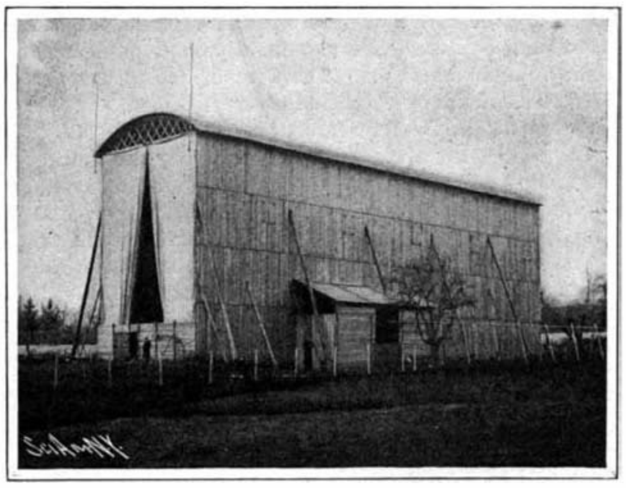
THE "ITALIA" AIRSHIP.

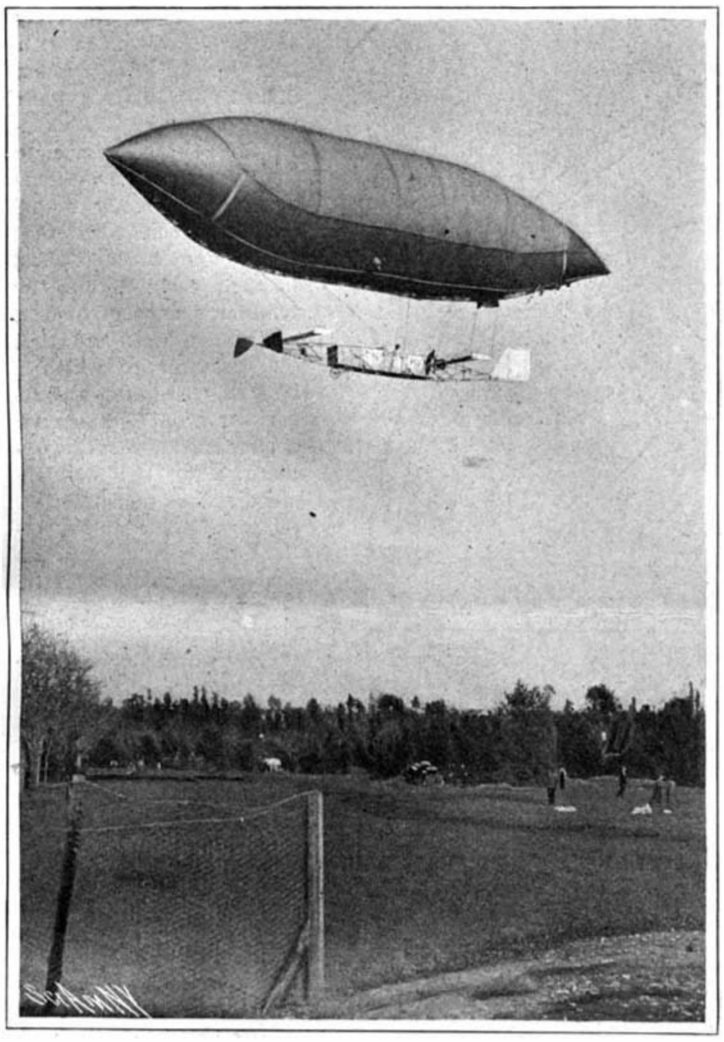
An Italian inventor, Count Almerico da Schio, while convinced of the superiority of the "heavier-than-air" flying machine, considers the airship to be the best means of teaching men the art of navigating the air. The Count thinks it best, therefore, to reject the airship only after man shall have learned to move safely through the air with a balloon to supplement the floating power and stability of the flying machine proper.

The new "Italia" airship is accordingly designed as a complete flying machine including wings, propellers, and rudder, the balloon being made to fulfill the secondary function just referred to, and to become more and more reduced so as eventually to disappear as the flying machine proper is continually improved. The disadvantages common to most balloons of losing ballast in rising and gas in descending, are remedied by using the motor and aeroplanes exclusively for rising and descending. This will allow the airship to remain longer in the air, and will make it able at any time to seek for the most favorable air currents.

