The Virginia Dismal Swamp.

The name of the Dismal Swamp, as well as its natural curiosities, has given it a weird interest. It is a little and curious world in itself, having its own vegetable and animal life. J. Ralph, in the *American Agriculturist*, gives the following description:

The Dismal Swamp in Virginia, one of the largest of the swampy tracts in America, is also one of the most promising areas for reclamation. It contains fully 1,500 square miles, and is at present of little value, except for a supply of timber, which is constantly diminishing. The swamp is situated on an inclined plane, gently undulating, and is really nothing but a continuation of the low, swampy, coastal plain which extends from Texas northward. It is an old sea bottom, and the western boundary of the swamp is a sea cliff and beach. Owing to the original deficiency of slope, it is swampy because the water cannot run off, and its swampy nature is increased by the growth of vegetation, which acts like a sponge in retaining water.

Near the center of the swamp is the famous Lake Drummond, about which so much has been written, and the origin of which is still an unsettled question. It has been supposed that during some time of drought a fire, burning the peat, has produced a large depression in which the waters of the lake have gathered. Prof. Shaler, of the United States Geological Survey, considers this explanation to be improbable, although smaller pools have been produced in this way. He offers as a theory that as the vegetation grew upon the old sea bottom, which had been raised to dry land, it began to grow first on the margin, and gradually to extend over the entire area, Lake Drummond being the last place to be filled. One of the most interesting features connected with the Dismal Swamp is its peculiar vegetation. Trees generally cannot grow in very swampy tracts, for their roots need to have access to the air during the growing season. The bald cypress (*Taxodium distichum*) under ordinary conditions differs in no way from an ordinary tree with respect to its roots; but in swamps such as the Dismal Swamp, where the roots are beneath water all the year, it has formed the habit of sending a knee-like protuberance from the roots up above the water into the air—breathing holes one might say, for the roots. In this way the cypress can live in very wet swamps. The black gum of the Dismal Swamp accomplishes the same end by arching its roots so as to raise portions of them above water.

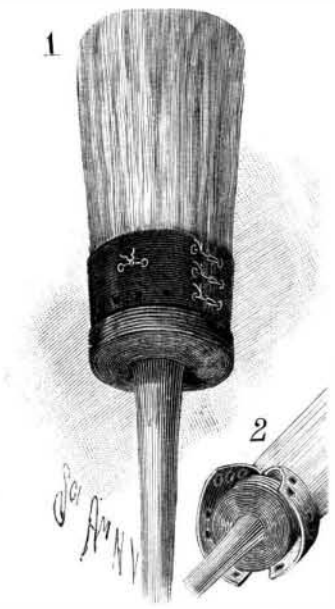
As would be expected, the animal life of this great swamp is also peculiar. No squirrels exist because there are no nuts; ground-loving animals are also absent because of the extreme wetness, so that there are no mice, moles, squirrels, or other animals of this class. Birds which build on the ground cannot live here, and the chief animal population of the higher classes consists of water birds and snakes. Of the larger animals, bears are abundant, and there is a peculiar and very ferocious species of wild horned cattle. These animals, probably the descendants of former domesticated cattle, are now thoroughly wild and very dangerous. The fights of the wild bulls are said to be very exciting by those who have seen them, and in the contests between the bears and bulls both are sometimes killed. It is said the bears, in order to escape the danger from the horns of the cattle, have the habit of springing upon their backs and rending the muscles supporting the head of their prey.

This region is in part a wilderness, but some efforts have been made to drain it, though these have been in the main unsystematic and unscientific, and have produced little result of value. Prof. Shaler estimates that by a proper system of draining this great swamp, fully 160,000 acres of land can be reclaimed at a cost of $4,000,000, making the land worth some $16,000,000. The region is very favorably situated for cultivating and marketing garden crops. Experiments already made prove the soil and climate to be admirably adapted to the cultivation of vegetables. The Norfolk district, where a costly system of fertilizing is necessary, now furnishes a large part of the supply of such crops to from four or five million people along the northern coast, and the demand is certain to increase. The drainage channels could furnish water transportation to within a mile of every part of the tilled area and thence to the sea.

AN alloy of gold and aluminum has recently been made. Its color is a most beautiful purple, and it will be valuable in making jewelry.

AN IMPROVED PAINT BRUSH BRIDLE.

