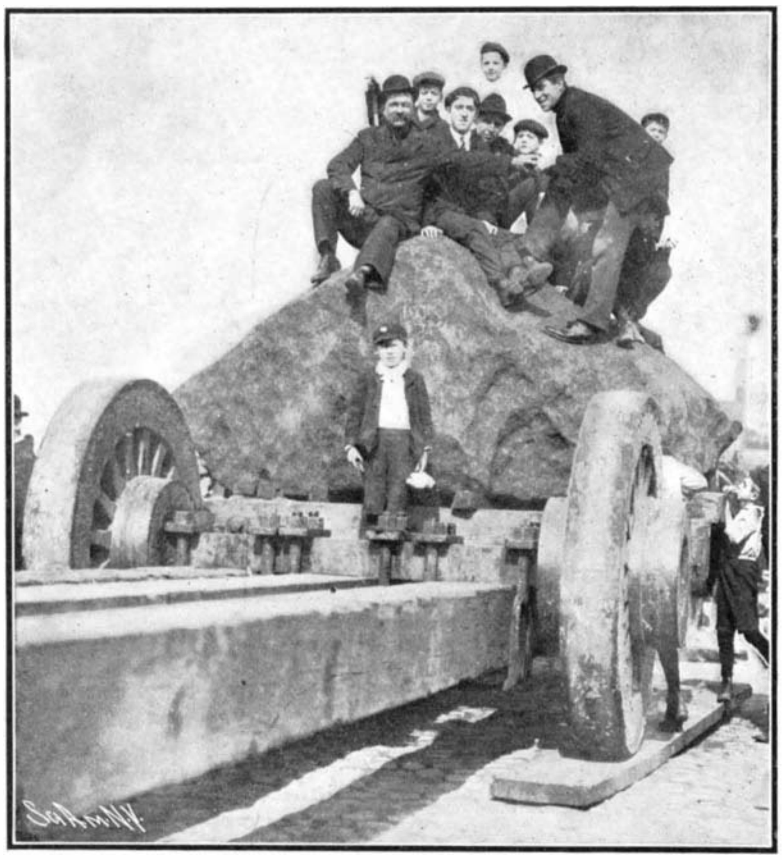
A NEW HOME FOR THE PEARY METEORITE.

BY WALTER L. BEASLEY.

Ahnighito ("The Tent"), the giant meteorite discovered by Lieut. R. E. Peary in Greenland in 1894, has been removed from its rather secluded position on Cob Dock, in the Brooklyn navy yard, and more strikingly exhibited on a mounted pedestal under the entrance arch of the Museum of Natural History, the two lesser ones (the "Woman" and "Dog"), companion meteorites found at the same time, having been previously installed in the interior. According to the legendary records of the present natives these three masses were originally an Innuit woman, her dog and tent, who were hurled down from the sky by the evil spirit. On account of the extreme high latitude in which the meteorite was found, namely, Melville Bay, thirty-five miles east of Cape York, North Greenland, coupled with its great size, uncontrovertible celestial origin, and the human associations surrounding the same, Ahnighito can be fittingly classed as the world's largest and most famous meteorite which has so far fallen on the earth's surface and been weighed. Its nearest rival is Bacubirito, of the State of Sinaloa, Mexico, whose weight has not yet been determined, but which, however, is conjectured to be far below the tonnage of Ahnighito. The new position of the noted meteorite displays its size and shape to marked advantage, the size rendering it conveniently accessible to the general public and scientists for examination. While it required many weeks of patient and laborious work for Lieut. Peary and his band of Eskimo helpers, with limited tools, to dislodge the mighty mass from its position of centuries in the Polar world and to safely get it into the hold of the "Hope" for its long voyage to civilization, the second moving of Ahnighito, measuring eleven and a half feet in length, seven feet six inches wide, six feet thick, and tipping the scales at thirty-seven and one half tons, was, with the aid of up-to-date appliances, speedily conveyed and set down in its new home in a day's time. At the foot of West 50th Street, North River, a wrecking barge, with a huge derrick, brought the meteorite from the navy yard and swung it upon the contractor's wagon, drawn by twenty-eight horses. The transportation charges on this precious mass amounted to over $500. The big meteorite is of especial scientific interest insomuch as its genuineness has been passed upon by the most celebrated experts of Europe. Fragments were sent to Profs. Fletcher, of the British Museum, Weinschenck, of Munich, Brezina, of Vienna, also Prof. Salisbury, of the University of Chicago. These high authorities pronounce the pieces examined to be of extra-terrestrial origin and belonging absolutely without doubt to a meteorite, as the topography of the surfaces examined in detail possess all the distinctive characteristics which mark the heavenly bodies and are not found in any other stones or metallic masses on the earth's surface. The analysis by Prof. Whitfield of the American Museum showed that it contained 91 per cent of iron and 7 per cent of nickel. The color is a dark brown or bronze. One side is wedge-shaped, the opposite tabular. When discovered it was sunk in the earth with the wedge side down. According to Prof. Salisbury, a member of the Peary expedition, the meteorite evidently fell on glacier ice, when ice covered the whole region where it lay. On the melting of the ice the meteorite was let down upon the surface in the position where it was found, half buried.

