

ELECTRIC LIGHT ADAPTED FOR USE OF NATURALISTS, CHEMISTS, ETC.

In presenting to the Academy the apparatus for electric lighting for the use of naturalists, chemists, micrographers, etc., constructed by Mr. G. Trouve, Mr. De Lacaze-Duthers expressed himself as follows:

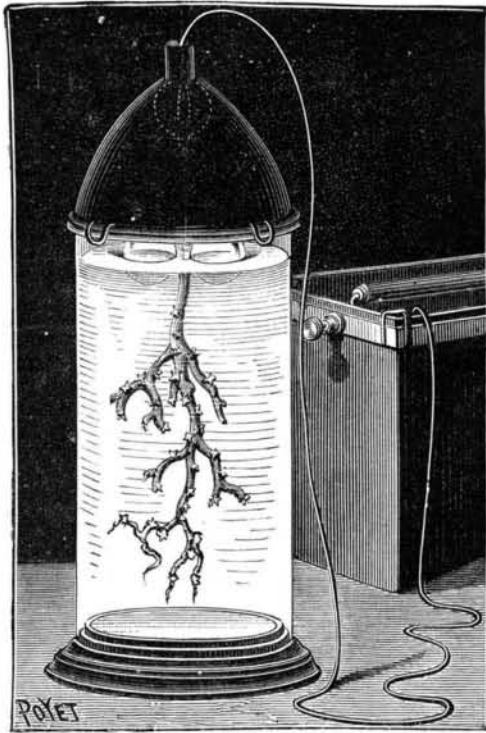


Fig. 1.—ELECTRIC LIGHT ILLUMINATING WATER.

"I have the honor of presenting to the Academy, in the name of Mr. G. Trouve, several apparatus for lighting by electricity, with which I have experimented in my laboratory at Sorbonne, and which rendered me important service in my zoological stations at Roscoff and at Banyuls, for which these instruments were constructed. There is no doubt that these apparatus will

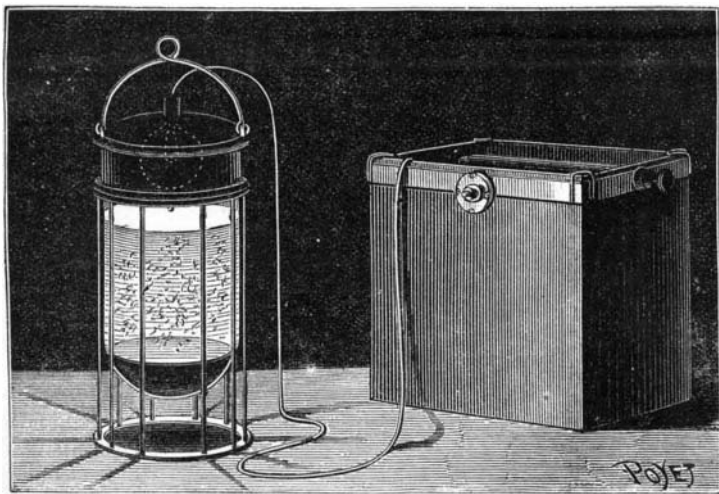


Fig. 2.—APPARATUS FOR STUDY OF FERMENTATION.

be of great assistance to chemists, botanists, and mineralogists, as well as to zoologists.

"This apparatus consists, as shown in Fig. 1, of a cylindrical glass vessel, at the bottom of which there is a

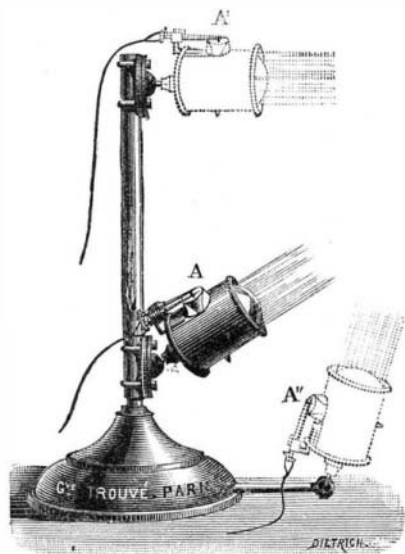


Fig. 3.—THE PHOTOPHORE.

silvered mirror. The vessel is provided with a parabolic cover, which is silver-plated and acts as a reflector, and from the center of which an incandescent lamp is suspended. It is filled with sea water in which are many small living objects, and also a branch of coral. The rays of light are reflected back and forth by the

mirrors in the bottom of the vessel and in the cover in a direction parallel with the vertical walls of the vessel. Light arranged in this manner permits of the study of these delicate creatures in even the most minute details. With the aid of the magnifying glass we obtain truly remarkable results, considering the simplicity of the apparatus used. At Roscoff, as well as at the Arago laboratory, the electric light produced by M. Trouve's simple apparatus was of great assistance to us in our observations of the delicate and transparent animals which float on the surface of the sea.

"For the study of fermentation, the apparatus is slightly modified as shown in Fig. 2; the reflecting cover is screwed on a metallic ring fastened on the upper edge of the glass vessel, so as to keep the preparations from the air. The glass is protected by a metallic cage or frame.

"Fig. 3 represents the reflector (photophore) invented by Messrs. Helat & Trouve, and modified for my use; and with its help the finest dissections can be made. It will be of great assistance in the dark days at Roscoff and Banyuls, when the want of light would interrupt work which had been commenced. This light does not change the color of the animals, which look just the same as in bright daylight. The great advantages of this instrument are its small size and the ease with which it can be arranged to give any desired light, oblique or direct. For example, a glass vessel containing water and living creatures can be kept dark with the exception of part to be examined by the magnifying glass, which can be illuminated by a brilliant ray of light.