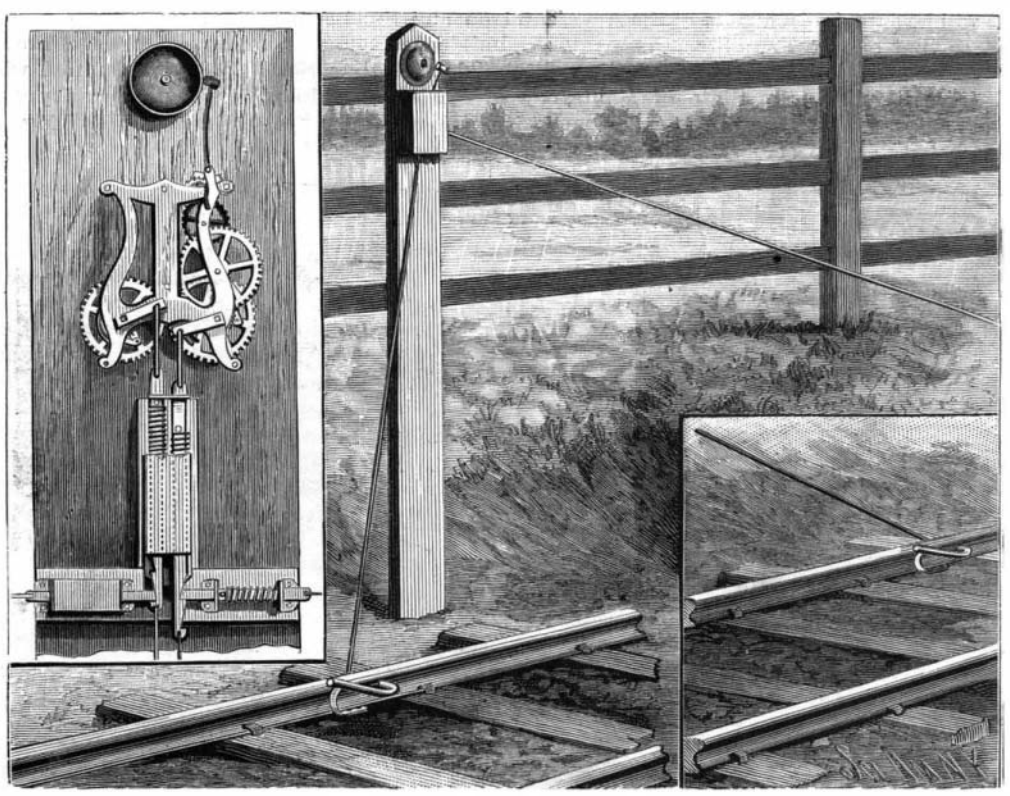
The improvement shown in the illustration is designed for application to paint brushes of all kinds, facilitating the working out of the coloring matter, and enabling the brush to be flattened as desired. It has been patented by Mr. Wm. H. Humphrey, of the United States Hotel, New York City. Fig. 1 is a view in perspective and Fig. 2 shows the bridle turned back in position for cleaning the brush. The bridle takes the place of the usual twine wound around the butt of the brush, and consists of two similar pieces or flaps, held at one end between the plug and the brush ferrule, the edges of the flaps having eyeleted perforations to be connected in pairs by cords. When the brush becomes worn the outer ends of the flaps with the outer cords may be cut off to give further flexibility, as this may be desired. Near the center of the flaps are other eyeleted perforations to receive a cord extending transversely through the bristles and back again, portions of the cord lying at each side of the center, and its ends being tied at one side. If the brush is to be round, the cord is left loose enough to permit the bristles to assume a cylindrical shape, but by tightening the cord the brush is flattened accordingly. Near the base of the flaps are perforations, through which the paint oozes when the brush is worked back and forth to free it of a certain color, but when the brush is to be thoroughly cleaned, the flaps are turned back, as shown in Fig. 2.



HUMPHREY'S PAINT BRUSH BRIDLE.

AN IMPROVED RAILWAY SIGNAL.