It is thought that a considerable portion of the meteorite has been removed by chipping off the fragments by successive generations of primitive natives in fashioning their crude implements for hunting land and sea-animals, their only chance for subsistence. Thus the big meteorite has been of great economical value to an entire aboriginal tribe isolated for centuries from civilization, the most northerly and smallest upon earth, whose habitat is entirely barren of metal.



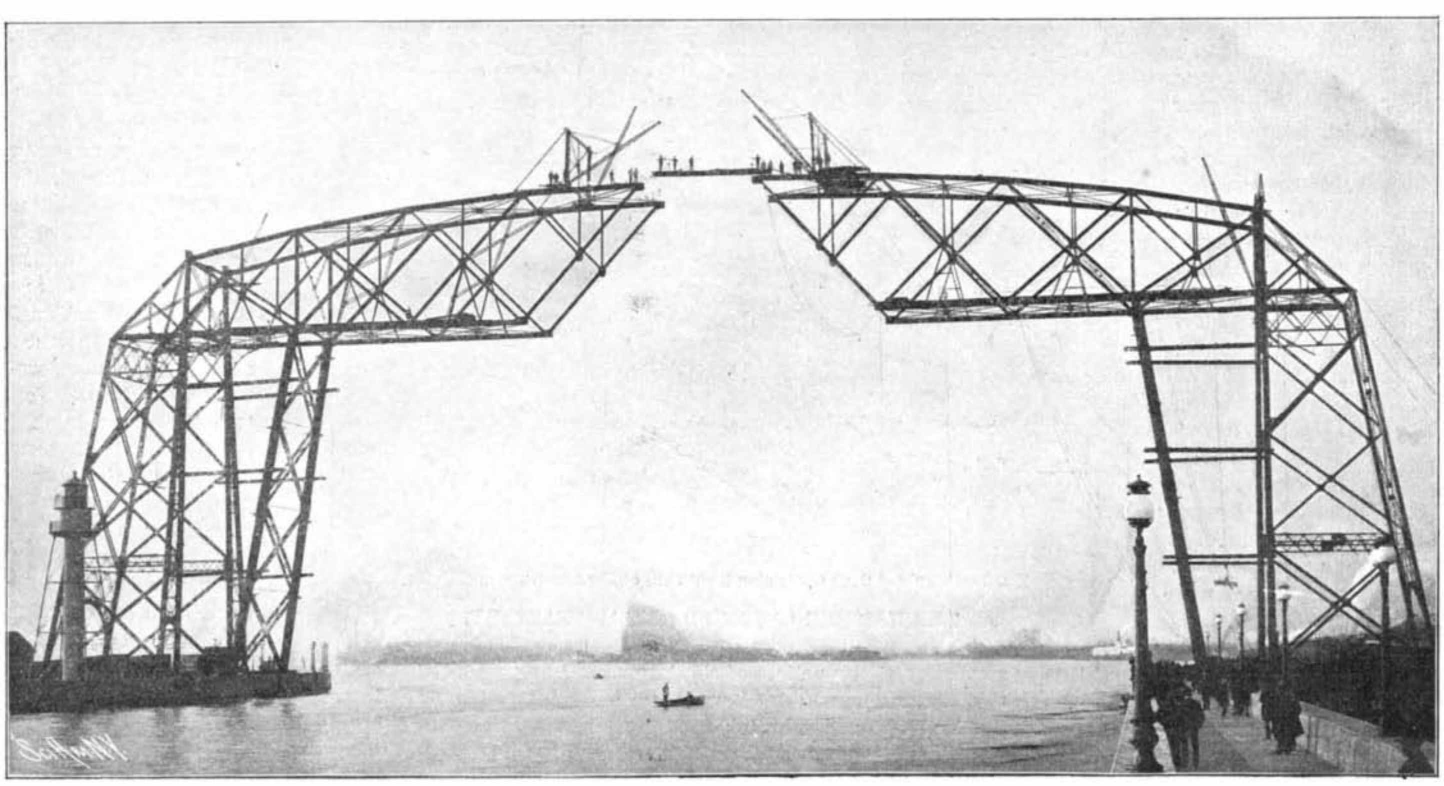
REMOVING THE PEARY METEORITE TO THE AMERICAN MUSEUM OF NATURAL HISTORY.

