

LAND IN AN ARID BELT

ITS VALUE GREATLY INCREASED
BY IRRIGATION.

The Wonderful Progress During a Decade
—Over 17,000,000 Acres Under Irrigation
Ditches and Upward of 13,000 Artesian
Wells in Use.

Worthless Acres Redeemed.

The most remarkable fact in the history of the country to-day is the development of the Pacific West. Formerly dependent for its prosperity on its minerals and shunned by agriculturists on account of its arid lands, it has changed all this by its achievements in irrigation and now mining camps and desert acres are converted into fertile fields, gardens, and vineyards. Though known from the dawn of civilization and employed on this continent by races that have vanished forever, irrigation is to us something of a rediscovery. Its use among us is very recent. Where a decade ago were sun-scorched plains and valleys, with no sound of animal life, but here and there a mockery of vegetation, are now a large and thriving population, prosperous cities and towns, lands worth for cultivation from \$500 to \$1,000 an acre and a wealth of fruit production



AN ALFALFA FIELD IN THE CALIFORNIAN DESERT.

[Harvesting a rich crop made possible only by irrigation.]

without a parallel in the world. Twenty years ago no one in America knew how to utilize water on a large scale for irrigation. A few colonies in different parts of the arid zone, a few settled in isolated valleys, were making experiments. A decade ago some 2,000,000 acres of the arid region were irrigated, and since then the progress of irrigation has been a march of triumph.

In 1886 the area under water ditches was 5,500,000 acres and by 1891 it had increased to 17,177,843 acres, of which 7,998,000 acres were under cultivation. The difference between the area under water ditches and cultivation is due to the fact that years are required to settle the country and prepare the soil after the irrigation ditches are formed. Of the large acreage under ditch in 1891, 4,500,000 acres belonged to California and a little over 3,000,000 to Wyoming and Colorado, each. California had 3,500 artesian wells and Colorado 4,500. Some of these wells yielded 4,000,000 to 5,000,000 gallons of water daily, capable of irrigating a section of land. Judging the present by the past, says Charles H. Shinn in Popular Science Monthly, there will be from 30,000,000 to 35,000,000 acres under some irrigation system by the close of the decade and the actually cultivated area may be close upon 20,000,000 acres.

Irrigation in California.

In the matter of irrigation California has had a larger and more extensive experience than any other division of the arid belt. In Merced County is the greatest corporate irrigation enterprise in the United States. The company has expended \$3,500,000 on a 50-mile canal from the Merced River, with 150 miles of lesser ditches, and has enough water to irrigate 600,000 acres. Colonies are springing up along the line of the canal and thousands of acres have



THE TRIUMPH OF IRRIGATION IN CALIFORNIA.

[A watering ditch in the famous Kern region, where hundreds of thousands of acres have been turned by the agency of water from arid into fertile lands.]

been planted. In the Kern region private capital has done an enormous work. Seven hundred miles of large irrigating ditches have been dug in this county, which contains more than 5,000,000 acres. Thirty large canals have been taken out of Kern River, the most famous of which is the Calloway, 80 feet wide on the bottom and 120 feet wide at the top. It irrigates 200,000 acres through 65 laterals, of an aggregate of 15 miles. Another irrigation enterprise of Kern County is that of two San Francisco capitalists. It embraces 27 main canals, with an aggregate length of 300 miles, besides 1,100 miles of permanent laterals. It can water 600,000 acres.

Twenty years ago the value of such land was less than a dollar an acre. To-day there are hundreds of acres of alfalfa, and orchards of peaches, apricots, prunes and almonds. Cotton, sugar beets, the sugar cane of Louisiana, tobacco, corn, cassava, and a multitude of the products of the temperate and semi-tropic regions thrive there and can be cultivated as staple crops. In other States the value, nay, necessity, of irrigation is appreciated. In Montana, Idaho,

Kansas, Utah, New Mexico, Arizona, Texas, Nebraska, Washington, Nevada, Oregon, and the Dakotas several million acres are under irrigating ditches. In 1891 Montana had 1,250,000 acres; Idaho, 1,200,000; Kansas, 990,000; Utah, 735,000; New Mexico, 700,000; Arizona, 660,000; Texas, 350,000; Nebraska, 200,000; Washington, 175,000; Nevada, 150,000; Oregon, 125,000; South Dakota, 100,000; and North Dakota, 2,500. These States have 5,486 artesian wells, making with California, Wyoming and Colorado a grand total of 13,492.

