

WONDER OF NATURE.

GRAND CANYON OF ARIZONA A MAGNIFICENT SPECTACLE.

Sublime Scenery Laid Out by Nature Holds Man in Its Spell—Great Chasm Miles Across—Is a Mecca for the Tourist.

The Grand Canyon of Arizona is within a government forest reservation sixty by eighty miles in size. About two-thirds of it is on the eastern and the other third on the western side. The timber is in fairly good condition. There was a bad fire two years ago which ruined several hundred acres of fine forest, but there is little danger of its recurrence because of the vigilance of Captain Fenton, the superintendent, and his corps of foresters.

It is thirteen miles from one rim of the canyon to that on the opposite side, and there are two trails by which the western side may be reached. One of them, the Bright Angel Trail, is opposite the new hotel, and although it is eighteen or twenty miles to the top the climb is comparatively easy. It follows a stream of clear, pure cold water which comes tumbling down a narrow canyon on the western side, and Major Powell during his first memorable exploration of the canyon called it the Bright Angel River because it was such a grateful discovery.

Captain Fenton says that the country on the western side of the canyon is much better than that on the eastern side; that the timber is larger and thicker, water is more abundant, and there are a great many deer and other big game. The forest reserve includes a strip of thirty miles along the edge of the canyon, and west of that, to the Utah line, the land has been taken up by Mormon ranchmen, who have large

lowed all of the trails to the river. Every one of these excursions is enough to use up the strongest men.

Nowadays one can ride to the canyon in a parlor car or a Pullman sleeper and step off the train into one of the most picturesque and comfortable hotels in the world. You can come all the year round. February and March are the least pleasant months, because there are apt to be rain and snow storms. From Sept. 15 to Feb. 1 the weather is most agreeable, but these summer days are almost perfect—neither too cool nor too hot. The thermometer ranges between 65 and 75 Fahrenheit. There are several advantages in coming down here in the summer, and a good many people are beginning to find them out. The altitude is 7,000 feet above the sea, and that insures cool nights, no matter how warm the days may be. But the days are not too warm for comfort; the thermometer seldom goes above 80; there is no humidity in the atmosphere; and if the sun is too hot all you have to do is to raise your umbrella. There is occasionally a freak of weather. The snowstorm in which we were lost occurred on the 20th of May, 1890, and it is a singular coincidence that a similar squall should arrive on the very same date this year, with snow enough to hide the roadway through the forest. But there is no danger of getting lost now. The trees have been blazed on both sides of the trail, and if you stick to the railway cars you are sure to bring up at the canyon, three hours or so after you leave the Santa Fe Line at Fort Williams. The snow never lasts more than a few hours. It may fall to a depth of two or three inches during the night two or three times a year, but as soon as the sun comes out in the morning it disappears almost instantly.

There is a peculiar railway down here. It is the only one I know of in

differing in color and intensity. It is a stupendous intaglio, carved in the silent desert by the Colorado River, and the rain and winds. It is like an inverted mountain range, 217 miles long, reaching a depth of 7,530 feet, with a series of depressions averaging 6,000 feet chiseled out of the earth by the erosion of ages.

It is the generally accepted theory that this great chasm is solely the work of water—of the floods that come down from the mountains every spring and summer—but Mr. Ordonez, a distinguished Mexican geologist, who came here not long ago, made a suggestion which may not be entirely new but is worth mentioning. It is his idea that, while the earth was cooling, the soil and the rocks contracted and split a deep and wide fissure in the surface of the plateau, and that its sides have since been worn down and polished by the action of the water. That seems reasonable.

There are various places along the rim from which splendid views of the canyon may be obtained. Each is different. Each has its own glories; but what is known as the Grand View is the best, because from that promontory the eye has a wider vista, a double view; there the canyon curves around like a monstrous serpent, and one can follow it a distance of nearly eighty miles. Thomas Moran painted his famous pictures from what is known as Moran's Point. He thinks the colors of the rocks and the clays appear more brilliant there than elsewhere.

