

circulars, small samples, photographs, etc., while record cards of merchants, merchandise, and other important commercial data are similarly treated. Manufacturers and others here and abroad are requested to send whatever information they believe to be of value in this connection.

#### MOTOR CAR FOR WHITEWASHING RAILROAD TUNNELS.

BY THE ENGLISH CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

The Central London electric railroad runs through the heart of London to a southwestern suburb. It is constructed on the deep-level tube principle, with the up and down tracks running through separate tunnels. Although the line is only about seven miles in length, there are thus about fourteen miles of tube, irrespective of short lengths at crossovers and junctions. Because the cars are but slightly smaller in cross-section than the tunnels, it is impossible to paint the tubes in the ordinary manner. The problem is still further complicated by the fact that trains run for nearly twenty hours during the day. Painting by hand is obviously impossible. The Board of Trade, however, demands that the tunnels and rails be thoroughly examined once in the course of every twenty-four hours. During this interval the railroad authorities periodically treat the ironwork to a protective coating. As ordinary oil paint cannot be employed for the purpose, whitewash is utilized, the material being mechanically applied to the walls by a special system devised by Mr. G. C. Cunningham, M. I. C. E., the general manager of the railroad. One of the ordinary electric motor-propelled passenger coaches withdrawn from service has been converted for the purpose. In the front of the car is the driver's compartment, while at the rear end is a circular frame, from the center of which radiate in all directions a series of twenty pipes arranged equidistantly. Each of these pipes has a double branch attached to its outer end, fitted with fine nozzles. These pipes are carried out as far as possible, leaving only a space of some six inches between them and the walls of the tube, the lowest nozzle being fixed at a height corresponding with the level of the car floor, which is only a few inches above the level of the track in the tunnel.

The seats within the car have been removed entirely to make room for a large rectangular tank of eight hundred gallons capacity. This tank is filled with whitewash. From this tank extends a pipe leading to an electric driving pump, from which in turn extends another delivery pipe to a small cylinder in the center of the nozzle frame. The cylinder feeds the branch pipes.

The car is driven through the tube at a speed of about four miles an hour. The electric pump forces the whitewash through the branch pipes at the rear, distributing it in a fine spray from the forty nozzles upon the whole internal surface of the tunnel above the track level. A perfect and even coating is in this way applied. Because of the liquid state of the whitewash, only a very thin coating is deposited upon the ironwork at one time, about three applications being required to cover the walls sufficiently. Owing to the comparatively slow speed at which the car travels, every part of the ironwork is thoroughly treated, and yet at the same time the coating is not sufficiently thick to peel off.

With this device it is possible to whitewash the whole length of the tunnels with at least one coating in a single night, when the trains have been suspended. As a two-and-a-half-minute train service is in operation throughout the whole working day, the whitewashing car cannot carry out its functions during this period without seriously interfering with the traffic, so that it is brought into operation immediately the last train has completed its journey.

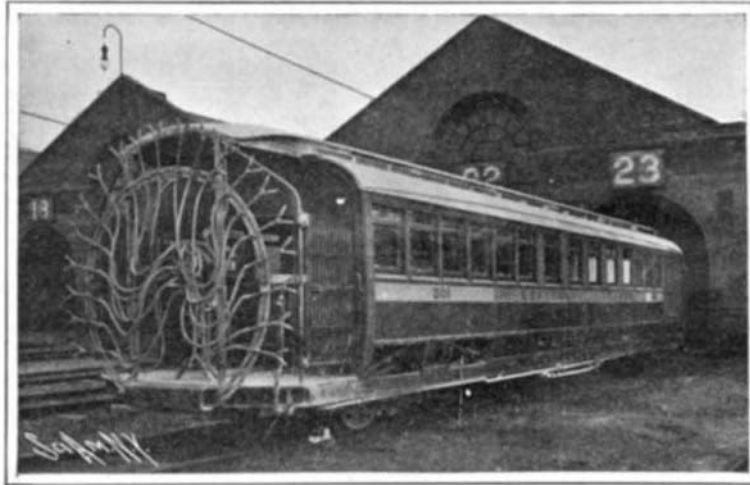
#### A HUGE ARCHED YUCCA TREE.

As is well known, the varieties of the yucca plant in the Southwestern States and in Mexico are so numerous and varied in size, that some of them are exceedingly picturesque.

This illustration of a yucca tree in the Mojave desert gives an idea of the huge proportions to which this particular species often attains. Its lower part really forms an immense arch, the center of which is several times the height of the horse standing beneath. In fact, the distance from the ground to the highest portion of the arch is nearly thirty feet. The specimen illustrated is of symmetrical proportions in con-

trast with the ones seen beyond the arch, the latter being twisted into a dozen different forms. They present a striking example of the effect of wind storms on the desert, as their distortion is due almost entirely to the action of the air currents in bending them, when young plants, into various positions.

Compared with varieties of the yucca found in Florida and portions of the Southwest, the specimen shown in the illustration is truly enormous in its proportions, being really a tree in height and the size of the stem.