INDIAN CORN.

The typical plant of the new world is maize, or Indian corn. The early adventurers and settlers both in North and South America found in it a delicious food, easily cultivated, apparently indifferent to soil or climate, yielding in abundance twice that of any other grain, with much less labor, and susceptible of preparation for the table in many forms. The white settlers found it the food of the Indians and made it their own, and for four centuries it has been the best known, as it is the cheapest and most nutritious, of the food supplies in the western hemisphere. And yet, after these centuries of knowledge, it has not obtained great favor in Europe. The potato, another plant indigenous to America, early became a popular European food, common to the tables of the rich and poor, and the chief support of the poor in Ireland, but corn, a much more nutritious food, and quite as easily cultivated, has never been widely adopted. Our most persistent missionary efforts have accom-

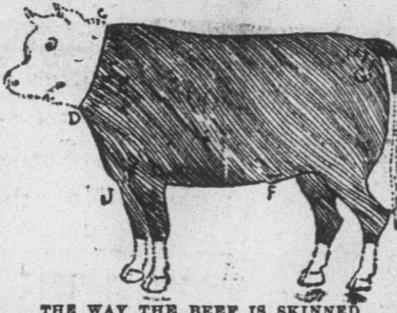
NOVEL ARMY RAFT.

MADE OF INFLATED OX HIDES
AND VERY BUOYANT.

The Useful Invention of a Russian Army Officer—The Hides of the Beesves Slaughtered to Support an Army on the March Utilized as Boats to Cross Streams.

Substitute for Pontoon.

A Russian engineering journal publishes some details describing a novel method of crossing rivers upon rafts



supported by inflated ox hides. Some interesting experiments were recently made by the Russian military authorities which showed that the system will be of great service to an army in the field.

Leather bags made from ox hides are each susceptible of supporting a weight equal to two or more men upon the surface of the water. Dives of cattle that accompany an army to be slaughtered for food furnish a ready supply of hides necessary in the construction of floating rafts. Although the subject may be somewhat technical, it seems interesting to know how it is possible to make these air sacks in the field.

When the ox is killed the head is cut off close up and a slit made in the skin of the chest. Then the skin is cut above the knees and the legs unjointed at the knees. The skinning commences at the neck and by means of incisions at the proper places and taking out the internal organs during the process the hide is generally drawn off intact. To close the openings of the hide, small slits like button-holes are made through both thicknesses near the edge. Then the hide is turned, the hair inside. Wooden pegs are put through the slits and the openings wound with several turns of beef tendons, which are held in place by the pegs. The skin is again turned, the hair outside. Before closing the last opening a hollow bamboo peg is introduced in the leg and the hide inflated with a bellows or the mouth.

The raft timbers are 11 to 12 feet in length and 2 to 3 inches in diameter. The inflated hides, four to eight in number, are tied to the corners of the raft. Figure 3 represents such a raft transporting Russian troops.

Oar locks are made to support the oars. The raft is floored for transportation of infantry and artillery. An air sack made of ox hide weighs about twenty-five pounds, and can carry a weight equal to the animal that it was taken from. A raft sub-

jected to two centuries wrecks have occurred along this stretch of coast, and looking seaward there are many signs of partially submerged blockade runners which came to grief.

Money is frequently exposed by the washing away of the beach. One night in 1864 a party landed there, and digging a hole, hid in it \$175,000

for a game preserve. This island is off the North Carolina coast.

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One of the great results of the Exposition will undoubtedly be to make this golden grain more familiar to the world and prove its value as one of the best of foods.

An Unpleasant Country to Live In.

