

Notes and Clippings.

THE ELECTRIC LIGHT DANGEROUS.—Mr. J. M. Stearnes, Jr., of Brooklyn, points out a novel source of danger possible with the electric light, namely, its effect upon the nervous system. He says: "The very high penetrating power of light waves from incandescent metal of carbon heated by electricity is well-known. It is so high, indeed, that the shadows cast by the light are blacker than Erebus, indicating an immense absorption of force by the intervening objects, and to a large extent destroying their reflection and diffusion, as is the case with lights of lesser tension. A reflector used with an electric or calcium light does not produce anything like a corresponding effect as when used with a common gas flame, as persons familiar with calcium lights well know. And it follows, therefore, that the black shadows of the electric flame must be due to the absorption of light waves. Now, in the light of an electric arc or incandescent lamp, one is to be subjected to a very powerful stimulant from the mere obstruction which his body affords. Our eyes cannot bear it all, and there is no reason to doubt that every nervous tissue will feel its use. We have already in this climate enough of nervous stimulation, and a fearful catalogue of nervous diseases, arising from too much force."

LIQUEFACTION OF OXYGEN.—M. Raoul Pictet concludes an article on the liquefaction of oxygen with the remark that his investigations necessitated an unusually large number of experiments for the establishing of preliminary data, and these he obtained by the aid of the Geneva Society for the construction of Physical Instruments, who furnished him with apparatus worth 50,000 francs, and thereby enabled him to work out results with perfect accuracy. He recommends that similar apparatus should be provided in all laboratories as an "essential means for the study of the molecular forces. Who knows," he asks, "but what crystallization and certain reactions may thereby be placed in peculiarly favorable conditions for further investigation?"

ELECTRICAL TELEGRAPHING WITHOUT WIRES.—Prof. Loomis continues his experiments in the mountains of West Virginia, to demonstrate his theory that at certain elevations there is a natural electric current, by taking advantage of which telegraphic messages may be sent without the use of wire. It is said that he has telegraphed as far as eleven miles by means of kites flown with copper wire. When the kites reached the same altitude, or got into the same current, communication by means of an instrument similar to the Morse instrument was easy, but ceased as soon as one of the kites was lowered. He has built towers on two hills about 20 miles apart, and from the tops of them has run steel rods into the region of the electric current.

ELECTRIC-SPARK PEN.—A new invention in the art of engraving, probably suggested by the familiar electric pen, has been brought out in Paris. A copper plate is prepared as for engraving, and over this is secured, in some convenient manner, a thin sheet of paper. The plate is then connected with one pole of a Ruhmkorff coil. The pen (presumably a simple insulated metallic rod or pencil with a fine point) is also connected, by means of an insulated wire, with the coil. Then, if the point of the pen (which is bare) is touched to the paper, a minute hole is burned in it by the spark that leaps from the point of the pen to the plate. By using the pen as a pencil, a drawing may be made on the paper in a series of fine holes precisely after the manner of the electric pen, except that in one case the holes are mechanically punched out, and in the other case are burned out. When the drawing is finished, the paper may be used as a stencil. A printer's roller carrying an oily ink is passed over the paper, and the ink penetrating the paper through the holes, reproduces the drawing in ink on the copper plate. The paper may then be removed and the plate submitted to an acid bath, when the surface will be cut away, except where the ink resists the acid, and those parts will be in relief, thus producing an engraved plate ready for the printing-press. By this ingenious device, the artist, drawing upon the paper with the spark-giving pen, performs two operations at once—drawing the picture and engraving the plate.