The airship "Italia" constructed by Count da Schio, as can be seen from the photograph, is cylindrical in the middle, throughout a length of 10.3 meters (42.64 feet), the diameter being about 8 meters (26¼ feet). The front part, 11 meters (36.08 feet) in length, resembles the point of a shrapnel, and the much thinner rear part is about 16.4 meters (65.61 feet) in length. The cover consists of varnished Italian silk coated outside with aluminium powder to reduce the effects of light. The regular symmetrical shape of the bottom of the balloon is obtained by coating the lower portion of the cover with highly elastic India rubber such as is used by Prof. Hergesell in connection with his "ballons-sondes." As this part is extremely elastic (it can be stretched to four times its original length) the cover will always be uniformly tightened, and the balloon will maintain its regular shape with a volume varying according to the atmospheric pressure. The horizontal aeroplanes having surfaces of 10 square meters (107.64 square feet) each, used in rising and descending, augment the longitudinal resistance of the airship. The frame is provided with three wheels and pneumatic tires to facilitate its manipulation on land.



The Building in Which the Airship is Housed.



The "Italia" Airship in Flight.

Only a few preliminary experiments have so far been made with the Schio airship, in which King Umberto and the Dowager Queen Margherita are taking much interest. While the results so far obtained would seem to bear out the claims made by Count Schio, judgment should be reserved till the definite experiments which are to take place shortly have been made.

THE LAYING OF A 10,000-VOLT CABLE.

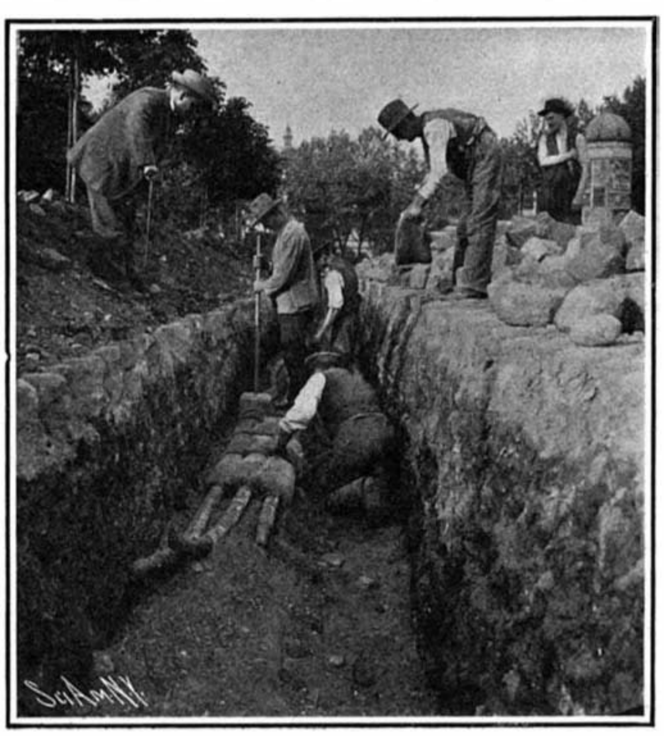
BY DR. ALFRED GRADENWITZ.

It is due to the high insulating power of atmospheric air that most electrical phenomena come at all to our notice. The same property of air proves very valuable in electrical engineering by allowing current-carrying conductors to be strung out in the open without the risk of leakage, provided there be no possibility of either a short circuit or a ground. These overhead conductors possess the advantage of being extremely cheap and easily inspected, but they are exposed to various dangers, rendering them unreliable for use in large cities. Here not only the risk of injury to the passer-by, but æsthetic considerations as well, are urged against this type of conductor, and for these reasons cables are usually substituted for bare overhead wires. These cables consist of insulated copper conductors, either single or in sets of two or more; and in order to protect them from injury, and prevent the current they carry from doing any damage, they are buried in trenches.

