

SCIENTIFIC AND SANITARY.

AN interesting French invention is that of an electric lock which may be unlocked by simply pressing a button. In Paris many of the small hotels close their doors early in the evening, and the belated guest often has some difficulty in getting the sleepy porter to make his appearance at the door. The inventor thinks that if the porter has only to press a button that the door would be more promptly opened.

A NEW device is an electric oil-well heater, designed to remove the paraffine that collects in oil wells. A water-tight case contains an electric heating coil, and two hollow rods from the upper end carry the conductors, which may be connected with a battery or dynamo placed wherever desired. The heater is placed in a well, point downward, and as it goes down the paraffine melts before it quicker than breath disappears from a razor.

THE English *Electrical Engineer* tells how the telephone may be used for telling storms. By placing two bars of iron at seven or eight yards distance from each other, and then connecting them on one side by a copper wire covered with rubber, and on the other side with a telephone, a storm can be predicted at least twelve hours in advance by the sounds heard through the receiver. The sounds are said to be like those produced by hailstones thrown against glass, while each lightning flash produces a shock light that of a stone thrown against the diaphragm of the receiver.

A MICROSCOPICAL and chemical examination of a peculiar form of metallic iron found on St. Joseph Island, Lake Huron, has just been made by Mr. G. C. Hoffmann, of the Geological and Natural History Survey of Canada. The iron appeared in the form of spherules disseminated through a thin deposit of dark reddish-brown limonite which coated certain faces of some surface specimens of quartz. These metallic-looking spherules were found to consist of nuclei of silicon, coated with a humus-like substance, which in turn was overlain by a metallic layer containing all the elements most frequently met with in meteoric iron. But the small proportion of nickel present (0.11 per cent.), and the relatively large amount of phosphorus (1.07 per cent.), as also the fact that the spherules contain nuclei apparently of a concrete character, leads Mr. Hoffmann to suggest the possibility of a terrestrial source for the material, upon the assumption that it has resulted from the reduction of an iron-salt by organic matter. An account of the phenomenon, accompanied by four coloured plates, appears in the "Transactions of the Royal Society of Canada" for 1890.

"German Syrup"

For Throat and Lungs

"I have been ill for Hemorrhage about five years, have had the best Five Years. medical advice, and I took the first dose in some doubt. This resulted in a few hours easy sleep. There was no further hemorrhage till next day, when I had a slight attack which stopped almost immediately. By the third day all trace of blood had disappeared and I had recovered much strength. The fourth day I sat up in bed and ate my dinner, the first solid food for two months. Since that time I have gradually gotten better and am now able to move about the house. My death was daily expected and my recovery has been a great surprise to my friends and the doctor. There can be no doubt about the effect of German Syrup, as I had an attack just previous to its use. The only relief was after the first dose." J. R. LOUGHELAN, Adelaide, Australia.

THE great loss of energy by the slipping of belts has suggested to the inventive genius of Edison a method of increasing the adhesion of belts to pulleys by the aid of magnetic action. The belt consists of a number of steel wire ropes which are crossed by bars of soft iron. The holes in the bars through which the ropes pass increase in diameter from the centre outward in both directions, so that in passing over a pulley entire flexibility is secured. The pulleys are made of iron and are highly magnetized by means of an electrical current operating through magnet windings. The soft iron bars in the endless belt are curved on their inner surface so as to make the contact with the smaller pulley as great as possible.

MANY devices have been invented for the use of dentists in exploring the mouths of their patients, but the great trouble with them has been that the patients did not like the hot, flaming lamps placed in their mouths. An ingenious American dentist in Paris has, however, invented a device that does away with these annoyances. The idea of the apparatus is to concentrate the rays of light on the point to be examined, and not introduce a lamp in the mouth at all. To do this a good-sized incandescent lamp is incased in a wooden handle, and back of the lamp is a metallic reflector. The light is concentrated in a long tube, which alone is inserted in the mouth. The end of the tube is clear glass, while the rest is ground glass. The device can be used not only in dental operations but also in surgical cases.

