

lower about 5000 feet elevation. The irrigating season lasts 91 to 122 days. The land is irrigated 29 to 32 hours per year. There are 45 canals—length not given. The settlements lie chiefly along the Beaver River and its tributaries.

The average depth of snow in the mountains is reported as eight feet. The Wasatch here rise to a great height, and snow lies on the mountains all the year round. Twenty-five reservoir sites are reported in detail, aggregating 17 square miles, sufficient to irrigate 20,000 acres at least; about ten of these reservoirs are in the valleys and the remainder in the mountains.

IRON COUNTY.

This county lies south of Beaver on the rim of the Great Basin, running from the Wasatch to Nevada. Its area is 2,102,400 acres, and nearly half of it is arable land, some of it capable of artesian wells, but most of it destitute of water; 6,997 acres are reported under cultivation. The irrigating season is given as 142 to 269 days. The elevation of the valleys runs from 5400 to 6100 feet above the sea. The duty of water is given as one cubic foot to 65 acres in the more arid valleys and from 160 acres to more than double that in the moister valleys. The water supply comes from eight small streams, capacity 67.63 cubic feet per second. The land is irrigated from 15 to 42 hours per year. If the water could be saved, from 10,000 to 20,000 acres could be redeemed; 14 reservoir sites are reported in detail. Water storage is the only means of developing the agricultural resources of this county. The soil is chiefly clay.

EMERY AND UTAH COUNTIES.

To this group belong parts of these two counties, which lie between the Green and Grand rivers. There are many thousands of acres of clayey soil that could be reclaimed by great canals running from these rivers, whose unlimited water supply, greater than all the rest of the Territory put together, will run to waste without assistance is given in constructing such canals. There is no part of the Territory that needs developing more than this. Very deep artesian wells might be successful here.

EMERY COUNTY.

But a small part of this county belongs to the dry counties, still nearly all of the cultivated area lies in that section of the extreme western side of the county. This lies directly east of Sanpete and Sevier counties at the foot of the coal range.

The rainfall does not exceed 10 inches per annum. The water supply comes from four creeks and one river breaking through the precipitous eastern face of the coal range in narrow canyons. The flow of water is 171.15 cubic feet per second. The area of the county is 5,603,680 acres. The cultivated land is 14,825 acres. The soil is a very refractory clay. The duty of water is one cubic foot to about 35 acres. Castle Valley is 4,500 feet above the sea, and the irrigating season is 229 days long. Little Grand Valley is 3,900 feet above the sea, and its irrigating season is 244 days long. There are 34

canals, length not given. One quarter of the crops was lost this year through lack of water. All the water is in use.

The average depth of snow in the mountains is 4 feet. Twelve reservoir sites are definitely reported, and many others are mentioned. There is enough storage to use double the total water supply. Probably 10,000 to 15,000 acres more could be irrigated by saving the waste water. Great suffering often results from scarcity of water in this county.

All kinds of crops are raised in this county, even sugar cane, fruit, peanuts, etc. Figs could be raised in the hotter portions.

HOT COUNTIES.

These counties are far more arid naturally than the dry counties, since they are farther from the lofty mountains, and most of the arable parts are 2000 or more feet lower, lying in deep valleys shut out from wind and surrounded by great fields of lava, with red hills and a red sandy soil of unknown depth. The heat here is almost unendurable and the rainfall is almost nothing. This region is valuable for the fruit and cotton that it raises.

WASHINGTON COUNTY.

This county is situated in the southwestern corner of the Territory. The area is 1,649,920 acres, of which 8892 acres are cultivated. These are situated along the Virgin River or its tributaries chiefly. It is estimated that 18,900 acres could be redeemed by an increase of the water supply. The lower valleys are 2,700 and the upper 4,000 feet above the sea. In the lower valleys the irrigating season is 197 to 228 days long, in the upper 122 to 177 days. The water supply comes from the Virgin River, four streams and many springs, capacity 191.8 cubic feet per second. In the lower valleys the land is irrigated 84 to 90 hours per year, and the duty of water is one cubic foot per second to 20 acres. In the upper valleys the land is irrigated 26 hours per year, and the duty of water is one cubic foot per second to 60, 80 and 128 acres. There are 31 canals, length not given. One third of the crops were lost this year by lack of water. It is probable that water enough could be stored to redeem most of the arable land in this county. Vast quantities of water go to waste in the Virgin river in the winter and flood time in Spring. The depth of the snow in the mountains is two to six feet.

This county raised 30,000 lbs. of cotton last year. The Sultana seedless grape is grown here and produces from 3000 to 5000 lbs. of the finest quality of raisins. Both the hard and soft shell almonds are raised in quantities here, as well as figs. It is believed that oranges can be raised here. Olives are grown in this county. Peaches and apricots from this region are very fine. They raise four to five crops of lucern per year. A crop of small grain and another of corn are raised from the same land.

KANE COUNTY.

This county is more rugged than Washington and more elevated except along the Colorado River. It lies east of Washington. The area is 2,659,200 acres of which 1825 acres are cultivated and 13,350 acres are said to be arable. The irrigating season is 182 days long, and the duty of water is from 37½ to 75 acres to the cubic foot per second. The water supply exclusive of the limitless Colorado River, is thirty-one cubic feet per second. There are nine canals, length not given.

The crops are greatly damaged by lack of water. Sufficient reservoir sites are reported to irrigate all the arable land in the county. The average depth of snow in the mountains is four feet.

The crops in this county are much the same as in the foregoing, though more small grain and hay are raised in proportion to the area cultivated.

SAN JUAN COUNTY.

This county lies in the southeastern corner of the Territory. Most of it is now proposed to be made an Indian reservation. Its area is 5,809,920 acres. There is a narrow strip of land along the Colorado and San Juan rivers that will produce the crops of Washington County, and has an unlimited water supply. Most of the cultivated area is 5000 feet above the sea, near the La Sal mountains. There are 1025 acres cultivated. Dry farming is successful in some localities in the mountains. There are good facilities for storage of water.

OTHER COUNTIES.

Small parts of Garfield and Piute counties situated along the Colorado are capable of raising the same products as Washington County.

UTAH TERRITORY.

To sum up we find there are about half a million acres of land under cultivation at the present time. This area could be doubled from the present canals if there were more water, and by new canals, etc., the various counties estimate that about three and a half million acres could be redeemed. This is doubtless three and a half times too large. The average depth of snow in the mountains is four feet. The length of the irrigating season in the moist counties is 162 days; in the dry counties it is about the same in the cultivated area, in the hot counties it is about 200 days. The returns average unsatisfactory in this respect, and must be wholly revised. The duty of water is about 80 acres to the cubic foot per second in the moist counties, in the dry counties it is uncertain and in the lower hot counties it is about 20 acres. The water supply is about 3000 cubic feet per second for the moist counties, 250 for the dry counties, and 250 for the hot counties, total 3,500 cubic feet per second. This is probably our minimum water supply throughout the driest years in the counties reported. If we were to add the supply in the Green and Grand rivers this amount would be more than doubled. Almost all of the present supply is appropriated during the irrigating season and our