Peculiar Electrical Phenomena.

Some very singular electrical phenomena, says the *English Mechanic*, were observed on two very dry days at a printing office in Mayence, when the establishment seemed to be converted into a huge electrical battery. Electric sparks several centimeters long could be drawn with the fingers from all parts of the printing machinery, just as may be done from a charged electric machine. The action of the sparks became so pronounced that the layers-on and takers-off (who, it should be remarked, in German printing offices are mostly young women) refused to work, as burning sparks were emitted every time the machines were touched with the hands. The electrical phenomena were most striking in the machines used for lithographic printing. A strong paper made of cellulose was being printed at the time, and the takers-off observed a slight crackling as the sheets, which adhered pretty closely to the oil cloth covering of the cylinder, were being withdrawn. This crackling was finally developed into a loud explosion, accompanied by beautiful flashes from ten to twelve centimeters (from four inches to five inches) in length. The discharges are stated to have been more effective the more quickly the sheets loaded with electricity were withdrawn. A small circular saw mounted about four inches from an iron column discharged at intervals of from 20 to 30 seconds, when driven, powerful electric sparks, accompanied by loud explosions, upon the column. These phenomena were observed for hours, and continued for two days, when the printing office became free from electricity, and has remained so since.

The following explanation is given of the occurrence: The outer walls of the building in which the printing machinery is placed are separated from the surrounding soil by a thick layer of asphalt, serving to keep the moisture arising from the soil from penetrating the walls. In the present case the asphalt at the same time served to isolate the electricity generated within. The floors of the several machine rooms are also laid thick in asphalt, and the machinery is fixed direct to this flooring, so that it is likewise perfectly isolated. There are only a few iron columns having direct connection with the earth. On the morning of the day on which the startling phenomenon described was first observed, all the machine belts had been greased with a mixture consisting of resin and linseed oil, serving to increase the friction between the belts and the pulleys. As soon as the machinery was set in motion, each individual pulley was converted into an electric machine on a large scale, negative electricity being formed on the belt covered with resin, and positive electricity on the iron pulley. The stored electricity, of course, was immediately given off whenever one of the machines, which for the time being were changed into accumulators or secondary batteries, was "tapped."

Worsted Yarn Scouring and Bleaching.

In scouring wool nearly all the natural grease is removed from it. This renders the wool so harsh and dry that it cannot be combed and spun. So it is found necessary to return to it a certain amount of grease or oil. For this purpose olive oil is the most suitable and the most easily removed, but, in many cases, at the present time a mixture of paraffine oil and an animal oil, called a wool oil, is employed. During the spinning the yarn gathers dust and bits of solids, and when the yarn is to be scoured these must be removed as well as the grease. A simple alkaline bath would be sufficient to remove the oil, but the action of a fixed alkali upon wool is considered disadvantageous before bleaching, and even a small quantity should be avoided. Ammonia should be used if any alkali must be employed. The common treatment consists in hot soapings with a neutral olive soap. The ordinary rectangular wooden box should be used, and the yarn manipulated in the usual way upon sticks. The hanks are turned in the usual way during the soaping. Fifty pounds is a convenient quantity to wash in one box. Run into the box 200 to 250 gallons of water, add four to five pounds of soap, dissolve and raise to 120° Fah., and enter the wool, work for fifteen minutes, allowing the temperature to rise, but not to exceed 190° Fah., under any circumstances. Wring, and repeat the treatment, but use three pounds of soap. If any difficulty is found in removing the oil, add a few ounces of ammonia water to each bath. The olive oil is easily removed, the wool oil with more difficulty, but usually perfectly if it contains a sufficient per cent of animal oil. Now wash over with cold water, wring, shake out, and introduce at once into the bleaching chamber.

The bleaching chamber should be built of brick, and the hanks can be hung upon poles. The sulphur should be burned at the bottom, and the fumes circulated up through the chamber. The yarn should be kept in the sulphurous acid for 24 hours. It must then be withdrawn and washed with warm dilute soap (1 pound for 50) containing a little soda. If a treatment for 24 hours does not give sufficient whiteness, then the yarn is wrung and returned to the chamber. After the final wash the yarn can be tinted by passing it through a bath containing a very small quantity of indigo extract if a blue white is desired.—*Textile Record.*

THE SPIRAL SCREW DRIVER.

