

sheathing to earth is more difficult to specify but in general it is stipulated that its resistance must not exceed one ohm. When it has this low resistance, the cut-out of the faulty main will act and so the sheathing and the metal in contact with it ceases to be dangerous. Where it is economically impracticable to obtain an earth having a resistance of not more than one ohm, earthing must be supplemented by an earth leakage 'trip-coil' so adjusted that it will operate at not more than 30 milliamperes. The resistance of an earth electrode depends very largely on the humidity and the character of the soil in which it is buried.

IN many cases when the supply is taken from overhead mains and there is no water supply, compliance with the I.E.E. regulations is very difficult and practically impossible. In this case the neutral main of a four-wire system of supply gives an easy method of getting an approximate earth potential over the whole of the supply area. Where there are no parasitic currents from tramways, this system has many advantages. This system is used in some parts of Australia and New Zealand. The Electricity Commissioners and the Postmaster-General have given their special consent to its use in certain districts in Great Britain. When this system is adopted, no fuse must be inserted in any conductor connected with the neutral main. This leads to a simplification and consequent cheapening of electrical installation work. In Australia, the State Electricity Commission of Victoria has recently altered its wiring regulations. The provision of an automatic circuit breaker is made compulsory in all new installations. In addition, breakers have to be installed in all existing installations at the expense of the supply authority. It will be interesting to see how this works in practice.

The Enforcement of the Rules of the Road

SUGGESTIONS made by Dr. H. C. Dickinson, the chairman of the Highway Research Board of the U.S.A., are the subject of a recent report issued by Science Service. Traffic experts to-day are aiming at simplifying the traffic rules and reducing their number so far as possible. Dr. Dickinson has reduced them to four. The first is to keep to your own lane of traffic with only two thoughts in mind, namely, to watch the car ahead and to warn the car behind you whenever you do anything which changes your movement in your own traffic lane. Secondly, to realize that you have no right to cross or turn into another traffic lane. Thirdly, to give a clear signal, or indicate by the motion of your car, whenever you change from your own traffic lane. Finally, never exceed a speed at which the car cannot be stopped without interfering with other traffic in the lane. When an accident causes personal injury or damage to a car—other than fenders or bumpers—it should be obligatory for both parties to attend the action in court. In personal injury cases, the permits of all the drivers involved should be suspended pending the hearing, and the permit of innocent drivers, if any, could

then be restored. Dr. Dickinson makes the novel suggestion that when an accident has nearly occurred and has only been prevented by the quick-wittedness of one of the actors, regulations should be used which would enable 'enforcing' officers to issue 'tickets' to drivers endangering other drivers or pedestrians. The charge he suggests is that of 'creating a public danger', and the penalty a small fine or dismissal on probation. Repeated offences could be dealt with more severely. The object of the proposal is to make it very unpleasant for anyone who puts another person in jeopardy even although no harm results.

Zoological Types in India

THE series of "Indian Zoological Memoirs" has been enriched by an excellent monograph, illustrated by 65 text figures, on "Palæmon, the Indian River Prawn", by Dr. S. S. Patwardhan (Pp. xi+100. (Lucknow: Lucknow Publishing House, 1937.) 2 rupees). These monographs are intended to assist in the teaching of zoology in India by the selection of a number of readily obtainable types, which can be worked out fully by students in their own time and perhaps at their homes. A single animal studied closely in respect to its anatomy with the consequent consideration of the function of all its parts is bound to be of great help. To this is added, in the judicious selection of types here, the possibility for the student to study his forms in Nature. The illustrations are good black and white drawings in close proximity to the descriptions of the parts, and there are directions for the necessary dissections. If we are to make any suggestions, we would plead for a greater consideration of function, and references might be inserted freely, so that interested students may be induced to examine their types in a more intelligent manner. For example, in this prawn a consideration of the mode of action of the mouth appendages may be deemed essential to the study of their anatomy—and we find no references to the considerable bulk of recent work on this matter. Form and function are inseparable, and both are essential to the study of the living animal. For a young student, the author assumes a little too much, the monograph being more useful to his teacher.

Institution of Professional Civil Servants

THE eighteenth annual report of the Council of the Institution of Professional Civil Servants covers the year 1936 and refers to a large increase in membership, which was 50 per cent greater than in 1935, when the figure of 10,000 was reached for the first time. One of the outstanding achievements of the year was the successful prosecution of salary claims on behalf of architectural and civil engineering and mechanical and electrical drawing office staffs. The satisfactory settlements which were reached are attributed largely to the extensive research of the Committee, which proved that such staffs were underpaid in comparison with similar employees outside. The report again emphasizes the importance of the National Whitley Council to members of the Institution. The

Council has also been concerned with the completion of the application of the recommendations of the Carpenter report to scientific establishments, and in his presidential address at the annual meeting on April 29, Sir Richard Redmayne emphasized the necessity for the upgrading of the highest professional and scientific posts in the Civil Service, which, so far as remuneration is concerned, compare most unfavourably with posts carrying a similar responsibility outside the Service. A sub-committee is considering appropriate salaries for those professional posts outside the scope of arbitration with the view of making representations to the authorities. The Association is also dealing with the salaries of architects, engineers and surveyors in the Civil Service. Sir Richard criticized the Treasury for refusing to allow the reference to arbitration of the Institution's claim that women scientific officers should receive the same scales of pay as their male colleagues in the same grade, and stated that the Chancellor of the Exchequer had been asked to receive a deputation on this question.

