

been thoroughly shrunk. On analysis the bricks are found to have the following composition :

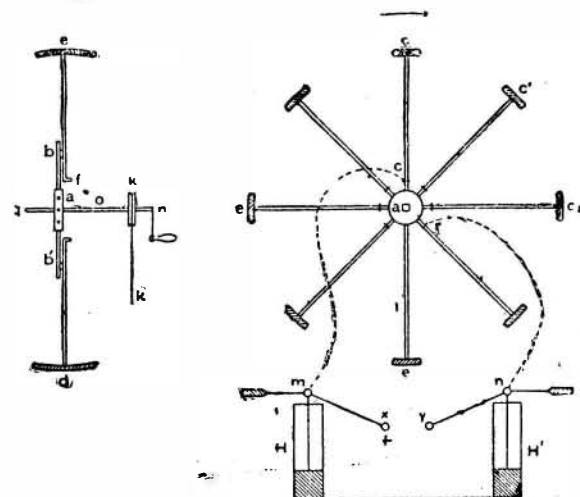
Silica .....	1.50	to	2.50
Alumina and iron oxide.....	0.75	"	1.25
Lime .....	1.50	"	3.00
Magnesia.....	96.25	"	93.25
	100.00		100.00

The high temperature required to insure that the bricks shall not be liable to further contraction is obtained by suitably designed gas kilns.

### A COLLECTOR OF ATMOSPHERIC ELECTRICITY.\*

By L. PALMIERI.

THE apparatus is based on the principle that as a conductor is raised in the open air it collects positive electricity (in ordinary weather), and that then, after



FIGS. 1 AND 2.—PALMIERI'S COLLECTOR OF ATMOSPHERIC ELECTRICITY.

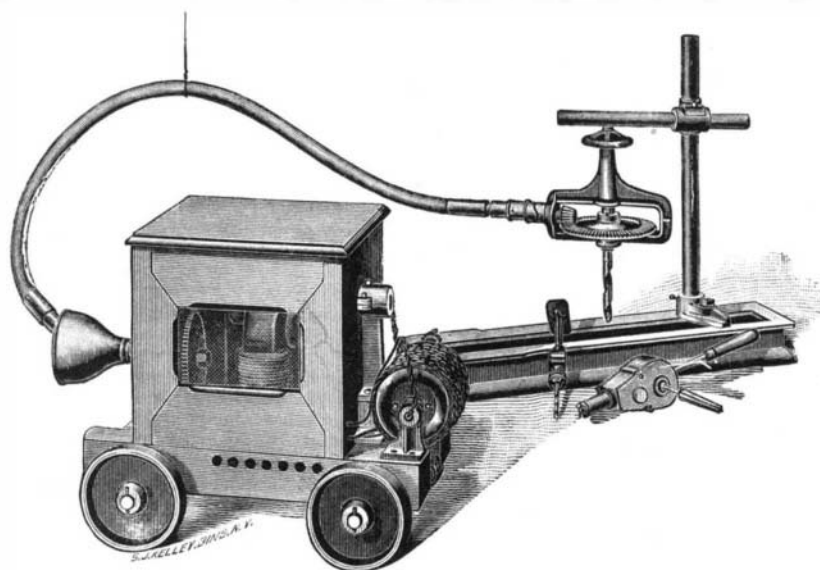
discharge, it collects negative electricity as it descends. Since 1850, the date at which I undertook the study of these phenomena conjointly with those of the ascending and descending liquid vein and others, again, which I called phenomena of approach and recession, I conceived the idea of constructing a rotary electrical machine, which became a source of electricity on fine, calm days. I made an entirely rough piece of apparatus, which is shown in several editions of my "Leçons de Physique," but it was always my intention to give it a convenient form and to add a suitable condenser. It is this rough piece of apparatus which is shown diagrammatically in the accompanying illustrations.

Let *a* (Figs. 1 and 2) be a modern disk, upon the circumference of which are fixed eight insulated rods, *b b'* (Fig. 1). These rods carry an equal number of conductors, *ll'*, terminated at the top by narrow strips, *c c'*, of any convenient length; at the bottom the rods are terminated by little elbows *f*. Both wheel and spokes can be made to revolve rapidly round the axle, *q n o* (Fig. 1), either by means of a handle or an endless cord, *k*. A spring or strip of metal touches the projection, *f*, of each spoke as it reaches a vertical position, and a second one presses against the spokes as they come to the diametrically opposite position, so that positive electricity is collected at *c* and negative at *r*. At *H* and *H'* are placed two Leyden jars, similar to those used in the Toepler and Holtz influence machines, *x* being the + terminal and *y* the - terminal of the machine.

Such is the collector in all its simplicity. In this note I only wished to describe its principle, and will say something at another time about the effects it enables one to obtain.

