

1,700 crossings in Britain, and naturally the installation of all these crossings is costly. The second step in advance was the introduction of the vehicle-actuated method of control, which has several advantages over the time-controlled system. With the time-controlled apparatus the 'right of way' is given to each of two or more intersecting roads for definite periods of time in sequence, quite regardless of the relative volume of traffic on the roads at any particular moment. One of the essentials of any form of control is to keep traffic moving, and this should only be subordinate to safety. The time-controlled system is powerless to differentiate between the volumes of the flow of traffic in the various directions. Many attempts were made in the past to produce a system which would provide maximum traffic facilities with maximum safety. There are now two systems of vehicle-activated control in practice, called the electromatic and the autoflex respectively. In the former, a vehicle passing over a pad makes contact and completes an electric circuit; in the latter the air in a channel in a rubber moulding is compressed and the compressed air produces the contact. The problem of co-ordinating a series of crossings is now being satisfactorily solved. Oxford Street, London, from Marble Arch to Tottenham Court Road is a good example of the advantages of this kind of control.

Invention of the Venturi Meter

IN connexion with an article on "Early Hydraulic Engineering", in which the work of Clemens Herschel (1842-1930) is referred to, *Engineering* in its issue for August 2 reproduces a letter from Herschel to the late Dr. Unwin describing his invention of the Venturi Meter. The letter is dated June 5, 1888, and addressed from the hydraulic engineer's office of the Holyoke Water Power Co., Mass. In his letter, Herschel says he tested a one-inch Venturi Meter, under 210 ft. head: "I am now satisfied that here is a new and pregnant principle to be applied to the art of gauging fluids, inclusive of fluids such as compressed air, illuminating or fuel gases, steam, etc. Further, that the shape of the meter should be trumpet-shaped in both directions; such a meter will measure volumes flowing in either direction, which in certain localities becomes a useful attribute. . . . And we are but in the beginning of the art of measuring pressures, and differences of pressure. When these shall be delicately measured, the Venturi Meter will have become as delicate in its lower limits of capacity, as any other and it is on this score *alone*, that it is as yet inferior to some of the volumetric meters." The letter was found among the papers placed at the disposal of the Unwin Memorial Committee by Miss Unwin.

Electric Welding in Industry

THE American Welding Society has awarded the S. W. Miller Medal to J. C. Lincoln, the founder of the Lincoln Electric Company, as the first to apply the electrical arc to building construction, and for his improvements in the art of arc welding. Mr.

Lincoln has pointed out that by arc welding the cost of the repairs of machines has been greatly reduced. It has eliminated the noise of the riveting hammer in building construction. A joint made by arc welding is often stronger than the parent metal; while a joint made by riveting never is. The amount of the material needed for the structure is therefore considerably reduced. It is of particular importance in marine construction, where the smooth outline rendered possible by welding appreciably increases the speed of the ship. The most widely used application of all is the replacement of steel and iron castings by welded structural steel. This application gives a method of having a lighter, stronger and cheaper material than it is possible to get by casting. Already about one and a half million tons of castings a year have been eliminated by this method. Mr. Lincoln thinks that welding will entirely eliminate the rivet as a method of joining structures. It will also largely increase the value of worn and broken parts.

Industrial Physicists

THE *Review of Scientific Instruments* reproduces in its issue of February the conclusions of the Conference held in New York to consider "the place of physics in industry and the best methods by which that place can be fully occupied". The Conference demands a training which shall develop: (1) a broad knowledge of the principles of physics with a leaning towards classical physics; (2) an intimate working knowledge of the more elementary branches of mathematics; (3) a grounding in the principles of chemistry sufficient for physical research; (4) power of expression in technical and especially non-technical language; (5) realisation that a research worker in industry is justified only by his value to the industry. It would be of great interest to discover whether these are the demands of industry in Great Britain, and if so, whether the training required is being provided by our educational methods.

Institute of Plant Industry, U.S.S.R.

A LIST of the publications during 1933 of the Institute of Plant Industry, Leningrad, compiled by Strumillo, appears as Bibliographical Contributions No. 4 of the Institute. The list of publications of this Institute, and of the old Bureau of Applied Botany which preceded it, is thus now complete from 1908 to the end of 1933. It covers 57 publications, is published in Russian and English, and the titles of all contributions of every volume are given in English even in cases where the originals contain no English summary. Most of the Institute's publications of specialised character have English summaries; those publications in this list which are not provided with one are indicated. The *Bulletin of Applied Botany, of Genetics and Plant Breeding*, together with its supplements, occupies the major portion of this list. The remainder is occupied by non-serial publications and by publications originating from the Institute, but issued by other publishers. "Plant Industry in the U.S.S.R." and "Agricultural Turkey" are two important contributions in the latter category.