Fruit Supplies in 1936

THE Intelligence Branch of the Imperial Economic Committee has issued a volume dealing with fruit supplies during 1936 (H.M. Stationery Office, pp. 106. 2s. 6d. net or 2s. 9d. post free). 55 per cent of the total import of fruit was of Empire origin. So high a proportion has never before been reached. There are, however, some very potent lessons for the home producer. The present report gives the convincing information that each apple tree yielded an average of 12.7 lb. of fruit in 1935, and 68.3 lb. in 1936. The "untimely and unusually severe frost" in May of 1935 is mentioned as the main cause of that season's low yield. It cannot be emphasized too strongly that the effects of frost are now largely within the control of the grower. The pioneer work of Mr. George Harrington, the investigations into general principles by various scientific workers, and the practical experiments by the technical staff of Messrs. Geo. Monro, Ltd., have made the practice of orchard heating a practical proposition without heavy finance. Total imports of raw fruit into the United Kingdom remain fairly steady around an average of nearly 28,000,000 cwt., and apple imports are not very variable around a mean of about 6,500,000 cwt. Imports of grapes, peaches, lemons, pineapples and plums from Empire sources were higher in 1936 than ever before, and more bananas were imported by Great Britain than in any previous year. Supplies of fruit from South Africa reached a new record. Totals for most fruit imports were, however, lighter than in 1935.

The Ross Institute

A MEETING of the Industrial Advisory Committee of the Ross Institute, which is now incorporated with the London School of Hygiene and Tropical Medicine, was held on May 28, at which the activities of the Institute were surveyed. Useful discussions also ensued upon the housing of African labour, the

risk of malaria when replanting rubber, the Indore process of disposal of night soil and town refuse and courses of instruction for laymen proceeding to the tropics. Information was also given of an investigation by Dr. Crowden at the School of Hygiene of experiments on air-conditioned cubicles for use in the tropics.

Fast Atlantic Crossing by Air

THE Empire flying-boat *Cambria* crossed the Atlantic on September 28 in the fastest time ever recorded. The distance of 2,000 miles from Newfoundland to Foynes, near Limerick, was covered in 10 hr. 36 min., giving an average speed of 190 miles an hour. According to the account in *The Times* of September 29, Captain G. J. Powell made tests of speed at various altitudes. During the first part of the flight he remained at 4,000-5,000 ft. and made speeds of 172.6-185 m.p.h. Later he climbed to 7,000 ft. and attained a speed of 195 m.p.h. Bad weather then forced him to 13,000 ft. when his speed fell to 167 m.p.h. Eventually, he reduced the height to 10,000 ft., where the most favourable wind for the easterly part of the journey was found.

The Night Sky in October

SUMMER Time ends on October 3 at 2^h U.T. The moon is new on October 4 at 12.0^h and full (the Hunter's Moon) on October 19 at 21.8^h. Conjunctions between the moon and the planets occur as follows: Venus on October 2 at 4^h; Mercury on October 3 at 6^h; Mars on October 11 at 18^h; Jupiter on October 12 at 17^h and Saturn on October 18 at 8^h. On October 29 at 17^h, Mars and Jupiter are in conjunction; the two planets passing within 1½° of one another (heliocentric positions). On October 11 at 6^h, Venus is in conjunction with Neptune. On October 15, Uranus is near the sixth magnitude star α Arietis; the diameter of the planet is 3½". The satellites of Jupiter, which always offer an attractive field for observation, present a few special features this month. On October 5 at 2^h 24^m-27^m Satellite II will be partly eclipsed by Satellite I. On October 7 a similar eclipse of these two satellites takes place at 22^h 07^m-24^m, the magnitude of the eclipse being 0.4. On October 17, I is partially eclipsed by III at 3^h 27^m-36^m. Appulses between II and I occur on October 12^d 01.9^h and October 22^d 1.0^h, whilst a complete occultation of II by I will take place on October 25^d 17.9^m. On October 13, Jupiter will occult the seventh magnitude star *B.D.* -22° 5100 = *C.D.* 13939, the emersion being visible in Great Britain at 18^h 34^m at position angle 276° from the north point of the planet's image ("B.A.A. Handbook, 1937", p. 19). The light variation of Algol (β Persei) may be observed about 1½ hours before and after the following times: October 3^d 19.6^h; 18^d 03.7^h; 21^d 00.5^h and 23^d 21.3^h. The periodic comet, Eneke, which was re-discovered by Jeffers on September 3 at the Lick Observatory, passes from Triangulum to Andromeda during the month. The comet, which was of magnitude 18 at the time of discovery, is still very