### COMBINATION OF STOW FLEXIBLE SHAFT AND ELECTRIC MOTOR.

FOR nearly twenty years the Stow flexible shaft has been on the market in connection with various other



COMBINATION OF STOW FLEXIBLE SHAFT AND ELECTRIC MOTOR.

tools designed and manufactured by the Stow Mfg. Co., of Binghamton, N. Y., for drilling, tapping and reaming.

Thousands of these are in use in the various railroad, machine, boiler and bridge shops in both this country and Europe. The Stow flexible shaft passed its exper-

\* *La Lanterne Electrique*.—*Electrical Engineer*.

imental stage years ago, and we think is now regarded by the general trade as a standard tool.

There has been for the past few years among the larger shops a growing tendency to increase the range of this tool beyond that for which it was originally designed. This demand has been met from time to time by increasing the length of the driving rope and adding extra idlers for the support of same; but the objection has been urged that when traveling cranes or other overhead machinery were used, the driving rope was in the way.

It is stated that all these objections are overcome by the use of the flexible shaft in connection with a specially designed low speed electric motor.

The manufacturers have had this combination under consideration for the past two years, and as a result of long continued and expensive experiments, are now able to offer to consumers where electric power can be had, an electric portable drilling, tapping and reaming plant that can, without trouble or loss of time, be carried to any distance from the source of power and, with proper usage, will undoubtedly give satisfaction.

The motor has a normal speed of about 600, which can be increased by rheostat to 1,000 and 1,200, and reduced by gears to 275 without loss of power. These motors are manufactured for a voltage of either 110, 220 or 500.

### RHUS POISONING.

By H. W. FELTER, M.D.,  
Cincinnati, O.

WITH the approach of the spring and summer months will come the usual number of cases of rhus poisoning or *dermatitis venenata*. These cases will occur principally in the rural districts, though occasionally the city physician will be called upon to treat cases in young persons, especially high school pupils, who make frequent excursions into the country for the purpose of securing specimen plants for botanical study.

This kind of specific skin affection is caused by the volatile principle of several species of the genus *Rhus*—principally, in this section, the *Rhus toxicodendron*, the *Rhus radicans* (a variety of the same species as the former, differing only in habit), and the *Rhus venenata*. The former is well known as the poison ivy, poison oak or poison vine; the latter as poison sumach, swamp sumach, and erroneously as poison dogwood and poison elder. *Rhus pumila* and *Rhus divursibia*, growing in some sections of the country, are also actively poisonous. This poisonous principle is the volatile *toxicodendric acid*, and is not a poisonous alkaloid, as was once thought to be the case. This acid is a constituent part of the acrid, milky juice, which exudes when the plant is bruised or cut—a juice which, when exposed to the light, will turn black, leaving an indelible stain. Consequently it has been employed by a few for marking linen. The stain, however, may be effaced by the application of sulphuric ether, which will dissolve it.

Horses, cattle, sheep, and, in fact, all herbivorous animals may feed among or upon the poisonous species of *Rhus* with impunity. Man and dogs are peculiarly susceptible to its toxic action. While not fatal to man, dogs have been killed by the poisonous vapor of the plant alone—death being accompanied by a general swelling of the body. Externally upon man it acts as an irritant, producing a vesicular, eczematous or erysipeloid inflammation. All individuals are not alike affected by it. With some contact with the acrid, milky juice is necessary to produce its toxic effects; others are poisoned merely by the exhalations given off by the plant, even though they be a considerable distance from it. This is especially likely to occur on a damp, warm, murky morning. Others, again, like the writer, can handle the plant freely, even besmearing the hands with the juice, without experiencing the slightest poisonous effects.

Though the toxic principle is volatile, it may be held in alcoholic solution for an indefinite length of time. Dr. Lawrence Johnson, in his Medical Botany, testifies to having been poisoned while experimenting with a tincture of *Rhus toxicodendron* which had been prepared thirty years before. The intensity of the toxic activity varies in those who are poisoned by it, some being but slightly affected, while others may be com-

pletely disabled by it. A young woman in the employ of Prof. J. U. Lloyd is intensely poisoned, sufficiently so to be confined to bed, by the emanations from rhus when the specific preparation is being transferred from the container to the shipping bottles. When it is known that rhus is to be handled in the laboratory, she is warned to absent herself until the work is completed. It is asserted that persons have been poisoned

from simply handling Japanese boxes that have been lacquered with a varnish prepared from the *Rhus vernix*, a poisonous species of Japan.