For hundreds of years prior to the advent of white communication the natives obtained their scanty iron supply for knives, hatchets, harpoons and arrow-heads from their iron mountains. Piles of blue trap rocks used by them in pounding off fragments of their god for making their weapons were found near by. Several of these interesting relics, so closely associated with the big meteorite, were brought back by Lieut. Peary among the Eskimo collection of the Museum.

THE AERIAL BRIDGE AT DULUTH.

The unusual form of bridge shown in our illustration will possess decided novelty to American eyes, for it is the first of its kind to be built in this country. It was erected in accordance with an agreement for perpetual free ferry service made by the city of Duluth in consideration of a grant of right of way for the United States ship canal at that port. For many years, two old-fashioned flat-boats plied half-hourly between the two landing points; but as the canal widened, this primitive mode became extremely inconvenient, not to say dangerous, and tugs were hired to take their place. With each succeeding year the expense increased, and the perpetual ferry began to loom up before the city fathers as quite a leading question. Numerous alternative plans were discussed, and for one reason or another abandoned. The estimated cost of a tunnel—about one million and a half dollars—rendered that form of communication out of the question, and the War Department refused to allow a drawbridge of any kind. One of the mayors of the city, however, had seen and been much impressed with the aerial bridge which was opened a few years ago at Rouen, France; and its applicability to the conditions at Duluth was so apparent, that this type was readily adopted. The present bridge was planned on the principles of the Rouen structure, and it will no doubt prove to be a satisfactory solution of the problem. Although the structure will be the first of its kind in America, it is not by any means novel in the engineering world, as there are in Europe to-day three bridges of the same general type: The one mentioned at Rouen, France, over the Seine; another at Pt. Egalite, Spain; and the third at Bigerta, Tunis.

The bridge at Duluth, as will be seen from our engravings, is a decidedly imposing structure. It consists of two piers or towers on shore, supporting a deep truss which spans the open waterway. There is nothing special in the details of this work, the piers being of the standard type used in steel railway viaducts, the truss being of the usual American design with long panels and single intersections. The posts are vertical on the side facing the channel, the other two posts on the land side being battered to give the necessary stability. In the erection of the structure the piers were first built to their full height, and then the trusses were erected by the overhang method, a temporary timber bent being used to support the first panel of the truss, and the rest of the overhang being erected from traveling derricks mounted upon the top chords. At the time our photograph was taken the last section of the top chord was being lifted into place by the derricks. From the water-line to the bottom of the trusses is 135 feet, and as the truss is 50 feet deep, the highest point is 185 feet above the water. The clear span between towers is 381 feet 6 inches. Special attention was given to wind pressure, the bridge being built to withstand a wind velocity of seventy miles per hour blowing transversely to the axis of the bridge. The traveling car will be suspended from the lower chords by stiff cables, and its floor will be 12 feet above the water level. The distance between landing points will be made in one and one-half minutes, and the schedule for trips will be arranged by the War Department soon after the completion of the bridge. The car measures 20 feet by 30 feet, and it has a capacity of 65 tons. The total cost of the structure will be about $110,000.



Clear Span, 381½ Feet. Depth of Truss, 50 Feet. Clear Height Above Water, 135 Feet.

Travel will be by means of a suspended car hung from the bottom chords of the truss.

THE NEW AERIAL BRIDGE ACROSS THE SHIP CANAL AT DULUTH.

The French Admiralty recently carried out an interesting experiment to ascertain whether the explosion of a torpedo in the vicinity of a submarine exercises any injurious effect upon another torpedo lying alongside the vessel. The submarine anchored off Cape Petet, and the torpedo, containing a charge of 100 kilogrammes of gun cotton, was fired at a distance of 50 meters from the submarine, beside which, exposed to the full force of the exploding torpedo, was placed the second weapon. Not the slightest damage was caused by the explosion.