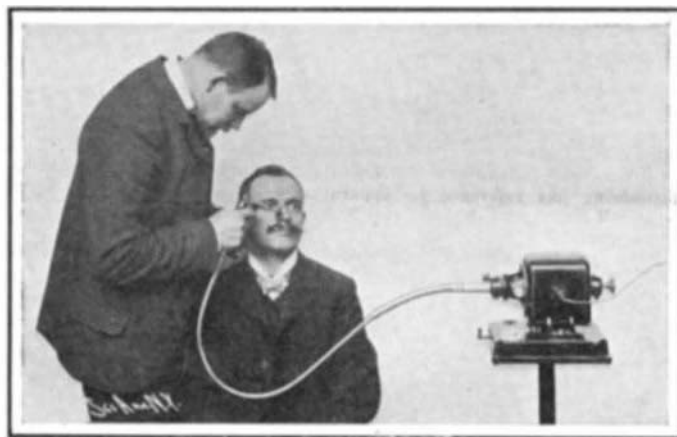
THIS CAR WHITEWASHES ONE OF THE LONDON TUBES.

An electric pump forces whitewash from a tank in the car through the radially-arranged nozzles mounted at the rear.

#### A NOVEL ELECTRICAL MEDICAL TREATMENT.

BY FRANK C. PERKINS.

The accompanying illustration shows the arrangement of a new and interesting German electric motor-driven instrument for treating red noses. This instru-



THE ELECTRICAL TREATMENT FOR RED NOSES.

ment was designed by Prof. Lassar, of Berlin, and is said to be a most efficient means of remedying the abnormal redness of the nose, usually caused by enlarged blood vessels.

By Prof. Lassar's method, a vibrator or concussion instrument is operated by an electric motor, the in-



AN ARCHED YUCCA TREE.

strument being provided with about fifty gilded platinum points in a bundle working in a vertical direction, at a very high rate of speed. The application of this instrument causes bleeding of the skin, the pricking treatment being accompanied in some instances with a galvano-caustical or electrolytical treatment by means of special needles.

In some instances an anesthetic is used, the chlorethyl spray being employed. In most cases, however, the patients are able to endure the rapidly-repeated pricking without inconvenience. One or two treatments per week are sufficient to restore very abnormal noses to their normal color within a month without destroying the excessive blood vessels or leaving any scar. In many cases the galvano-caustic or electrolytical needles are not utilized, although they may be employed in combination with the rapidly-repeated pricking of the electric motor-driven instrument when found necessary.

#### Seaweed Burning in Norway.

Along the shores of Joderen, on the southwest coast of Norway, the seaweed grows in veritable forests; not the common grass variety, but actual trees from five to six feet in height, with stems like ropes and leaves as tough as leather. It begins to sprout in March and April, and gradually covers the ocean bed with a dense, impenetrable brush. In the fall the stems become tender, the roots release their suction-like grip on the rocky bottom, and the autumn winds wash it ashore in such great quantities that it looks like a huge brown wall along the entire coast. The fall crop is of comparatively small value. The only use that can be made of it is for fertilizing purposes, because it is only in the spring that it can be successfully burned, and at this time there is such a demand for it that every stalk and leaf is gathered as if it were pure coin.

The weed-burning season is the busiest of the year, and every member of the household is drafted to assist in gathering, drying, and burning. At the close of each clear day the whole coast seems to be aflame from thousands of bonfires that are kept burning far into the night. This is one of the many natural resources that has unexpectedly developed in Norway, and no one ever dreamed twenty years ago that this seemingly worthless weed would in a few years, as a source of income, surpass the fisheries, which have been the mainstay of the people of that country for ages, nor rival that of agriculture in one of the leading agricultural districts of Norway. Yet such is the case to-day; and those who are fortunate enough to own land abutting the seashore, can reap the most profitable crop of the year. Owners of farms located where the weed seems to have a predilection to drift can burn as much as 3,000 pounds a year, which sells for from \$2.25 to \$3.75 a pound.

The annual income to Norway from seaweed ashes amounts to about \$150,000. Every fisherman knows the difference between alga and tang. Only the former can be used as raw material for the iodine and chloriodic industry; tang is entirely worthless. But of the different kinds of alga, it is immaterial, or nearly so, whether one makes use of the large, strong stalks or the broad-leaved kind; when the weed is carefully handled, one can secure an excellent product. If tang is burned with alga the value is decreased considerably, but notwithstanding this fact the mixture is not infrequent.

After the burning the ashes are carefully gathered, packed, and shipped to all parts of the world. The subsequent treatment of the ashes is veiled in scientific mystery. They contain many valuable chemical properties among which iodine is the most important.

#### An Interesting Type of Roman Villa Unearthed at Caerwent.

An unusual type of Roman villa has been unearthed on the site of the ancient Roman encampment in Britain at Caerwent. The remains have been found to be in an excellent state of preservation. A departure from the conventional practice of the Romans in the designs of their residences, as revealed by previous excavations in the country, is the provision of extra rooms abutting on the four sides of the courtyard. In the basements two completely perfect heating devices or hypocausts were found, together with the peculiar blue tiles utilized by the owners for conducting the heat from the stove in the basement and radiating it through the upper rooms of the dwelling. In the basement some exquisite specimens of Roman paving were moreover unearthed.