You can wander along the rim for sixty miles. There is no obstruction for all that distance, and you can look down a mile into the bowels of the earth.—William E. Curtis, in Chicago Record-Herald.

When the Stars Fell.

Almost historic is the remark of the awe-stricken lad who, while observing



For Halter-Breaking Horses.

Some horses have the bad habit of pulling at their halters when fastened at the manger and always breaking them. While it is generally considered that the horse gets along much better in the box stall where he is not fastened at all it is not always possible to arrange such a plan, so that something must be done to break the halter-breaking habit. The following plan is admitted to work nicely and to break any horse of the habit after a few weeks' trial. Take a strong rope long enough for the purpose and, after

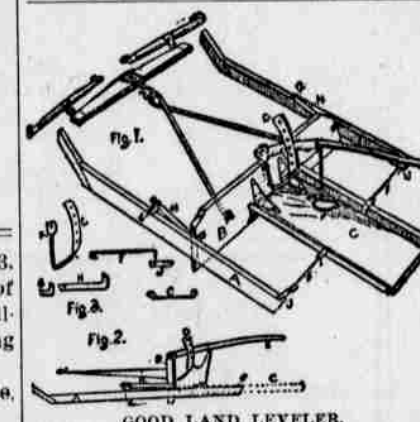


PREVENTS HALTER-BREAKING.

doubling it, pass an end each side of the horse about midway between the front and hind legs. Pass the ends through a ring, then through the hole in the manger and then tie the ends in the halter ring. When the horse pulls back the rope tightens around the body and pulls him back, so that after a few trials he gives up the plan. To prevent the rope from making the back of the horse sore, make a soft pad of several thicknesses of new unbleached muslin, covered on the outside with a piece of denim or any equally strong, clean material. Make small straps of some of the material and sew, to the pad, the rope passing underneath these loops. The illustration shows the idea plainly. Figure 1 indicating the shaping of the pad at the center seam.—Indianapolis News.

Practical Land Leveler.

Fig. 1, prospective sketch; Fig. 2, side view; leveler, E, extends back directly over right side of boat, C; short end of iron, H, bolts to rear side of B, in middle, and long end is hinged by bolt to top end of G, which is bolted on top of runner with upturned end flush with inner side of runner. Operator stands on boat, C, and by using lever, E, raises or lowers scraper, B, which is hinged on runners by bolts between G, G and H, H. Boat, C, is



GOOD LAND LEVELER.

hinged to back of scraper with bottom 2 inches above lower edge of scraper. Iron, D, is 1½-inch wagon tire and has half twist at x, x.—Chancey Avery, in Ohio Farmer.

The Uruguay Potato.

Fresh investigation regarding the new Uruguay potato indicates that the plant will probably not prove of much practical value where the common potato or the sweet potato can be grown with success. It is a tropical plant which will not thrive in cool weather, and even where it has succeeded it is of such a weedy character that it is liable to become a nuisance when it escapes from cultivation. Those who are experimenting with the new potato express some hopes that it may yet be improved to such an extent that its vigorous productive character may bring it into use to a limited extent. At present it is not recommended for commercial uses.

Spreading Manure.

Calculate the amount of manure on hand and estimate the expected amount next spring. Then measure off or estimate the area of land that the manure will probably cover. Do not waste the manure by spreading it over too much space. A small plot that is well manured will give larger proportionate crops, and at a lower cost, than a large field that is manured insufficiently. Homeopathic doses of manure do not give good results. Concentrate your manure on the least space possible for a fair return.

How Long Is a Week?

"Oh, yes, he's very careful about himself and his clothes. Why, he can wear a collar a whole week long." "Gee whiz, he must have an awful long neck!"—Philadelphia Press.

Eggs in Commerce.