Statistics of the American Iron Trade.

One of the most important and interesting of the statistical papers published annually by the United States Geological Survey is a review of the American iron trade. The report for 1903, like those of many preceding years, was prepared by Mr. James M. Swank, general manager of the American Iron and Steel Association, and contains a great variety of data regarding the production and shipments of iron ore; the imports and exports of iron and steel; the average monthly and yearly prices of iron and steel and articles manufactured from them; the production and consumption of pig iron; the production of spiegeleisen and ferromanganese; the production of all kinds of steel, as well as the numerous articles, such as castings, rails, wire rods, wire nails, plates, and sheets, which are made from steel; the Canadian iron trade; and the world's production of iron ore and coal, of pig iron and steel.

The prosperity which characterized the iron trade of the United States from the beginning of 1899 to 1902 and throughout the early part of 1903 was suddenly checked about the middle of 1903 by a sharp reaction in the stock market, which caused a decline in the demand for iron and steel and a consequent decline in prices. Production during the first half of the year was on a large scale, and prices were satisfactory, but in the last half of the year both production and prices declined rapidly. Soon after the beginning of the year 1904, however, there was a revival of activity in production, but prices did not rally. In October, however, the prices of pig iron advanced. During September and October there was a distinct revival of confidence and hopefulness in the iron trade, and by the time Mr. Swank's report was written, in the latter part of October, there were few signs of the reaction which began a little more than a year before.

Mr. Swank's tables of statistics show that the world's production of iron ore during 1903 amounted to 100,900,000 tons, of which the United States claims 35,019,308 tons. The world's production of coal and lignite amounted to 870,498,000 tons, of which 319,068,229 tons belonged to the United States. The world's production of pig iron in 1903 amounted to 46,420,000 tons, to which the United States contributed 18,009,252 tons. The world's production of steel during the same year amounted to 35,510,000 tons, of which the United States produced 14,534,978. It is thus seen that in the production of iron ore, coal, pig iron and steel—all great factors in the world's material progress—our country is the leader. We produce 34.71 per cent of the world's iron ore, 36.65 per cent of its coal, 38.80 per cent of its pig iron, and 40.93 per cent of its steel.

The Current Supplement.

The current SUPPLEMENT, No. 1512, opens with a splendidly illustrated article by the English correspondent of the SCIENTIFIC AMERICAN, on the battleship "Dominion," which forms one of the "King Edward VII." class. Mr. Joseph Hollos writes on simultaneous telegraphy and telephony. An excellent discussion of the limitation and the use of storage batteries is presented by H. M. Hobart. The last installment of the exhaustive series on "Current Wheels: Their Use for Lifting Water for Irrigation" is published. Taken as a whole this series of articles may be considered by far the most important monograph of the construction and operation of current wheels that has so far appeared. Commander Peary's paper on the North Polar explorations is continued. "On the Modern Reflecting Telescope and Making and Testing of Optical Mirrors" is the title of a series of articles from the pen of Prof. G. W. Ritchey, the first of which appears in the current SUPPLEMENT. The papers will describe the methods employed by Prof. Ritchey in the optical laboratory of the Yerkes Observatory in making and testing spherical, plane, paraboloidal, and hyperboloidal mirrors. The subject is very thoroughly discussed. The treatise will be followed at an early date by an excellent paper of Prof. Draper's on the making of a 15-inch telescope. There has recently been installed in the McKeesport plant a new 40-inch universal slabbing mill, which is remarkable for its size and some novel features introduced into its construction. The mill is worthily treated in a well illustrated and fully descriptive article. The usual Trade Notes and Recipes, Engineering Notes, Science Notes and Selected Formulæ are given.

Catlinite is the name given to an indurated clay rock once used by the Dakota Indians for pipe material. It is also called Indian pipe-stone.

THE HASCHKE COMPOUND STORAGE BATTERY.

The illustrations shown herewith give a good idea of the construction and method of assembling the plates of a compound or multiple-series storage battery, which has been patented and put into practical use by Mr. J. E. Haschke, of Chicago, Ill.

