water as possible.

These dams, however, are entirely washed away at each freshet, and are only built again when the water has nearly subsided. The difficulty the Moquis find is that, owing to the soft and friable nature of the soil, their dams will not stand. This fact of the surface soil, for a depth of 25 to 5o feet, being so soft would render the retention of water in the vicinity of the farms all the more valuable, as such porous soil would hold enough moisture to constitute a form of sub-irrigation, and so help to tide over dry seasons.

In constructing dams successfully in such ground, the main point to be observed is to give them sufficient footing in the sides of the arroya; 15 or 2o feet being necessary in the case of a dam to retain a head of 15 feet of water. I found a very good ledge of limestone within half a mile of the site of one of the proposed dams.

The best form of dam for this soil would be one with a well anchored core of wire netting and brush, covered with the toughest and most clayey soil to be found in the neighborhood, and pitched on both slopes with rock, to prevent scour in time of freshet. This form of construction is shown in the small figure on the plan. Of course, as the soil is so extremely friable, the dams must be in the form of submerged weirs in flood time, as any attempt to construct a waste way in such material would be hopeless.

As the rock, brush, cedar logs for anchors, and fairly tough soil can be found in the vicinity, no material would be necessary except the wire, and powder and fuse for blasting rock.

At least three dams are necessary to afford protection to

the farms, and five or six could be built with advantage as, owing to the rate of fall of the valley, the intervals between the dams should not be very great.

Such a system of dams would be of incalculable benefit to the Moquis, both as a means of saving much of their best farming land from destruction and as a provision in some measure against dry seasons.

(Report of Godfrey Sykes, Esq.)