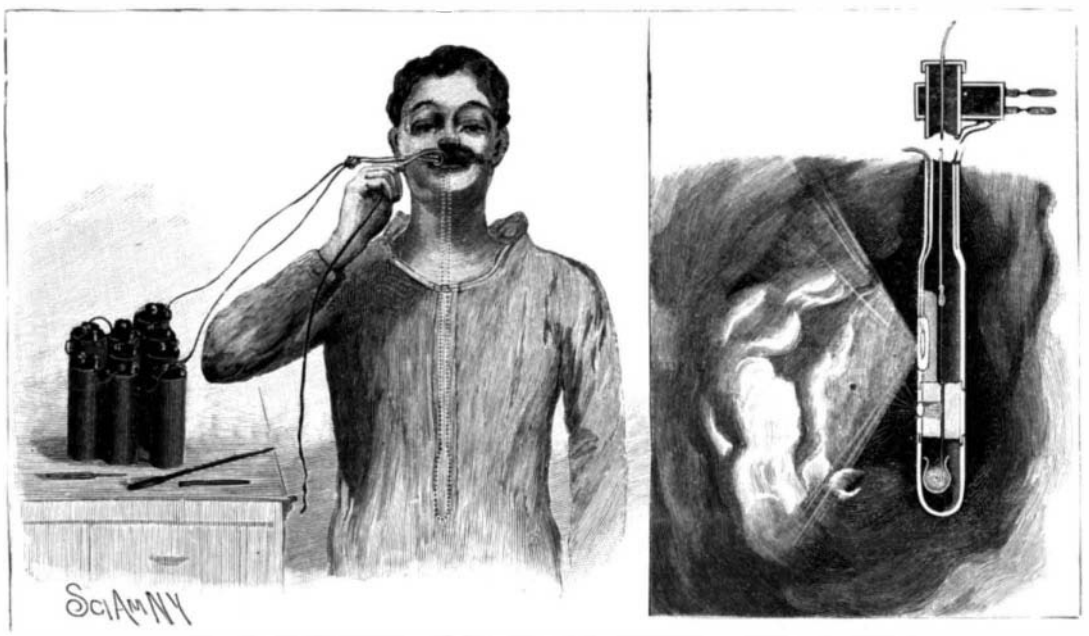
PHOTOGRAPHY OF THE STOMACH.

Dr. Max Einhorn, of New York city, made a communication to a medical journal some seven years ago regarding "gastrodiaphany," in which a miniature Edison lamp in a special mounting attached to a soft rubber tube containing a wire was introduced into the stomach so that an examination can be made of it. This method was called "gastrodiaphany," as the stomach became translucent. The object of this device was to show the size and situation of the stomach to the eye and also to recognize tumors or other gross anatomical changes of the anterior wall of the stomach. This was, of course, a different apparatus than the "polyscope," which is used for looking into the stomach, and was not intended to replace any such device. It has been found to be of considerable value to surgeons.

In the same paper Dr. Einhorn described a camera for photographing the interior of the stomach, but owing to technical difficulties, the camera was not constructed by Dr. Einhorn. Such a camera has, however, been perfected by Dr. Fritz Lange, of Munich, Germany, on almost the identical lines given by Dr. Einhorn.

Through the courtesy of Dr. Lange we are enabled to present an accurate illustration of the device employed. The camera is a marvel of compactness, and is constructed on exactly the same principles as all cameras for taking moving photographs, although, of course, there is no attempt made to combine them so as to project the actual operations of the stomach. The camera itself is swallowed by the patient, and it contains a small electric lamp for illuminating the walls of the stomach. A photographic film twenty inches long and a quarter of an inch wide is wound at the bottom of the camera. One end of the film is fastened to the cord, which runs freely in the tube. When the cord is pulled, the film is drawn slowly past the lens. The cord and the conducting wires must, of course, be swallowed with the camera itself. When the camera reaches the bottom of the stomach the surgeon begins to pull the cord, which runs the film past the lens. The electric light is then turned on, and, after the sensitive film has been impressed with the image, the current is turned off and another section of film is brought into play until the requisite number of pictures have been obtained, then the entire apparatus is withdrawn from the stomach of the patient and the films are carefully developed and enlarged.



DR. LANGE'S APPARATUS FOR PHOTOGRAPHING THE STOMACH.

A NOVEL ELECTRICAL EFFECT.

