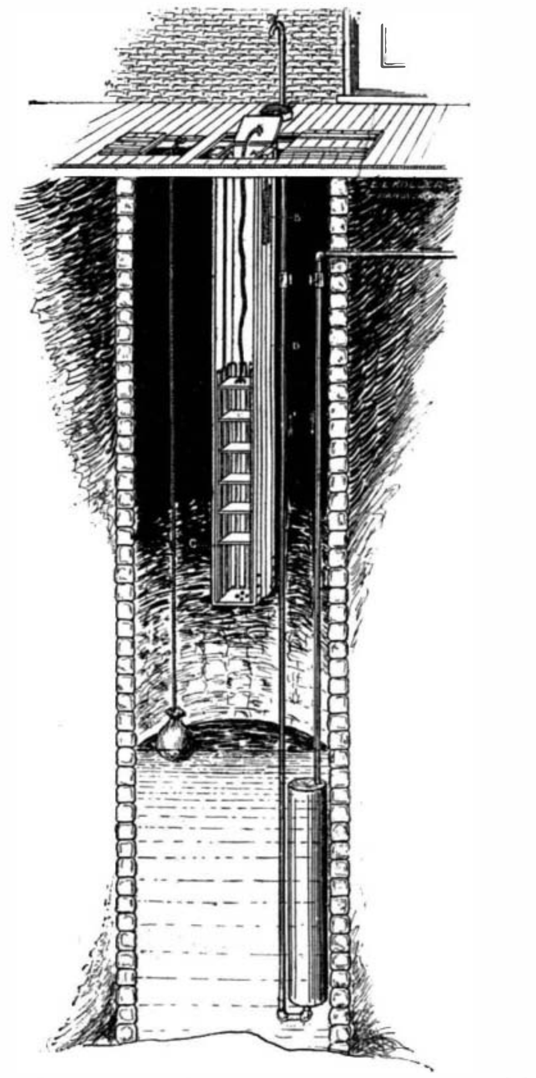
A HOME-MADE COLD BOX AND WATER COOLER.

In the SCIENTIFIC AMERICAN of September 9, 1899, page 164, I noticed a cut and an article through the suggestion of Mr. George H. Young, of Elmira, N. Y., entitled "Simple Means of Cooling Drinking Water." Upon this I wish to suggest improvements of my own invention which I had placed in my well. I use a tank of galvanized iron (an ordinary hot water boiler which has been used in Hanover for about twenty-five years); a dumb-waiter; ropes with halter clips attached at one end to staples in joists and the other end fastened to a bag or basket which may contain bottles, etc.

The water tank is connected with the pipes from the



A HOME-MADE COLD BOX AND WATER COOLER.

water main. The lower pipe is connected with the bottom of the boiler to draw out any sediment which may gather as well as to get the cold water.

The outside box of the dumb-waiter is 12 feet long by 12 inches by 12 inches nailed against the joists over the well, which is 24 feet deep. The tray is made of laths 6 feet long by 2 inches by ½ inch, with shelves, and is worked by pulleys, *AA*, at the top of outside box and weights, *B*. The ropes are fastened near the lowest shelf, *C*, thereby keeping the tray from falling over when pulled above the surface. A cord is fastened to the top of tray and to the lid of box to raise the tray when heavily laden. The tray is so weighed that when nearly empty it will rise of itself, and is held up by a turn button under the shelf, *C*. The weights work in separate inclosed boxes, *D*, 12 feet long by 3 inches by 5 inches, outside of the large box. Window sash cord is used. A space of about 2 inches is between the trap-door on the porch and the box lid. In the bottom and lower sides of the box are about twenty 2-inch holes to allow the air to pass in and out as the tray moves. By tying loops in the ropes when the weights are up, the tray can be taken out and laid on the porch and thoroughly washed, dried and aired. Any carpenter can make this refrigerator for $10 complete and placed in the well. I have used this plant at my residence for two years and have not bought one pound of ice.

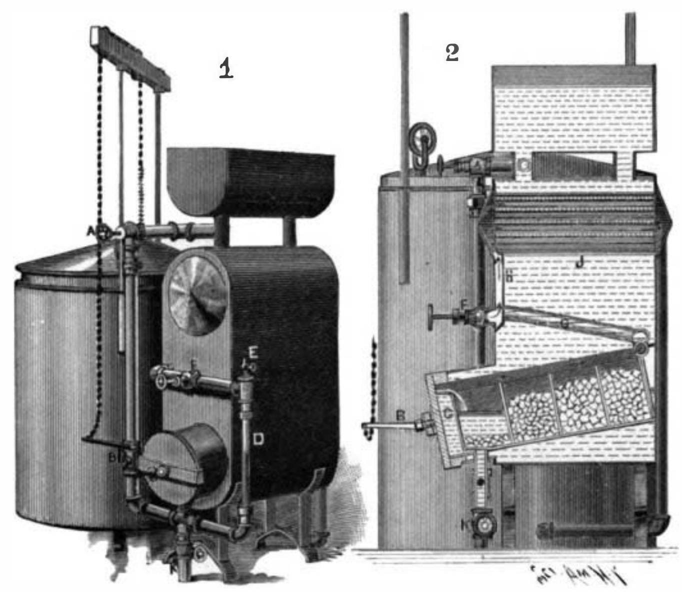
A. C. WENTZ, M.D.