The illustration represents an improved means for actuating an audible or visible signal, to be located adjacent to a railway crossing, for indicating the approach of a train, the signal being operated by the train. The improvement has been patented by Mr. Owen C. Morris, of Phœnix, Md. The figure at the left shows the details of the signal-operating mechanism, adapted for connection with a rail of the track at either side of the crossing, the apparatus being inclosed in a suitable casing, attached to a post at the side of the track. The mechanism, by means of which an alarm is sounded on a bell or gong, is operated by two spring-actuated driving wheels, the shafts on which the wheels are mounted being rigidly connected at their outer ends with crank arms, pivotally connected with links extending to the upper ends of vertically movable slides in a casing which is shown partially broken away. Sleeved on the slides are spiral springs, whose lower ends abut against the lower end of the frame and their upper ends against lugs on the slides, so that as the latter are drawn down, the springs are compressed. The lower projecting ends of the slides are formed with stops adapted to be engaged by spring-pressed horizontal bolts, sliding in brackets, the outer end of one of the bolts being connected by cable or wire with a tripping lever located on the rail at some distance from the signal. These levers are so inclined that the wheels of a passing train, approaching the signal in one direction, will press the lever down and thus draw upon the wire or cable to withdraw the bolt, releasing the slide, and permitting the spring to force it up, thereby operating the clock mechanism to sound the alarm. As the train reaches the signal, a similar tripping lever on the rail is operated to draw down the slide, a wire extending from this lever to the bottom of the slide, which is now engaged and locked by the horizontal bolt, the device being then in readiness for the following train, the signal having been sounded from the time the first tripping lever was moved until the second one was reached. To prevent unauthorized persons or animals from operating the signals, C-springs of sufficient strength are placed under the tripping levers.



MORRIS' RAILWAY SIGNAL.

A Great Tableland 17,000 Feet High.

Captain Bower, of the Indian Staff Corps, has arrived at Simla from China, after a very remarkable journey across the Tibet tableland. He had with him, says *Nature*, Dr. Thorold, a sub-surveyor, one Pathan orderly, a Hindostani cook, six caravan drivers, and forty-seven ponies and mules. The Calcutta correspondent of the *Times*, who gives an account of the journey, says that Captain Bower, leaving Leh on June 14, crossed the Lanakma Pass on July 3, avoiding the Tibetan outpost placed further south. Journeying due east, he passed a chain of salt lakes, one of which, called Hor-Ba-Too, is probably the highest lake in the world, being 17,930 feet above the sea. Gradually working to the southeast, the explorer saw to the north a magnificent snowy range, with a lofty peak in longitude 83° and latitude 35°. After many weeks' travel over uplands exceeding 15,000 feet in height, where water was scarce and no inhabitants were to be seen, the party on September 3 reached Gya-Kin-Linchin, on the northern shore of Tengri Nor Lake, in longitude 91° and latitude 31°. This is within a few marches of Lhassa, and two officials from the Devi Jong, or temporal governor of Lhassa, met him here and peremptorily ordered him to go back. But he refused to return, and a compromise was effected, guides and ponies being provided on his agreeing to make a detour to the north in order to reach the frontier of Western China. He reached Chiamdo on December 31, only just succeeding in getting off the tableland before winter set in. He struck Bonvalot's route for a few miles when marching to Chiamdo. The country about this town is very fertile and well wooded. Three thousand of the monks of Chiamdo, who lived in fine monasteries, threatened to attack the party, but were deterred on learning that they carried breechloaders. Captain Bower arrived at Tarchindo, an outpost on the Chinese frontier, on February 10. The distance covered from Lanakma to Tarchindo was over 2,000 miles, all of which, save a few miles, has now been explored for the first time. The route for thirteen consecutive days lay over a tableland 17,000 feet high. Captain Bower is engaged in writing a report and completing his maps.

The Condensers of the Baltimore.

Recently on removing the tubes there was nothing in their appearance to indicate anything wrong, but it was found that a very light blow would break them across. The fracture showed a complete change in the material. A thin ring on the inside had the color and appearance of the brass of which the tubes were originally composed, but outside of this the rest of the tube was of a dull copper color without metallic luster. The whole phenomenon was so entirely different from the usual experience with condenser tubes, which have generally been considered indestructible when intelligently treated, that an explanation seems impossible. As far as can be learned, there has been trouble on nearly all the new ships with the copper pipes, and it is not confined to the American navy, but the English have had the same trouble. A correct explanation will be of great interest to all mechanical engineers. A chemical analysis of some of the defective tubes of the Baltimore is now in progress, and when it is completed it may throw some light on the subject.