The idea the inventor had in mind in designing this battery was to economize in weight and space as much as possible, and at the same time construct a battery of great efficiency and durability which would be suitable for all kinds of automobile work. He had already developed a plate and form of separator which practical tests in electric automobiles had shown to work well, so that his present invention consists in a method of assembling these, or, indeed, the plates and separators of any standard type of storage cell.

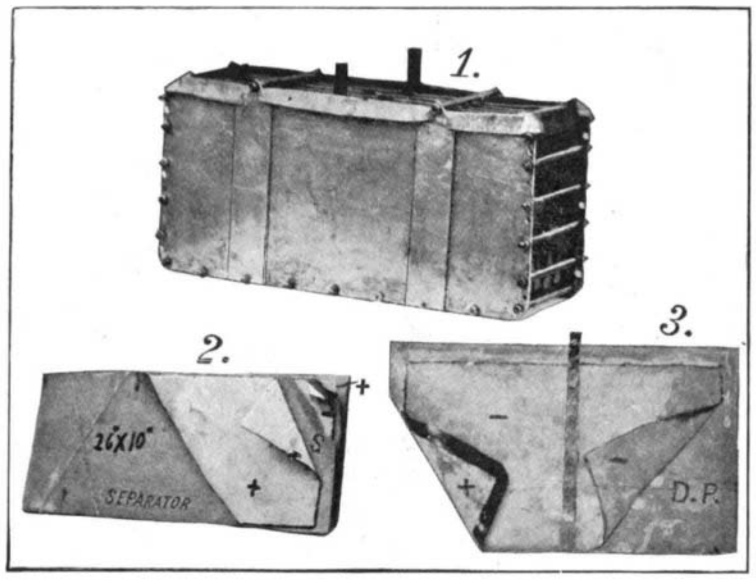


Fig. 1.—1. Compound Battery Assembled. 2. Plates Arranged in Pasteboard Separators. 3. Division Plate with Positive and Negative Plates Attached on Opposite Sides.

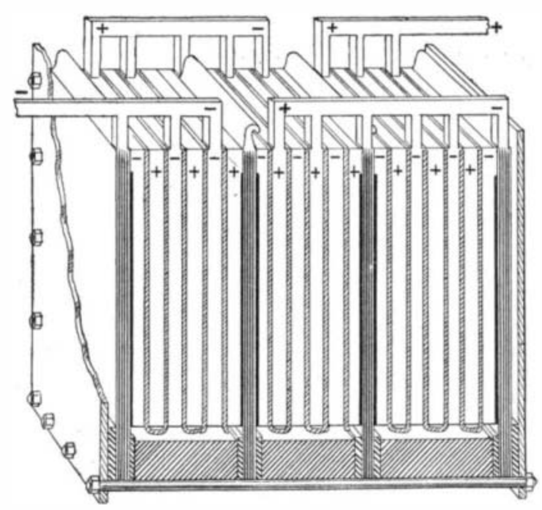


Fig. 2.—Diagram Showing Method of Assembling Battery.

The Haschke plate, as constructed and used for the past eight years, consists simply of a thin sheet of pure lead highly perforated with holes about one-twelfth of an inch in diameter, these holes being filled with the usual paste of red lead or litharge for the positive or negative plates respectively. Such plates are highly flexible, and, although the tendency of the active material to cause them to buckle is slight because of the smallness of the pellets of the latter, still any warping that does occur will not harm them on account of their flexibility. The separator used by Mr. Haschke consists of a specially-treated envelope of thin cardboard, which completely incloses the plate and thus tends to keep the active material from falling out. After being treated by exposure to certain gases engendered by electrolysis, this thin cardboard, when placed in the sulphuric acid solution, becomes as tough as leather while remaining porous. It has to be renewed after three years' use, owing to its disintegrating on the top edges, where the air gets at it. If kept completely submerged, it will last longer.

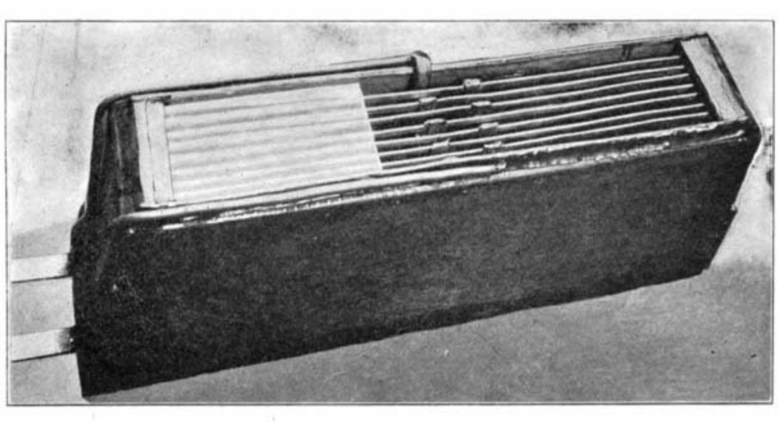


Fig. 3.—Completed Crate Containing Eight Cells of Haschke Compound Battery.