Poisoning from rhus, so far as the skin affection is concerned, differs little whether the person is poisoned from the emanations or from direct contact with the plant—the effect being an acute dermatitis. From a few hours to several days after the exposure the part becomes erythematous, soon becoming oedematous, though in some cases the oedema is absent. The parts become in some individuals enormously swollen, especially the genitals and face. I have seen cases in which the face was so swollen that the eyelids could not be opened, and the patient had lost, so far as features were concerned, all resemblance to the human species. A blister, surrounded by several smaller vesicles, now makes its appearance. The itching and burning are often so intolerable as to cause the patient to scratch the parts, thus breaking the blister and making an ugly raw sore. The contents of the blister coming in contact with the healthy parts creates a newly poisoned area.

This inflammation somewhat resembles erysipelas, having much the same appearance and spreading in much the same manner. The favorite seat of the trouble is on the face and genitalia, forearm and leg. It is probably carried to the genital organs by the hands. Constitutional disturbance is often marked, nausea, vomiting and abdominal pain supervening. Lumbar pains and pains in the joints may accompany the local lesion; fever and profuse diaphoresis also being present. The bowels and kidneys may partake of the trouble, resulting in diarrhoea or diuresis, with hemorrhage. The trouble is at its height in five or six days, though some cases, especially in those disposed to eczematous affections, the disease may last for several weeks, and may recur from time to time after the local manifestations are apparently cured. With the subsidence of the active inflammation free and complete desquamation takes place.

Perhaps no common ailment has brought out so many remedies as rhus poisoning. Nearly every doctor has a favorite specific (?) for its cure. In this affection cleanliness is clearly of great importance, as in any other skin disease. For this purpose the parts should be thoroughly washed with aseptic soap and warm water, the latter being applied freely to the affected area. Following this any of the following lotions may be employed for its local effect:

1. *Lobelia*. An infusion of lobelia inflata has been a favorite local application with many eclectic physicians, and is nearly as specific as any remedy in the materia medica. It has enjoyed quite an extensive use in domestic medicine for cases of poisoning of this nature.

2. *Salix Nigra*. I have seen excellent results from a decoction of black willow or pussy willow freely applied with wetted cloths.

3. *Impatiens pallida and fulva*, bruised and applied, or simply the expressed juice applied, has promptly relieved cases that have come under my observation.

4. *Grindelia Robusta* (fluid extract 3 ij., water 3 iv.), locally applied, is highly lauded by old-school doctors.

5. *Alum Curd* (alum 3 ss. beaten up with the white of one egg) will often relieve the itching and burning, and will prove soothing and effectual when the face is the seat of the affection, and particularly when an application is to be used on and around the swollen eyelids.

6. *Specific Veratrum*, locally painted, has been recommended, though I have no personal knowledge of its action.

7. *Hamamelis* (distilled) is an excellent and clean application. An elegant and effectual lotion may be made by shaking up with distilled hamamelis (3 j.) about twenty grains of aepsin. This makes a pleasant remedy, having the combined odors of witch hazel and wintergreen, and is of a slightly greenish-yellow color. With me it is a favorite application for burns.

8. *Liquor Sodii Boratis Compositus* (Dobell's solution—borax and sodium bicarbonate *aa.* 3 ij., acid carbolic grs. xxiv., aqua Oj.) has proved a useful application. It serves the purpose of alkaline washes, which are so frequently employed in treating rhus poisoning.

9. *Lead Acetate* (solution) has failed as often as it has relieved. The same is true of zinc sulphate.

10. *Iron Sulphate* (3 j. to water Oj.), according to Prof. J. U. Lloyd, applied freely to the parts, makes an excellent and effective lotion.

11. *Asepsin Soap* cured a stubborn case of chronic rhus poisoning. A thick lather was applied to the affected parts and allowed to dry on without rinsing or wiping. (See paper by Prof. F. J. Locke in *Journal* for March, 1893.)

A singular thing in the treatment of rhus poisoning is the fact that specific *Rhus toxicodendron*, internally administered in small doses, will hasten the cure of the local manifestations in cases where the topical remedies fail to be of benefit.—*Eclectic Med. Jour.*

### PHYSICAL GEOGRAPHY OF THE OCEAN BOTTOM.

By RALPH S. TARR.

A STUDY of the rocks shows that by far the greater number have been formed beneath the waters of the ocean. The fate of the dry land is to be worn away, bit by bit, the object of the sea to assort these particles and arrange them in layers. Life, which exists in the ocean, at death falls to the bottom and in many cases the hard parts are preserved as fossils. Later these strata may be elevated above sea level, for both continents and ocean bottoms are changing in elevation.

It is true that the greater part of the stratified rocks which at present make up the main part of the continents have been formed in that part of the ocean near the shore line. Here rivers are pouring their sediment-laden waters into the sea, here waves and tidal currents are busy wearing away the shore and transporting sediment to a place of rest. A few miles from the shore the water is clear and but very little constructive work is being done, while practically no work of destruction is accomplished.

My purpose is not to consider this relatively more