

The bridge, which took a little more than eight years to complete, cost £4,248,000. It consists of a main span of 1,650 ft. with a clearance of 170 ft. over the central 300 ft. of span, and ten approach spans. It accommodates a roadway 57 ft. wide, four railway tracks and two footways. The principal parts of the main-span truss are of silicon steel with a modulus of elasticity of 30,500,000 lb. per sq. in. Analytical methods of calculation were used, arithmetical processes being carried out by calculating machines. Calculations were required for the following combinations of loads: dead load, live load and impact, horizontal force, centrifugal force, wind loads and temperature variation. Of the total weight of the main truss material, the proportions attributable to various loads are as follows: dead weight of arch, 35 per cent; dead weight of deck, 23 per cent; live load and impact, 26 per cent; wind, 8 per cent; horizontal force, 2 per cent; and temperature, 6 per cent. Tests on model members were made by means of a testing machine of 1,250 tons capacity, capable of dealing with tension and compression specimens up to 50 ft. long and bend test specimens 20 ft. long. Tests of the arch after completion indicated a span $\frac{3}{4}$ in. in excess of 1,650 ft., a difference partly due to unavoidable errors of survey and possibly partly caused by shrinkage of the concrete below the bearings. The bridge was erected by Messrs. Dorman, Long and Co., of Middlesbrough.

The *Indian Antiquary*

WITH the December issue, which, through labour troubles, has only just become available in Great Britain, the *Indian Antiquary* ceases publication. The demise of this valuable periodical will be greatly regretted by all who are interested in Indian studies. For more than sixty years it has served as a medium of publication for original communications of the highest standard of scholarship, dealing with the ethnology, archaeology, history, linguistics, folk-lore and religions of India. The *Indian Antiquary* was founded by the late Dr. J. Burgess in 1872 and later was acquired by the late Sir Richard Temple as his sole property. Under his editorship—he was editor-in-chief for forty-six out of the fifty-one years of his connexion with it—the services of the *Indian Antiquary* to the cultural history of India were incalculable. Sir Richard Temple's wide knowledge of oriental subjects made him an ideal editor of a journal of this type, not merely because of his own numerous contributions to its pages, but also for the stimulus and assistance he was able to give to the studies of others. As one result of his influence may be mentioned *Epigraphia Indica*, the official record of epigraphic work in India, which was a direct outgrowth of work initiated by the *Indian Antiquary*. In 1924 Sir Richard Temple transferred his interest in the journal to a small private company, and the Royal Anthropological Institute assumed responsibility for its publication. Sir Richard Temple retained the editorship, at first in association with Mr. S. M. Edwardes, and after his death in 1927 with Mr. C. E. A. W. Oldham, who became editor-in-chief on Sir Richard's death in 1931. Owing to financial

conditions the Royal Anthropological Institute felt compelled to sever its connexion with the *Indian Antiquary* in 1932 and during the past year it has been carried on by the editor in order to complete publication of matter in hand.

Protection of Power-Transmission Plant from Lightning

A SERIES of articles on lightning by J. F. Shipley which is being reprinted in *Distribution of Electricity*, a paper published by W. T. Henley's Telegraph Works Co., gives a résumé of what has been accomplished in recent years in protecting transmission lines and engineering plant connected with them from damage from lightning. The effect of a lightning flash on a transmission line is to puncture the insulators or make them flash over, sometimes causing a short circuit which shuts down the supply. During the last forty years a very large number of devices have been employed to protect the lines, such as air-gaps, water-jets, oxide films, etc. These have been found only partially effective. The ideal arrester would be some link between the line and earth which would have infinite resistance at the normal pressure, but when for any reason that pressure increased by 10 or 20 per cent, the resistance should become practically zero, thus furnishing the impulsive rush of electricity with a safe path to earth. A recent device consists of a solid block of a material consisting of conducting particles of metallic oxide diffused in a baked clay which is microscopically porous. It is similar to porcelain in texture and mechanical strength and normally has almost infinite resistance. As soon as the electrical pressure across a block of it rises above a definite value its resistance decreases at a very rapid rate. If we double the voltage, the current it will pass increases more than twelve times. The material seems to have two names, 'thyrite' and 'ocelit'. As it is an artificial product and can be accurately controlled, it looks as if a real step forward has been made in the design of these arresters, or 'safety-valves' as they are often called.

Electric Waxing of Floors

Helios, a German electrical trade journal printed in Leipzig, gives descriptions in three parallel columns in German, French and English respectively of the latest electrical devices. In the issue for November 19 an interesting description is given of tests on an electric floor-waxing device, with and without a suction apparatus for the simultaneous collection of dust. The tests were carried out in the laboratories of several universities as well as in commercial test rooms. When the suction device was used there was no appreciable change in the percentage of dust in the air caused by the whirling of the waxing apparatus. When no suction device was employed the percentage of dust in the air increased as much as seven to eight times the normal quantity. In this case the dust on the floor was whirled upwards by the waxing machine. With the suction device it is not necessary to clean the room so often and there is no need to have a special vacuum cleaner. The dust which settles on furniture prolongs the work of cleaning, and certain works of art are damaged, while it is