Mr. George W. Patterson, of Chicago, has favored us with a photograph of an "electrical spectacular effect," which he produces at entertainments which he gives. The graceful figures of light shown in our engraving are produced by electrically lighted Indian clubs swung in a darkened room. The club is of special construction and the current is supplied by flexible wires inclosed in a rubber tube. Three series of eight, three, and one-candle power colored lamps are set in sockets in the club at right angles to the center of the club, which is split lengthwise. At the tip of the club is a 32-candle power lamp. When the clubs are swung at ordinary speeds the effect is very beautiful, an operator behind the scenes manipulating a switchboard turning on and off the lights in the two clubs, which are swung to music. The patterns are almost infinite in their variety and suggest the engine-turning on our bank bills. Storage batteries furnish the current when the regular incandescent circuit cannot be tapped.

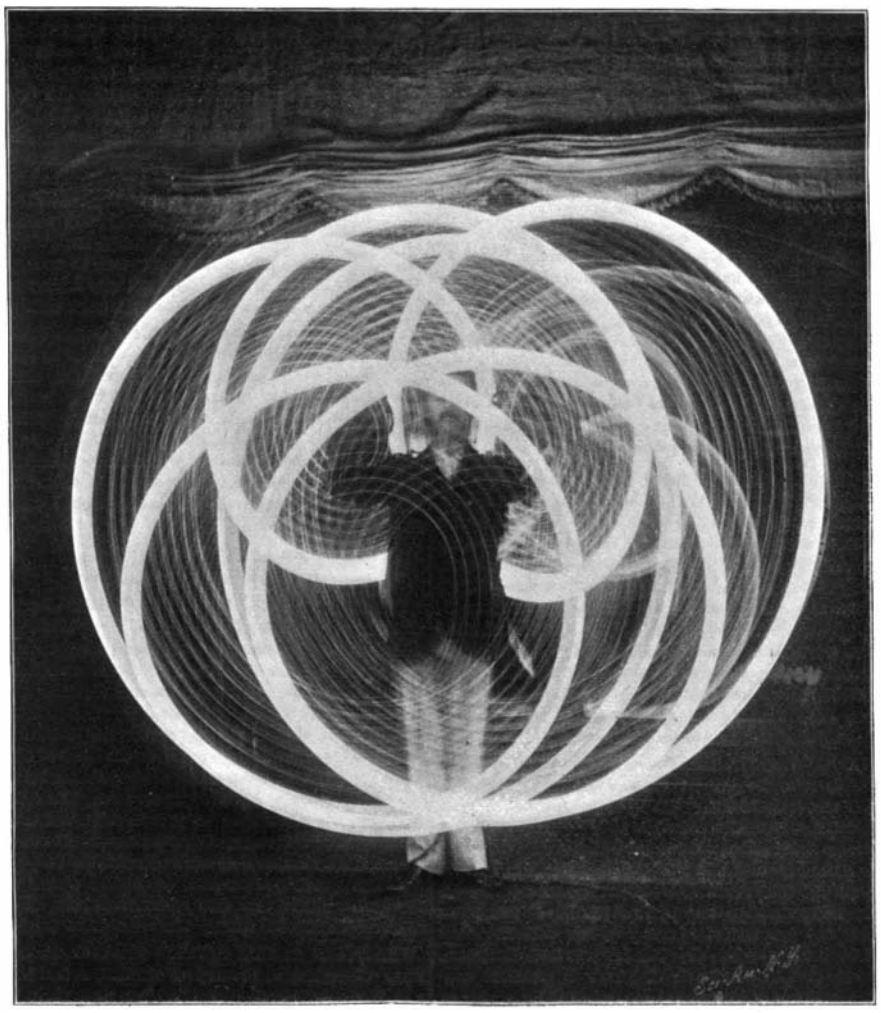
Production of Fluorine by the Electrolytic Method.

M. Moissan has lately presented to the Académie des Sciences a description of his new apparatus for the preparation of fluorine by the electrolytic method. Up to this time platinum vessels and electrodes have been used for this purpose, but as they are attacked during the operation, the preparation of fluorine by this method involves a considerable expense. M. Moissan has for some time been carrying out a series of experiments with this element, and has recently designed a new electrolytic apparatus in which the containing vessel is of copper, its form being about the same as that of the platinum vessels. Its volume is somewhat greater, being 300 c. c., thus permitting him to use about 200 c. c. of hydrofluoric acid, whose conductivity is increased by the addition of 60 grammes of acid fluoride of potassium. The electrodes are of platinum, as before, but have a larger surface; they are made in the form of hollow cylinders open on one side.