THE HASCHKE COMPOUND STORAGE BATTERY.

The new compound battery is made up of several individual cells consisting of U-shaped hard rubber frames clamped between thin lead plates. Rubber gaskets are used in order to make acid-tight joints. Any suitable number of cells may be arranged in this way, and as many plates may be placed in each cell as it is made wide enough to receive. Mr. Haschke, on account of the extreme thinness of his plates and the compact manner in which they are assembled (see Fig. 1, No. 2), gets as many as six plates in a cell ¾ inch wide; and, as these plates can be made as long and as high as the space in the battery compartment will permit, a very large active surface can be obtained. The division plates forming the side walls of the cells serve as current conductors and as supports for the end plates of adjoining cells, which are soldered to the division plate across the top. In Fig. 1, No. 3, *D P* is a division plate with a negative plate soldered to one side and a positive plate to the other. As all the positive plates of any one cell are connected together, and all the negative plates are likewise connected, it follows that since all the positive plates of a cell are connected to the positive plate on one side of a division plate, and all the negative plates of the next cell are connected to the negative on the other side, the positives of one cell are all connected to the negatives of the one following *through* the division plate. This makes unnecessary the connecting lugs between cells which are ordinarily employed, and thus reduces the resistance of the circuit considerably. In practice, however, the inventor lead-burns the lugs of the positives of one cell to those of the negatives of the next, arching them over the division plate and also attaching them to it, as shown in Fig. 3. The division plates are brought up an inch or two above the plates proper, and they are curved so as to avoid splashing and to afford sufficient surface to prevent leakage of current. The diagram, Fig. 2, shows the arrangement of the plates proper and the division plates. The division plates are here shown clamped between the U-shaped hard rubber pieces by means of rubber gaskets and bolts passing through steel end plates. The appearance of the battery when finished is shown in Fig. 1, No. 1. It is afterward placed in a crate and covered with plates of glass. Such a crate, containing eight cells, is shown in Fig. 3. An 80-volt, 200-ampere-hour battery weighs, according to the inventor, about 850 pounds, which is extremely light for a battery of this capacity, while by doing away with the usual hard rubber jars the chance of leakage from breakage or defect is reduced. The compound battery can be filled with electrolyte in a few moments, and all the cells can readily be inspected through the glass covers, or the electrolyte can be tested after the cover glasses have been removed.

The "hole interrupter" invented by Prof. Simeon was designed with a view to utilize the Joule heat for interrupting an electric current. As, however, Mr. Johnson, in the course of his experiments recently presented to the French Academy of Sciences, has convinced himself, the working of this instrument, so far from being due to the Joule heat, is to be ascribed to causes quite foreign to any heating effect. Now Mr. Johnson has tried to construct an interrupter that would really be actuated by Joule heat. A reversed funnel, the pipe of which was 7 millimeters in diameter and 10 millimeters in length, was glued to the lower part of a cylinder 75 millimeters in diameter. The vessel thus formed was immersed in a tumbler filled with a mixture of alum solution and sulphuric acid. Two aluminium plates were inserted as electrodes, one into the cylinder and the other into the outer tumbler, and connected to the terminal of a 110-volt battery. On completing the current, a vapor bubble was formed in the funnel pipe, escaping into the inner cylinder, where it was rapidly condensed. The circuit is opened when the bubble forms in the pipe, and closed on its escaping into the cylinder. The current then forms another bubble, which in turn rises into the cylinder, and so on. This interrupter possesses the drawback of working rather slowly (its frequency being smaller than the Foucault interrupter); on the other hand, it affords the advantage that it is independent of the dimensions of the metallic circuit, even in case there are no inductive coils or solenoids, whereas the Wehnelt and Simeon interrupters require a self-induction that is susceptible of variation only within rather narrow limits.