"By changing the angle of the light, and using a very powerful glass, I have dissected nerve threads which were so delicate as to be almost invisible by daylight.

"The electric generator used for operating these apparatus which I have just shown is very compact; it weighs scarcely 6 lb., and is very reliable. It is represented in Fig. 4, and was recently presented to the Academy by Mr. Jamin."

Mr. Peligot remarked that, having experimented with these apparatus in the mint, he is convinced that they would be of great assistance in the study of crystallization.

Blood under the Microscope.

According to the *American Bazaar*, the only instance on record when the blood of two persons was compared in a criminal trial was in a murder case in Chicago. The comparison settled the innocence of the woman on trial for her life. A comely woman, with \$20,000, married a man in Chicago, and placed her snug little fortune in his business. In the course of time he commenced to abuse her, and finally she decided to apply for a divorce. The double calamity of losing a woman to beat and the withdrawal of her \$20,000 from his business made the brute furious, and the next morning he was found dead in one corner of his bedchamber, a bullet having gone through his heart. His wife was found wounded in another part of the room. She said that her husband had come home the night before in a rage and began to abuse her while she was in bed, that he hit her on the head with the butt of his revolver while her head was on the pillow, and spattered blood over the linen; that she jumped up, and he shot her, inflicting a slight flesh wound in her side.

She then rushed at him, and, snatching the revolver from him, shot him through the heart. He reeled to the corner where he was found, and died. The prosecution did not believe her story, and set up the theory that she shot him when he was asleep, and dragged him to the corner, and then inflicted the wound upon herself. The carpet where the dead man lay was saturated with blood. According to the theory of the prosecution, the blood on the pillow was his also. Dr. Piper put the section of the pillow with blood upon it under the microscope, and drew on a cardboard the shape of the corpuscles, enlarged about two thousand diameters. He then put the blood on the carpet under the microscope in the same way. The comparison settled the question at once.

The blood corpuscles were as different as day

and night, and sustained the woman's account of the shooting. She was acquitted on that and other evidence.

As between human blood and dog's blood, the microscope enables the expert to determine precisely whether a specimen is from a human being or a dog. But it is

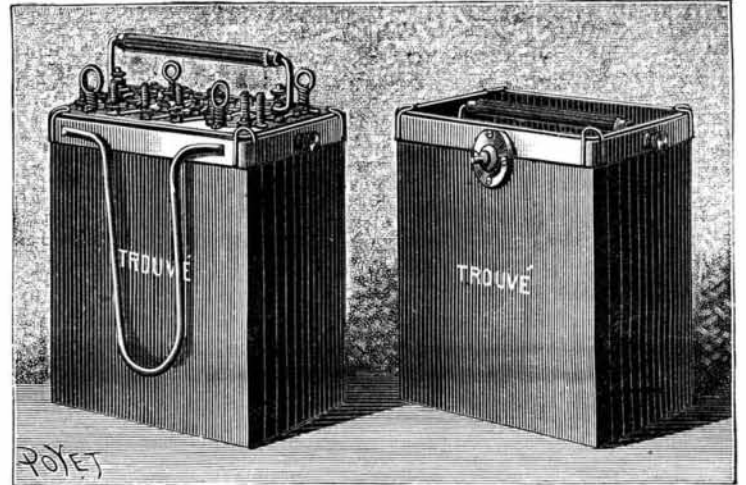


Fig. 4.—THE TROUVE BATTERY.

impossible to determine between human blood and a hog's blood.

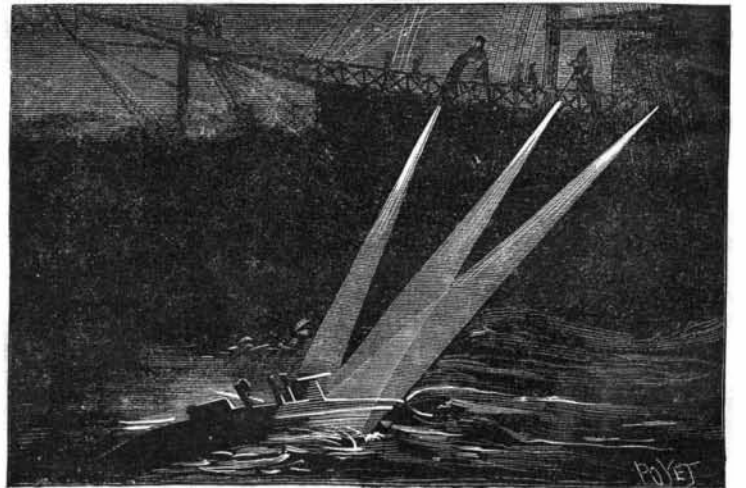
ELECTRIC APPARATUS FOR SUBMARINE LIGHTING.

The accompanying illustrations represent the lighting by electricity of the dredge which was recently sunk in the Suez Canal by an English steamer. It will be remembered that this accident prevented the passage of vessels for some time. Attempts were made to



DIVERS WORKING BY ELECTRIC LIGHT.

blow up the sunken dredge by means of dynamite, but these attempts failed because the divers had not sufficient light for properly placing their cartridges. Being unable to clear the canal immediately, the company proceeded to widen it by 67 feet for a distance of 954 feet. In the mean time the Egyptian Agency telegraphed to Paris for a practical system of lighting.



WRECK ILLUMINATED FROM THE SHIP.

The company, after having addressed several houses, applied to the Minister of the Navy, who advised the use of the Trouve submarine electric lighting system, which he used. Several trials were made on Friday, July 3, and on Sunday, July 5, the necessary apparatus for clearing the canal were shipped.