The northern half of the Island of Borneo is the queerest and most unsatisfactory place to live in that one can imagine. It is a land of constant recurring phenomena, where cyclones are frequent and deluges of water very common. The vegetation in that half is very fine, but in all probability the wildest and most tangled on earth—not even excepting that of Africa. The cause of all the trouble is the shallow condition of the sea north of it, great shoals of sand existing a few miles out which extend along its entire northern length. These shoals are covered by a depth of water not over five feet deep. The constantly recurring winds that blow in that climate change to hurricanes and sweep the

port by four hides will carry ten men and rise six inches above the water. With six hides it will carry twenty men and project three to four inches above the water. Four of

in gold. Ever since this has been searched for. The pilots say there are grounds for belief that just after the war the money was dug up by a man who lived in that section, but others do not believe this, and it is only a short while since several persons from New York, Washington, Philadelphia and Norfolk made search for the treasure. They used divining rods and explored hundreds of rooms on the island, working day and night.—Washington Star.

Egg-Stealing Hens.

In Captain Bendire's "Life Histories of North American Birds," the

hen of the Canada grouse is reported as a confirmed egg-thief. A number of these birds were observed in cap-

tivity to rob one another's nests frequently.

Two hens had their nests near together, about two feet apart, and as each laid every other day, one nest would be vacant while the other was occupied. The hen that laid last would not go away until she had stolen the nest-egg from the other nest and placed it in her own.

A hen was once seen to attempt to

to steal an egg from another nest twenty feet distant. She worked for half an hour or so, but did not succeed in

moving the coveted egg more than eight feet—the way being uphill.

The egg escaped her and rolled back a foot or two so often that she gave up the task in disgust.

One evening the observer found one

hen on the nest, and knew that she

was beginning to set, as all the other

hens had gone to roost. Slipping his

hand under her he found three eggs,

the nest-egg, an egg she had just laid, and one stolen from a neighboring nest.

These inflated hides are so buoyant

that a large number of soldiers and

pieces of artillery can be transported

across rivers and other bodies of

water, and at much less labor and

expense than is involved in carrying

a heavy pontoon bridge.

SLAVERY DAYS IN NEW YORK.

The Captain of a Successful Trader in Live Freight Was Four Times Mayor.

On the turn from the seventeenth to the eighteenth century slave-dealing was an important and well-thought-of industry, or, in the more elegant phrase of one of the gravest of New York historians, "a species of maritime adventure then engaged in by some of our most respectable merchants."

The Dutch are credited with having brought the first cargo of slaves to the northern part of

America—from their possession on

the Guinea coast to the Virginia

plantations—and, according to Har-

per's, a regular part of the business

of the Dutch West India company

was providing African slaves for use

in the American colonies. The

profits of the business, even allowing

for the bad luck of high death rate,

was so alluringly great that it was

not one to be slighted by the emi-

nently go-ahead merchants of New

York, and the fact must be remem-

bered that as a business slave-dealing

was quite as legitimate then as is the

emigrant traffic of the present day.

Young John Cruger has left on record

a most edifying account of a voyage

which he made out of New York in

the years 1696-1700. In the ship

Trophee, Daniel, to Madagascar for

the purchase of live freight, and the

sentiment of the community in the

signal from the teller.

Photographing Suspects.

Suspected persons, as they stand at

the paying teller's window in the

Bank of France, are instantaneously

photographed. A camera is always

in position, and is operated upon a

signal from the teller.

DEATH, TAXES AND THE SPRAYS FROM A STREET SPRINKLER ARE ALL HARD THINGS TO DODGE.—Troy Press.

A South African Household.

Olive Schreiner thus describes a

typical South African household:

"The father English, the mother half

Dutch with a French name, the gov-

erness a Scotch woman, the cook a

Zulu, the housemaid a Hottentot, the

stable boy a Kaffir, and the little girl

who waits at table a Basuto."

DEATH, TAXES AND THE SPRAYS FROM A STREET SPRINKLER ARE ALL HARD THINGS TO DODGE.—Troy Press.

Death, taxes and the sprays from a

street sprinkler are all hard things

to dodge.—Troy Press.

Pennies for the Heathen.

Madge, aged 7, had a list of ques-

tions and answers given her by her

Sunday-school teachers to learn, the

first of which was, "What is a mis-

fortune?" and the answer, "One sent

to teach the heathen."

The list was duly learned, and she went to Sunday school full of importance that she had her lesson perfect. On her return she was asked if she had remem-

bered the answers, and she replied:

"Yes, mamma. I only missed the first,