Since the introduction, by Mr. F. A. Howard, of Belfast, Me., of the original Allard patent spiral screw driver, which on account of its great merit as a labor saving tool has found many imitators, various parties have used different devices to avoid the original patent. The accompanying illustration represents the screw driver with the bit extended and with the bit closed. To drive a screw, as is well understood, the point of the screw driver is placed in the nick of the screw, and held there by the thumb and finger while the handle is gently withdrawn, thus extending the bit, after which it is only necessary to press on the handle in a straight line with the axis of the screw, the spirals on the upper part of the bit causing it to rapidly revolve. The screw is withdrawn as with a common screw driver. This tool is especially designed for light and rapid work, for the use of mechanics, such as machinists, gun and locksmiths, cabinet makers, coffin makers, carriage makers and all who have large quantities of small screws to drive, thereby avoiding the tiresome turning of the hand and twisting of the wrist. The best quality of material is used and superior workmanship employed in the production of the "Allard," which retains its hold on popular favor, and the sales of which are said to exceed those of all its competitors. The New York agents are the Alford & Berkele Co., of No. 77 Chambers Street.

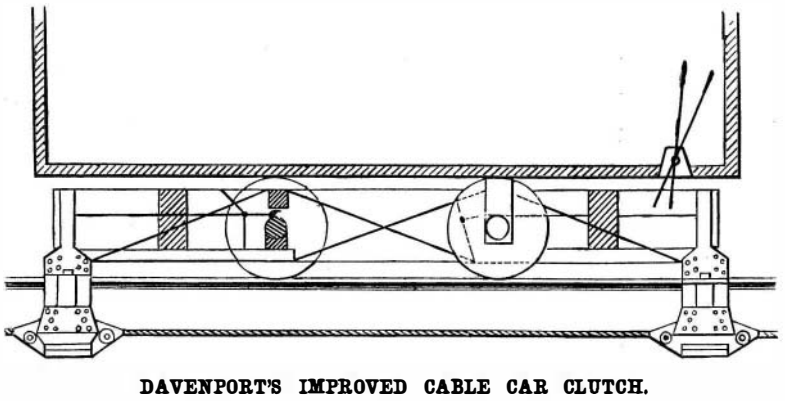
THE "ALLARD" SCREW DRIVER.

Plane Tree Pollen Causing Influenza.

A German resident of Barcelona recently published the fact that severe attacks of influenza—exactly like those which we call in this country "rose" or "hay colds"—have afflicted the members of his family year by year in spring, and that he has at last traced them with certainty to pollen dust from the plane trees which surround his home. A German scientific journal thereupon declares that the evil influence of plane tree pollen upon the stomach, throat, eyes, and ears was a well known fact in antiquity, both Dioscorides and Galen having called attention to it. That German scientific men will acknowledge that an influenza may be produced by pollen dust of any kind will surprise many American travelers; for many must remember their experience with German physicians, who have laughed the idea to scorn, refusing to believe in the periodicity of the attacks from which their foreign patients suffer, or in the potency of the cause to which those patients attribute them.—*Garden and Forest.*

AN IMPROVED CABLE CAR CLUTCH.

An improved system of cable car clutches and switches, designed to enable the cars to turn a corner and exchange lines of cable, has been invented by Messrs. Henry and George Davenport, of Somerville, Philadelphia, Pa., the illustration herewith showing a longitudinal section of the improved car. To the framework of the car are pivoted frames in the outer ends of which are journaled the shanks of the grips, each frame carrying a roller which rides upon a curved track, and the devices at the front and rear of the car being alike. The grip has a sliding bar carrying a lower jaw adapted to move upward, and clamp the cable, the frame having a guide beveled at its ends and carrying guide rollers for holding the cable while the jaws are being brought into engagement therewith. Upon one end of the car are arranged two levers, each connected by a rod with an arm on a shaft adjacent to each of the axles of the car, and to each clutch-supporting frame is attached one end of a spiral spring, the opposite end being connected with the body of the car, the spring acting to draw the frame over to cause the clutch to enter the switch and follow the curve leading from one track to another. To transfer a car from one track to another, the front grip is detached and allowed to follow the curved slot, while the car is pushed forward by the rear grip until the front grip enters the conduit of the second cable and is engaged therewith, when the rear grip is released, and the car moves forward on the second track as before.