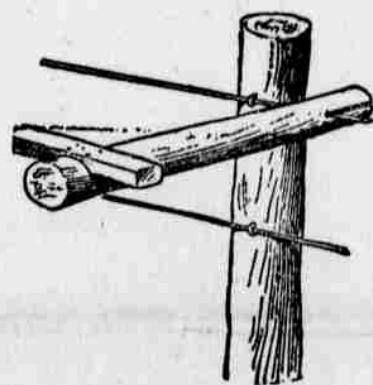
A poultry farm, whether ducks, geese, chickens or turkeys be the specialty, accumulates a large and malodorous surplus of eggs that refused to develop into fowl. The average person would suppose that if there is anything on earth that is utterly worthless it is a stale egg. Millions of stale eggs are used every year in preparing leather dressing for gloves and book-binding—an industry that is largely carried on in the foreign tenement houses of New York and other large cities. They are also used in manufacturing disinfectants and in the preparation of shoeblackening, and even the shells are made into fertilizers. The eggs that have not yet lost their virtue also have other uses besides the more common ones for culinary purposes. It is estimated that fully 55,000,000 dozen are used by wine clarifiers, dye manufacturers, and in the preparation of photographers' dry plates.—Exchange.

Road Building.

The importance of the new office of public roads, which is the official designation of the division of the bureau of agriculture devoted to the study of roads and road-building materials, has been recognized in a larger financial appropriation than was accorded the old office of public road inquiries. The scope of the new division has been materially enlarged, now taking cognizance of the chemical and physical character of road materials, work which was formerly done, where possible, by the bureau of chemistry. One of the features of the new office, aside from its enlargement and the authority which has been given it to confer with prospective builders and offer them expert advice, is the post-graduate course in highway engineering, which has just been inaugurated, with a view of giving young civil engineers theoretical and practical training in road-building.

Homemade Wire Stretcher.

Take a round stick 2½ feet long and 2½ or 3 inches in diameter. Make opening in end 6 inches long and large



WIRE STRETCHER.

enough to allow wire to slip in. Put handle on the other end and then with stick at right angles to post and wire next to post twist as tight as wanted. Any wire can be broken with this device and you don't have to have anything to fasten stretcher to.—Exchange.

How to Make a Hay Sweep.

