TREATMENT OF CROPS BY ELECTRIC DISCHARGES.

PROF. HENDRICK has described in the *Scottish Journal of Agriculture* (vol. i., 1918, pp. 41–51) the results of some extensive experiments on the treatment of growing crops with an overhead electric discharge. The work was carried out during the years 1913, 1914, 1916, and 1917 on Mr. Low's farm of Mains of Luther, Kincardineshire. The apparatus was that of the Agricultural Electric Discharge Co., Ltd., consisting of an interrupter, induction coil, and Lodge valves. The overhead installation consisted of a number of fine wires (the diameter is not stated) arranged 15 ft. apart, and alternately bare and cotton-covered; these wires were about 11 ft. from the ground at the centre and 15 ft. near the supports. The experimental area consisted of ten plots, each 0·56 acre, half of each plot being electrified and half used as a control; the control areas lay south-east of the electrified ones. In 1914 a galvanised-wire netting ($\frac{1}{2}$-in. mesh) was placed between the electrified and control areas. A five-course rotation was followed (turnips, barley, hay, potatoes, and oats), and the ten plots were so arranged that in each season "two whole plots were under each of the crops of the rotation." In 1917 the treated barley showed an increase in grain of 31 per cent. over the control, but this result was not obtained in other years, and the general conclusion is arrived at that no persistent improvement was obtained in any of the crops grown.

These careful experiments show clearly the necessity for caution in this type of work, but, unfortunately, they do not advance our knowledge of the subject. In investigations on electro-culture there are two main aspects, the agricultural and the electrical; in these experiments, however, while the agricultural conditions have been carefully considered, the electrical conditions have been treated with comparative neglect. The information is given that the apparatus was capable of giving a current at 60,000 to 100,000 volts, but no measurements appear to have been taken of the actual voltage employed or of the discharge current from the wires, and no data are given as to the number of hours, or the time of day, during which the discharge was employed. The experiments were certainly a failure, but we cannot say under what electrical conditions the failure occurred. It is thus impossible to repeat the experiments or to compare them with experiments in which more successful results have been claimed.

IRON-ORE OCCURRENCES IN CANADA.

THE Canadian Department of Mines has just issued the second (final) volume of a report upon iron-ore occurrences in Canada by Messrs. E. Lindeman and L. L. Bolton. The first volume contains an account of the principal operating mines that may be considered active producers of iron-ore, and the second volume gives brief descriptions of a very large number of occurrences, some of which have been worked in the past, but are not now contributing to the output, whilst others have not been attacked. A considerable number of more detailed memoirs, such as those on the iron-ore deposits of Nova Scotia, on the Wabana iron-ore of Newfoundland, etc., have already been published by the Department of Mines, but the present work is particularly useful, as it not only summarises these, but also describes a very large number of occurrences about which no information has hitherto been available. A very useful feature, too, is the very complete series of references to any previously published descriptions of the mines or occurrences. Another, to which attention may with advantage be directed, is the large number of magnetometric maps that accompany the present report. It is pointed out in the introduction that particular attention has been devoted to these magnetometric methods, which have hitherto been but rarely employed outside Scandinavia, where they originated, because it is desired to impress the value of this method of working upon Canadian mining engineers, since definite information can thus be obtained as to the size, shape, and distribution of deposits of magnetite, while magnetometry provides a permanent record that will serve as a guide in the further exploration or development of these deposits.

BRITISH SCIENTIFIC PRODUCTS EXHIBITION.

THE British Science Guild has carried out successfully a very useful enterprise in the British Scientific Products Exhibition, which was opened by Lord Sydenham, president of the Guild, on August 14, at King's College, London. The exhibition contains many examples of products and appliances of scientific and industrial interest which, prior to the war, were obtained chiefly from enemy countries, but which are now produced in the United Kingdom. It is an impressive reminder to all of the great advance made in the production of articles of prime importance for the home and foreign markets hitherto obtained from other countries. The exhibits cover a wide range, and include chemical products and processes, physical and electrical appliances, optical apparatus, measuring and mechanical instruments, surgical, bacteriological, and pathological appliances, including X-ray apparatus, etc. In practically all the sections the degree of progress indicated by the exhibits is surprisingly great, and even where no striking development has occurred in the way of new invention, there is noticeable a marked general improvement in apparatus constructed on the recognised lines of pre-war days.

Interest naturally centres round those exhibits associated with aircraft production. Here the developments and the differences between present-day aeroplanes and those of a few years ago are clearly marked. Modern spars, for instance, are much stronger for a given weight, engines have been developed as regards both material and construction to the extent of reducing their weight by more than one-half, whilst the size and power have grown enormously and are still making advances. The metallic materials which have been produced since the outbreak of the war, and of which aircraft constructors have been able to avail themselves, have made it possible for the greater part of an aero-engine to be made of light alloys. In non-metallic materials the investigation of timber has led to some interesting results. With regard to the many fittings which go to make up the complete aeroplane, one item of outstanding interest is the magneto. Before the war the Germans had practically a monopoly in the manufacture of this article for both car and aeroplane use, the Bosch magneto undoubtedly being the most popular throughout the world. The war has changed that, and the British manufacturers have seen to it that the home-built magnetos are worthy of their name. There are now nine British firms engaged in this work, with the result that during the past four years 300,000 magnetos have been manufactured for war service alone. What is equally important is that the home-made magneto is