AN AUTOMATIC ACETYLENE-GENERATOR.

The improved acetylene-apparatus, which we illustrate in perspective and section, consists essentially of two parts—a gasometer and a generator connected by pipes.

The gasometer comprises the usual water-sealed bell rising and falling in a tank.

The generator comprises a case located alongside of the gasometer and provided with a superposed tank, from which water is supplied to the carbide-chamber. This carbide-chamber, *C* (Fig. 2), consists of an inclined cylinder inserted in the lower portion of the case and projecting outwardly for a short distance. The cylinder contains a drawer divided into a number of carbide compartments. The drawer being inclined, it follows that when the carbide is all decomposed, the compartments will all be filled with water, and consequently, little gas will be lost when the chamber is opened to be cleaned. From the upper end of the carbide-chamber a pipe, *G*, extends to the cooler and thence to the gasometer. Water is conducted to the carbide by means of a pipe connected with the lowermost chamber. The carbide-chamber receives its supply of water from the superposed tank through the medium of a pipe having a valve, *A*, the seat of which is provided with a small by-pass through which water can always flow, so as to prevent the possibility of an inrush of water through the feeding-pipe and, hence, an overproduction of gas. Between this valve and the generator a controlling valve, *B*, is inserted, by means of which the flow of water can be entirely cut off. The valve, *B*, is automatically operated by means of a lever connected by a chain with the gasometer-bell. When the bell has reached its lowermost position the chain is pulled, the lever raised, and the valve, *B*, opened to admit water to the generator. The water-pipe, provided with the valves, *A* and *B*, is connected with the generating-chamber by means of a four-way fitting, with which is also connected a valved drain-pipe, *K*. The fitting is provided with a by-pass pipe extending upward and connecting with a T-valve, *F*, controlling the pipe, *C*, leading to the carbide-chamber. The by-pass is fitted with a water gage, *D*, showing the level of the water in the carbide-chamber and is provided with a vent-valve, *E*. When the carbide-chamber is filled with water and the valve, *F*, is closed, the by-pass allows the water to run off for the renewal of the carbide. The valve, *F*, also controls the passage, *H*, leading to the cooler, *L*, consisting of pipes, the ends of which are covered by caps. The gas flows through the passage, *H*, between the first cap and the side of the case, thence to the space between the opposite cap and side of the case down through a pipe into the gasometer. The inventor of the apparatus is Leonard F. Rose, of New London, Iowa.



AN AUTOMATIC ACETYLENE-GENERATOR.

ELECTROGRAPHS OF THE ELECTRO-STATIC CURRENT MADE WITHOUT A CAMERA.

PROF. ELMER GATES.

During a recent storm here in Washington several men took shelter near some trees, and the bench upon which they sat was struck by lightning. One of the men afterward found upon his body what he called the "picture of a tree." People in speaking about it, and newspapers in writing about it, spoke of it as a photograph of a tree made on his body by lightning. An examination of the photographs of the electric spark herewith presented will make it evident that it was not a picture of a tree which was found upon his body, but a picture of the path taken by the current in spreading over the surface and through the skin. This popular belief that the lightning photographs a tree upon the body of a person struck by a current must, therefore, be abandoned.

I had often photographed the spark—and brush—discharge by means of a camera, but it recently occurred to me to try the action of the spark and current of a frictional machine directly upon the sensitive film under such conditions as would enable me to determine certain facts about the path of the current through a conductive surface. Accordingly I placed a 14 × 17 Cramer isochromatic plate in between the two poles of my ten-plate 32-inch static machine while in full action, and directed the spark directly against the sensitive plate placed within a light-proof envelope, thus allowing the current to photograph its path through the film. The machine was made to run at such speed as to give a rapid succession of sparks at about half its full sparking distance. Then the knobs were drawn farther apart until, at the speed at which the machine was running, the sparking ceased and in its place there occurred a brush discharge. The envelope-covered sensitive plate was then placed vertically between the poles, transversely across the path of the spark, and nearer to the negative than to the positive pole, with the film side toward the positive pole. The positive terminal was then moved toward the sensitive plate until one spark passed, and then quickly drawn back so as to prevent the machine from delivering a second spark. The plate on being developed showed in a most interesting manner and in its natural size the path of the current. The sensitive film is a much better conductor than the glass upon which it is placed, the latter being one of the best non-conductors. Hence the current spreads through the film instead of going through the glass, and leaves traces of its path by depositing