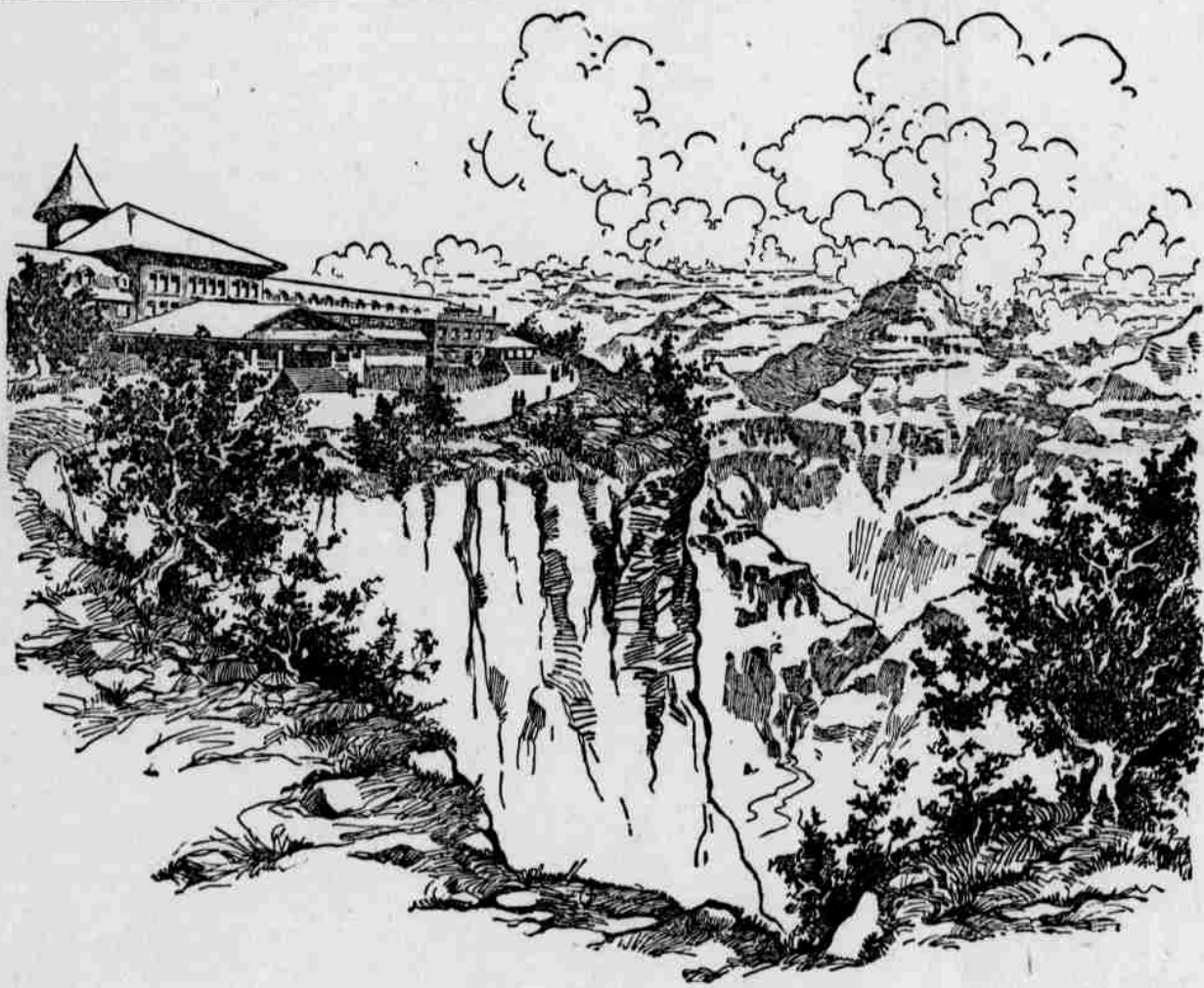
A. E. Shreffler, of South Dakota, says: "The following is what I believe to be a cheap and practical way to make a bucker, or hay sweep. All the materials required for this purpose are two 1x8's, 14 feet long; one 2x12, 14 feet long; three 2x4's, 18 feet long; one 2x4, 12 feet long, and 30 feet of 1-inch rope. Cut the 18-foot 2x4 into pieces 9 feet long and point them at both ends with a sharp hand ax. Next spike these 9-foot pieces on the 2x12 plank, 4½ feet from each end, placing the 2x4's 2 feet and 4 inches apart. Cut the 12-foot 2x4 into four equal pieces, place upright on the edge of the 2x12, 3 feet 8 inches apart, and brace them solid by nailing the 1x8 on the stakes. Cut rope to 15 feet length and put one on each end of the 2x12 and you have a reversible bucker, or sweep-rake, better than you can buy for twice the cost."

Preventing Scab and Rust.

The results of various methods of treatment to prevent apple scab are given in bulletin No. 88 of the Nebraska Experiment Station. Removing cedar trees from the vicinity of the orchard and destroying the cedar apples is the customary way to control the cedar rust, which is closely related to applescab. Thorough spraying with Bordeaux is effectual against both scab and rust, and the spray should be applied in a fine mist and with considerable force. All parts of the tree must be wet thoroughly in order to prevent the rust securing a start.

Stopped the Crowing.

Those who live in crowded neighborhoods in town or city are often debarred from keeping chickens because of complaints of neighbors of the early morning crowing of the cocks. The authorities in an English town have devised a remedy for this trouble, consisting of placing the perch where the cock roosts so high that when he stands up to crow he knocks his head against the roof and desists. It is claimed that a swinging board over his head answers the same purpose.