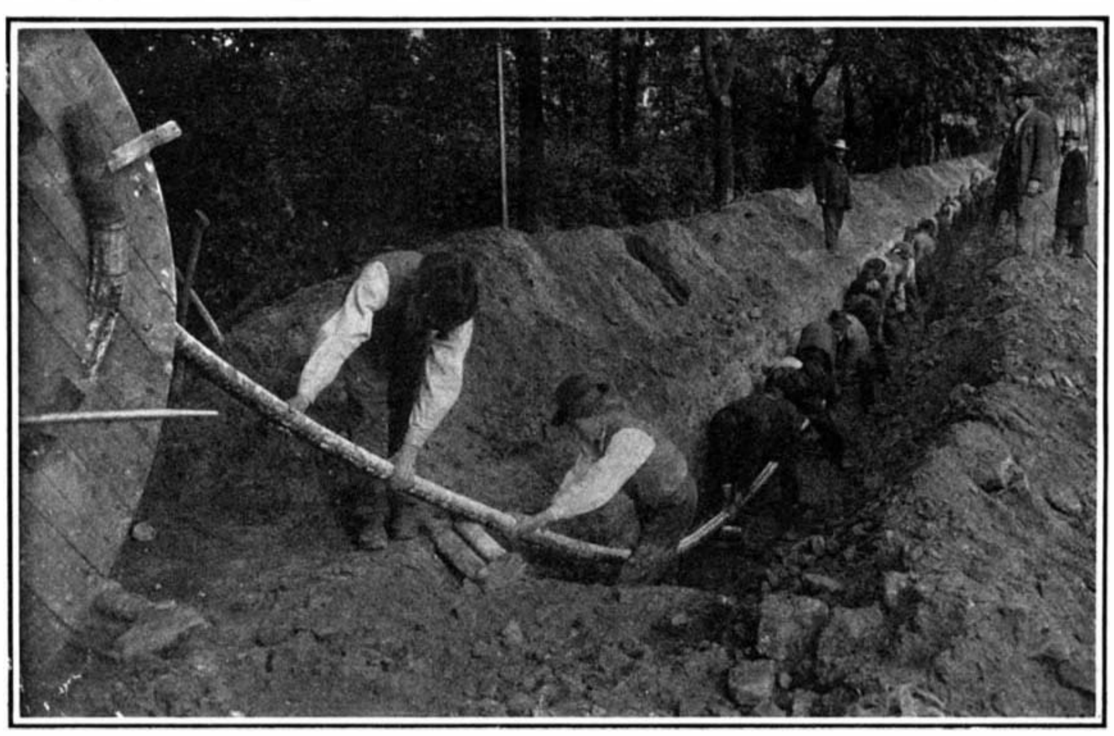
We are indebted to the Berlin Electricity Works for the accompanying illustrations, showing the recent operation of laying a 10,000-volt cable. The line is intended for transmitting current generated at the Oberspree central power station to the Zossenerstrasse and Alte Jakobstrasse sub-stations. The cable was constructed at the Oberschöneweide Cable Works of the Allgemeine Elektrizitäts-Gesellschaft. It is to carry three-phase current, and accordingly comprises three copper strands of 1.085 square inches cross section each. Each of these conductors, on account of the high pressure carried, is at first surrounded with a caoutchouc layer, and together with the two others is imbedded in jute. Around this insulation a lead sleeve is forced, and this serves to exclude moisture. Over the sleeve is a wrapping of jute, and on this an iron sheathing is wound.

The cable was made in lengths of about 170 meters (557.7 feet) each and coiled on wooden drums. It was carried to the working place in special cars. The trench in which the cable was to be laid was dug to a depth of three feet. After running out the drum from the car, it was taken to the head of the trench, and a gang of workmen seized the end of the cable and carried it on their shoulders into the trench. Here it was dropped into specially arranged rollers, by means of which it was drawn off from the drum. This done, the cable was straightened and provided at intervals with labels indicating its cross section, the voltage it was adapted to carry, etc., so that any required strand might be readily identified in case of future repairs. As the iron sheathing referred to above could not be regarded as a full protection to the high-tension conductors, the cable was coated with a concrete layer. The concrete was placed in rough jute bags, which were tamped down on the cable throughout its length. The jute bags soon gave way, permitting the concrete to set over the upper half of the cable, and thus provide it with a solid concrete covering. The trench was then filled in. The joints

Sections of High-Tension Cable.



Preparing the Protective Sheath.



Laying the Cable in the Trench.

THE LAYING OF A 10,000-VOLT CABLE.