THAT prickly pirate of the plains, the Mexican soap weed, is being converted rapidly into a delicious toilet soap, "fit to wash the hands of the Pope," by a West Bottoms manufacturing company. It is the root that is used. A sharp spade is driven down deeply by the side of the plant, the earth is broken and the thick, brown root secured. The top, with its long spines, is thrown aside. Sometimes a long, sharp tool is required to reach deep into the ground in order to secure the greater part of the root. Like the prairie dog, "it goes down to water." The root has been known to extend as far as twenty feet into the soil, but only from two to three feet of the upper portion, which is about two inches thick, is worth digging for. The roots are first washed, then cut up and boiled out in a big vat, where other ingredients are also placed. When this is dried out to such a degree that it will solidify it is moulded into semi-transparent cakes that slip around in the hands delightfully while being used.—*Kansas City Times*.

FOR many years astronomers have been seeking a device that would automatically register the passage of a star across the field of a telescope. The honour of a successful invention for this purpose belongs to Rev. George A. Fargis, the assistant director of the Georgetown College Observatory. He calls the device a photochronograph, and it very cleverly does its work by the combined action of electricity and photography. The apparatus is very complicated, but it may be described in a general way by saying that a photographic shutter placed in the transit instrument works synchronously with beats of a clock. When a star begins its transit a connection is made with a clock relay. An armature actuated by a coil lifts the shutter when the current breaks, and falls when the current is turned on. The make-and-break occurs every tenth of a second, and hence the photographic negative back of the shutter shows a simple line of dots, each representing a tenth of a second exposure. The apparatus is said to be successful, and it is considered as marking an important epoch in the history of mechanical aid to the science of astronomy.

IT has generally been supposed that the absurd practice of flattening the head was peculiar to the Chinook or Flathead Indians of the Lower Columbia River in Oregon, U.S. Dr. R. W. Shufeldt, however, has discovered flattened heads among the Navajo tribes of north-western New Mexico. In this case the back of the head is flattened, and the effect is to diminish the length of the head and produce a high upright forehead—in short, to reverse the object of the Chinook custom. One of the skulls collected by Dr. Shufeldt had a cephalic index of 94.6, that is to say, the breadth was 94.6 per cent. of the length. These hyper-brachycephalic or excessively broad skulls

are not seen in every individual of the tribes, nor are they confined to a particular sex. They appear to be a variety of the race, for Dr. Shufeldt cannot discover any artificial means of forming them, like the pressure board used by the Chinooks. The child's head is quite free in the cradle, and there is a soft pillow for it to rest on. Whether the flattening is due to carelessness on the part of some of the mothers in not providing a proper pad, or to inheritance from a past age when the back of the head was purposely compressed, is still a matter of doubt.

ANOTHER substitute for bone, celluloid, etc., in some of the industrial arts has been brought to public attention, the substance in this case being milk, its usefulness being exhibited in the form of combs, billiard balls, brush backs, knife handles and various other articles for which ivory, bone, or celluloid are employed. In accomplishing this, casein, or the solids in milk, is first reduced to a partially gelatinous condition by means of borax or ammonia, and then mixed with mineral salt dissolved in acid or water, which liquid is subsequently evaporated. The casein is placed in a suitable vessel, and the borax incorporated with it by heat, the proportions being ten kilograms of casein to three of borax, dissolved in six litres of water, and, on the casein becoming changed in appearance, the water is drawn off, and to the residue, while still of the consistency of melted gelatine, there is added one kilogram of mineral salt held in solution of three litres of water. Almost any of the salts of iron, lead, tin, zinc, copper or other minerals soluble in acid may be used. On the mixture being effected, the solid matter is found separated from the greater portion of the acid and water, and is then drawn off. Next the solid matter is then subjected to great pressure to drive out all possible moisture, and then to evaporation under great heat to remove any remaining moisture. The resulting products, called "lactites," can be moulded into any form, and by admixture of pigments or dyes may be of any desired colour.

THE skin of toads and salamanders has lately been submitted to microscopical examination by Mr. Schulz (*Intern. Journ. Micros.*), who finds that there are two kinds of glands present in the skin of these animals, viz., mucous and poisonous. The former are present all over the body; the latter are confined to the back of the body and limbs and the ear region behind the eyes; and in the salamander are present at the angle of the jaw. The poison glands are larger than the mucous glands in the salamander, are oval, and have a dark granular appearance, due to strongly refractive drops of poison, a good reagent for which is copper hæmatoxylin. The poison is secreted by epithelial cells lining the glands and, when the animal is stimulated by electricity, it is exuded slowly in drops by the toad, but discharged in a fine jet, sometimes to the distance of a foot or more, by the salamander. The anæsthetic action of the poison of the toad and the use to which it is put in medicine by the Chinese have frequently been pointed out.—*Science*.

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