SCENE IN THE GRAND CANYON OF ARIZONA.

herds of cattle. Nearly all of the inhabitants of that corner of Arizona are Mormons. John D. Lee, the leader in the Mountain Meadow massacre, had a ranch at a ferry over the Colorado about a hundred miles north of here, where he lived in concealment for more than twenty years. He was finally discovered, identified, arrested, convicted and executed for complicity in the murder of a caravan of people in northern Utah while on their way to California. His widow now keeps a hotel at Holbrook, Ariz., one of the most important stations on the Santa Fe Road, and several of his sons and daughters are living in the locality.

People are beginning to find their way here. Last year, which was the first since the railroad was opened, about 12,000 people came. This year, if the present average keeps up, there will be from 20,000 to 25,000 visitors, and everyone who comes goes home a walking advertisement for the place. There is nothing to compare with it anywhere in the world. It is impossible to exaggerate the grandeur, the sublimity, the impressiveness of the scenery; and its fascination cannot be accurately described. It is impossible for one man to express his emotions to another.

It is a singular fact that three-fourths of the people who come to the canyon are women. A large number of them are well along in years, and the endurance and the nerve they show is extraordinary. Nearly every woman who comes here insists upon going down to the bottom of the canyon, while only half of the men show that amount of energy. Two New York women have been here for months. They have visited all the places of interest within 150 miles, including the Moki and Supai Indians, and have fol-

this country over which no passes are issued. Everybody except the conductor and the train crew—even the president himself—has to pay fare, and a round-trip ticket over the entire system costs \$6.50. The railroad is ninety miles long. It has no stations except the terminals at Williams, where it connects with the Santa Fe, and at the Grand Canyon of the Colorado. It has no side tracks except one to allow the trains to pass. There are four passenger trains a day, two in each direction, made up of a baggage car and two coaches and through Pullmans from Kansas City and Los Angeles twice a week. There are no freight trains and no freight is carried except water and other supplies for the hotels at the Grand Canyon. The road depends upon passenger traffic alone. That is the reason why passes are not given. There are no switchmen in the employ of the company and the pay roll carries only twelve names, including conductors, engineers, firemen, ticket agents and all concerned, and the track is kept in order by five section gangs of ten men each, who are now rebuilding it from the bottom with new ties, new rails and ballast of volcanic cinder.

I shall not try to describe the Grand Canyon of the Colorado. Few pens are brave enough to attempt it, and none is equal to the task. Famous writers have described the canyon with fine word-painting, but none conveys more than a meager idea of what the canyon looks like; and it seldom looks the same from hour to hour. With every shifting cloud its outlines and colors seem to alter. As the sun rises and sets in the heavens its majestic outlines change like the scenes of a panorama. You may sit on the rim from breakfast to dinner, gazing over the same area, and see a dozen pictures

the great meteoric display of 1833, turned his eyes to a familiar corner of the heavens after an especially brilliant flight of meteors, drew a long breath, and gasped:

"Well, the old Dipper's still there, anyhow!"

Much more recently a similar spectacle, although in this instance a display no greater than is ordinarily looked for in August skies, disturbed the tranquillity of a little girl whose father, an enthusiastic amateur astronomer, had taken her up on the roof with him to see the sight. He expected her to be delighted with the shooting stars, but he soon observed that her expression was scarcely a joyous one. "What is it, Ada?" he asked her. "Don't you like to watch them. Aren't you enjoying yourself?" "Ye-es, papa," she answered, dubiously, conscientiously trying to harmonize the dictates of politeness and truth. "At least, I suppose we can spare the stars, and I think I might enjoy it if only you can give me your word we are sure of the moon."

Serpent Immune from Its Venom.

One of the most important things about serpent venom is that each species seems to be immune to its own poison. If a snake is inoculated with its own venom it remains unaffected. M. C. Phisalix, who has done so much on this subject, finds experimental evidence that this immunity is to be attributed to the presence in the blood of a free antitoxin. This neutralizes the poison as it is introduced.