RATS.—A novel way of destroying rats is mentioned in the *English Mechanic*, adopted by a provision merchant in Limerick, which he showed to me some 30 years since, and which he called his "rat barrack." He estimated his loss by rats eating and damaging his goods at fully £200 per annum, and this I am quite prepared to believe as his average of pig killing in season time was a thousand, or perhaps nearer to two thousand per week, besides an extensive tannery and leather store. He had tried

almost every known method of destroying them—traps, poison, cats, dogs and even foxes; but all proving unavailing, he thought he would try what kindness would do! So in the middle of a lumber-yard at the extreme end of his extensive premises he built his "barrack," say 15ft. long by 8ft. wide, and the walls 3½ft. high, good sound stone and mortar work, the top coped with flags projecting 12in. inside, so that a rat could not climb out; the building was covered with a boarded hipped roof, strongly made, and perfectly waterproof, the eaves projecting 6in. all round, and fitting snugly to the coping; the roof was moveable, but would take four men to lift it. At the base of the walls a hole the exact size of a brick was left in each side and end, and when finished all, inside and out, was well limewashed. He then had a quantity of pieces of timber, planks, &c., and the cleanest and best unbroken straw—i.e., hand-threshed such as is used for singeing pigs) placed inside, and outside the rats were duly supplied with food such as they liked best, especially the blade-bones of pig, and pans of clear water. So here the rats lived in great luxury and quietness, as the yard was not much frequented; but whenever a rat was heard of in any other part of the premises it was worried by the terriers, its best escape being to the before-named elysium, where its life would be one of extreme happiness—at least until the "day of doom" came round. Once a year or oftener Mr. Russell held his "rat battue." About one or two of an afternoon, when Mr. and Mrs. Rat, and their numerous descendants, were sure to be at home, he hunted up all the premises with his terriers, of which he had the best selection in the country, proceeding in the end to the lumber-yard, put a brick into each of the holes in the barrack walls, took off the roof, and with pitch-forks removed the planks, &c., from the inside, and put in the dogs. These soon gave the finishing shake to the poor inmates, who could not escape either by the holes or over the walls. At the battue previous to my visit I was assured they had killed sufficient to fill half a sugar hogshead! After the massacre and removal of the dead the place was thoroughly cleaned and fresh whitewashed with hot lime, and prepared with every comfort for a fresh immigration, for which there was an abundant supply in the neighbourhood.

TO POLISH STEEL.—Mix half a pound of fine emery powder with the same quantity of soft soap, and add a small piece of soda. Simmer this over a slow fire for two hours, to extract all the moisture. Rub on with flannel, and finish with plenty of dry whiting.

MARKING TOOLS BY ETCHING.—Warm the steel and apply a thin coat of white wax, and let it thoroughly cool, then take a sharp engraver (a scratch awl will not answer) and run the point through the hair, in order that the point may be coated with the least possible amount of grease, and mark the device through the wax. Apply nitric acid and allow to stand for a few minutes, then wash off thoroughly with water, and heat the article; rub off the wax with a clean rag. By a little practise any one, who can form a shapely letter, will be able to mark a tool very nicely.

LABOR-SAVING MACHINERY.—The following, from Mr. W. Godwin Moody's indictment before the Social Science Convention at Cincinnati, embodies a popular error in regard to labor-saving machinery:

"It has so enormously developed the power of production as to far outstrip man's utmost power of consumption, enabling less than one half of the producing and working classes, working ten hours a day to produce vastly more than a market can be found for."

This starts upon the assumption that "man's utmost power of consumption" is fixed and known, and that all production in excess of that well-known limit must be surplus. Wiser men than Mr. Moody have reasoned from false premises to wrong conclusions. The "power of consumption" depends upon a great multitude of considerations. Our financial crisis, the natural result of our war and of the financial system it created has reduced the consumptive power of the people at least one half. We are growing back into a better condition. The consumptive capacity of the American people will, without doubt, increase at least fifty per cent during the next ten years, in addition to the increase which will come from an enlargement of our population. Almost every body is now living closely fearing for the future. Increasing crops, bringing money from abroad, and renewed activity in home industries will give increased purchasing ability. When affairs in this country reach their normal condition, it will be found that even with the labor-saving machinery there will be labor for all who are willing to work.—*Boston Commercial Bulletin*.