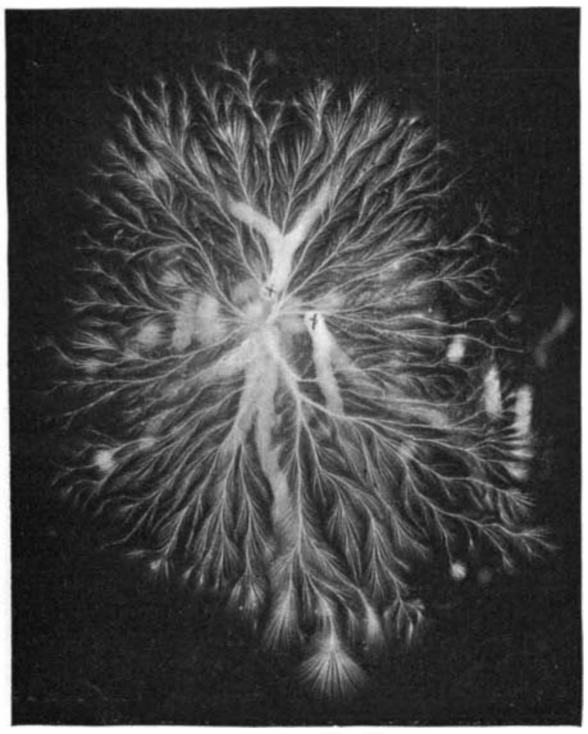


Fig. 1.—AN ELECTROGRAPH.

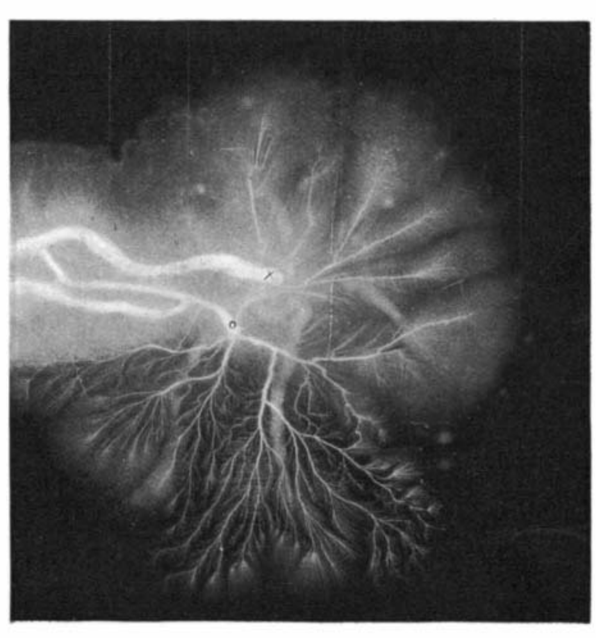


Fig. 2.- FIRST EXPERIMENT.

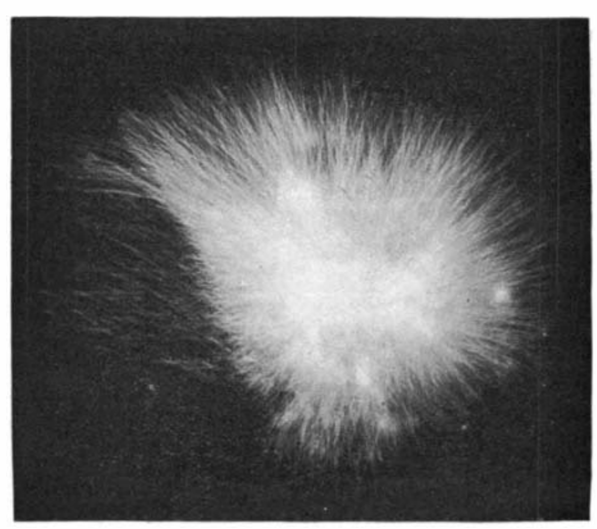


Fig. 3.—BRUSH DISCHARGE.

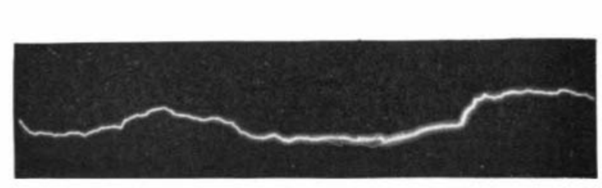


Fig. 4.—DISCHARGE IN AIR