The mixture of hydrofluoric acid and fluoride having been carefully freed from water, the electrolysis is carried on very satisfactorily in this apparatus, and the containing vessel is not attacked. It is probable that the fluorine which comes off, being in solution in the liquid, attacks the copper to a slight extent at first, and forms upon the surface of the vessel a thin coating of fluoride of copper, which serves to protect it from further action. This explanation is borne out by the fact that when copper electrodes are used, the formation of a layer of fluoride is observed upon the anode plates; this layer acts as an insulator and prevents the current from passing.

The amount of fluorine produced by this apparatus is large enough to give good results; for instance, by using a current of 15 amperes at 50 volts, M. Moissan has obtained a rate of production corresponding to 5 liters per hour, the experiment lasting six minutes. In a second experiment he employed a current of 20 amperes at the same voltage, and the production reached the rate of 8 liters per hour. However, this second experiment cannot be carried on for any length of time, as the liquid heats excessively, in spite of the fact that the apparatus was cooled to as low as —50° C. The fluorine given off in this latter case carries along with it a large quantity of the vapor of hydrofluoric acid.

M. Moissan considers this apparatus a decided improvement upon those which have existed heretofore, and has been using it in the experiments which he has been making recently in his laboratory; he also expects to use it to advantage in a series of new experiments, in which it will be necessary to have a constant stream of fluorine.



EFFECTS OBTAINED WITH INDIAN CLUBS MOUNTED WITH ELECTRIC LAMPS.

The Origin of the Decimal System.

The decimal system, it has been said, was evolved from the human hands, which, with their ten fingers, constituted the only counting-board used by primitive man. It is well known that the system was not perfected until ciphers were introduced. This cipher system was invented in India in the fifth century, and its introduction into Europe is generally credited to Leonardo Fibronacci, better known as Leonardo Pisano, the author of *Liber abaci*, published in 1202. Leonardo learned the Arabian tongue and art of reckoning from his father, who lived in the Arabic city of Bugia. But before Pisano's time, another *Liber abaci* had been written by Gerbert (translated in 1843 by the French academician Chasles), which is based on a cipher system. At the last Toulouse congress, R. Astier showed that the same system had already been employed in the *Geometria* of Boethius (sixth century), and hence long before the introduction of Arabic signs into Europe.

Astier states that the counting-board (abacus) of the Greeks and Romans, which serves as the basis of column reckoning, was invented by the Babylonians, who, it will be remembered, are usually thought to have used only the duodecimal system. Astier supports his assertion by citing an old abacus which seems to have escaped the attention of such mathematical historians as Chasles, Montucla, Marie, Bossut, as well as the old lexicographers Rich and Saglio. The precious document in which the abacus is described has been preserved by a Renaissance scholar, Bolsani (Pierius Valerianus), in his work, *De sacris Aegyptiorium literis*. The system which he describes contains nine numbers, running from one to nine, a cipher, or zero, being dispensed with by using a special column and a decimal arrangement of figures progressing from left to right. The numerical characters of this abacus of Bolsani's are in every way similar to the cuneiform letters of the Chaldeans and entirely different from Arabic numbers. Bolsani's abacus would therefore lead us back to Babylonian days; and the period or comma which plays so important a part in the decimal system is really a cuneiform character.

Astier has requested Assyriologists carefully to examine the statue of a builder in the Louvre, usually designated as the statue of King Gudea (2500 B. C.) It is generally supposed that Gudea is here represented as a builder holding in his hands rule and compass and on his knees a rectangular tablet on which the scale of Babylonian measurements of length are inscribed, together with a figure which has hitherto been considered the plan of a building. Astier holds that this scale is perhaps a Babylonian abacus, and King Gudea is represented as the inventor of the decimal system. So bold an hypothesis can be accepted only after a most searching investigation on the part of Assyriologists.—Prometheus.

Absorption of Nitrogen.

It is pointed out in Nature that, in connection with the preparation of argon, while Prof. Ramsay used magnesium for the absorption of nitrogen, Ouvrard subsequently proposed lithium and Maquenne recommended a mixture of lime and magnesium. Dr. Hempel, however, has investigated the subject systematically and finds that a mixture of calcium and sodium is much more effective. He mixes 1 gramme of finely divided magnesium with 5 grammes of coarsely powdered lime and 0·25 gramme of sodium. In a comparative time experiment the rates of absorption of nitrogen by magnesium, lithium, lime-magnesium, and lime-magnesium sodium were in the ratio 1, 5, 8, and 20.

A RUSSIAN expedition will visit the New Siberian Islands next spring. The Czar will assist the expedition.