DAVENPORT'S IMPROVED CABLE CAR CLUTCH.

Reduction of Low Grade Ores by Electricity.

The Utah Mining and Reduction Company, whose works are located at Bingham, ten miles south of Salt Lake City, are using the new "Meech process" in the reduction of their low grade and rebellious ores with success.

The ore is passed through a crusher and rolls, crushed to 40 mesh fine, thence into a disintegrating machine, four tons at a time, through a valve, with sufficient water and chemicals to treat the sulphur and refractory elements. Steam is then admitted to a pressure of 100 pounds per square inch, and, at the same time, the mullers are revolved at about 30 revolutions per minute, generating electricity in such volume as to greatly assist in the decomposition of the ore.

This is continued for three hours. The ore is reduced to an impalpable powder, many times finer than is possible by other methods, and is thoroughly decomposed and desulphurized.

The water absorbs the chemicals, every atom of gold is made bright, and in condition for amalgamation. The pulp is now discharged into the amalgamator below, a revolving machine seven feet long and five feet in diameter, in which are copper plates placed lengthwise, and, by hydrostatic pressure, quicksilver is thoroughly pressed through the ore, by a "settler" of peculiar shape, having an electric copper wire broom to assist in gathering the fine amalgam before the tailings are discharged.

The cost of the treatment is from two to three dollars per ton, and as the gold ores treated run from $12 to $20 per ton, it leaves a handsome margin for the owners.

The ore veins are large, and thousands of tons, or enough to supply the mill for the next 100 years, are already in sight.

By this process about 90 per cent of the gold is saved.

The works occupy about nine acres of land on the banks of the Jordan River, and consist of two main buildings, 32×64 and 24×34, one two-story boarding house, one blacksmith shop, two 35 horse power engines, one crusher, one roll, and other necessary appurtenances, are connected with the mines by the Denver and Rio Grande and Western Railway, and demonstrate in a practical manner the immense sums that can be realized from the treatment of low grade and refractory ore dumps, that have heretofore been considered absolutely worthless.

What the Cow Gives Annually to the United States.

Under the title of "What the Cow Gives Us," originally from the *American Breeder*, a statistical article is going the rounds of the dairy and trade press showing the extent, value, and importance of the dairy industry. What the cow gives us is declared to be $500,000,000 worth of dairy products, good, bad, vile, poisonous or otherwise, as estimated for last year in milk, butter, cheese, water, acids, chemicals, color, oils, etc. The proportion of milk, butter or cheese produced does not, of course, appear, but taken as a whole the article is intended to show the great money value in cows and cow products, and the importance, commercially and politically, of the 4,000,000 farmers who own them. Whether the figures are correct or not, there is no doubt that the dairy industry is very large, and susceptible of still larger expansion. One thing, however, is very certain, that out of 1,350,000,000 pounds of butter said to be made last year, at least one-third of it ought never to have been permitted to have been sold for food. The same may be said of cheese, a big part of the annual product being skim or filled cheese, and about as nutritious and digestible as sawdust. Competent observers are of the opinion that a large part of the increase, both in production and value of dairy products, represents merely the increased adulteration and dishonesty on the part of the dairymen and farmers. Take from the estimates of "What the Cow Gives Us" the beef and hog fats and vegetable oils, not to speak of the more pernicious adulterants, such as chemicals and acids, salt, water, coloring matter, and other things which are taken from various sources and finally credited to the cow, and the real showing would be much less.—*Produce Exchange Bulletin.*