in (*a*) the water, (*b*) associated with the plankton, and (*c*) in the deposits. Work is in progress in connexion with the factors which limit growth of bacteria in lake waters, and it is hoped that the results will serve as an introduction to a more specialized study of the nutrition of water bacteria. As Algæ are the primary producers of organic matter in a large body of water, their association with bacteria in life and during decay is of considerable importance; present work, which has demonstrated that bacteria living on dying cells of the diatom *Asterionella* are unable to grow on common solid laboratory media, indicates the technical difficulties involved in such studies. Preliminary studies on lake muds has shown that in large bodies of water such autotrophic processes as involve nitrogen and sulphur oxidation are confined largely to the immediate surface layer of the deposits. In the discussion following the paper several speakers emphasized the need for developing work on the bacteriology of water along these lines.

C. B. TAYLOR

PRACTICAL TRAINING OF ELECTRICAL ENGINEERS

THE practical training of the professional electrical engineer is the subject of a report published recently by the Institution of Electrical Engineers*. The report, which is the work of a joint committee comprising representatives of the Institution, the Radio Industry Council and the British Electrical and Allied Manufacturers' Association, makes specific recommendations as to the character and duration of an ordered scheme of practical training, and reviews in some detail various considerations underlying its recommendations.

Where the young engineer has obtained his academic qualification by a full-time university course, the practical training should occupy two years and be termed a 'graduate apprenticeship'. Where, on the other hand, part-time technical education of appropriate standard is being pursued during the industrial apprenticeship, the duration of the practical training should be four years. This is termed a 'student apprenticeship'. Subdivision of the training period is made under three headings: basic mechanical training; basic electrical training; and office training. The first period, occupying roughly half the total time, deals with general manufacturing methods and workshop processes. It is in the second period that attention is directed towards the more specifically electrical aspects of the manufacture of particular types of electrical machinery or apparatus. The title "Office Training" is used to cover the acquisition of experience in the drawing office, planning and progress departments.

During the student apprenticeship it is assumed that the apprentice will be released from work on one day a week to attend a technical college course leading normally to a Higher National Certificate.

Stress is laid upon the value of the personal contacts which the apprentice makes with all classes of industrial personnel during his training period. It is largely through these contacts that he develops his sense of personal responsibility and his appreciation of the great importance of human relationships in industry. In the same connexion, mention is made of the merits of apprentice associations and similar bodies.

While the general plan developed in this report is based upon conditions obtaining in a relatively large manufacturing organisation, the special considerations affecting smaller firms and those specific to the operating side of the industry have also been given detailed attention. It is laid down as axiomatic that practical acquaintance with the basic processes employed in manufacture is needed by every engineer. For organisations such as electricity supply undertakings or telecommunication services, provision is therefore made for a considerable period of 'secondment' of the apprentice to a manufacturing organisation.

Quite apart from its specific recommendations, the report embodies a most careful analysis and appraisal of the duties and functions of the professional engineer and of the purposes towards which the various departments of his practical training should be directed. The report does not make specific reference to the important and difficult question of how best to integrate the military service requirement into the training period. It should be mentioned, however, that provision has been made by the Ministry of Labour and National Service for deferment to cover the whole of a five-year period of technical education and practical training. The details of this provision, which are set out in a leaflet, N.L.11, issued by the Ministry, are restated in the June issue of the *Journal of the Institution of Electrical Engineers* and are the subject of a further comment in the September issue of the *Journal*.

* The Practical Training of Professional Electrical Engineers. Report of a Committee appointed by the Council of the British Electrical and Allied Manufacturers' Association, the Radio Industry Council, and the Council of the Institution of Electrical Engineers. Pp. 42. (London: Inst. Elect. Eng., 1947.) 1*s*.

FORTHCOMING EVENTS

Monday, October 27

INSTITUTION OF ELECTRICAL ENGINEERS (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Discussion on "Standardization in the Electrical Industry" (to be opened by the President, Mr. P. Good).

INSTITUTION OF THE RUBBER INDUSTRY, MANCHESTER SECTION (at the Engineers' Club, Albert Square, Manchester), at 6.15 p.m.—Mr. B. Gordon Darnton: "Incidentals in Latex Treatment".

Tuesday, October 28

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 5.15 p.m.—Sir Edward Salisbury, F.R.S.: "The Vegetation of the Chalk", 1. "The Characteristics of the Chalk Habitat and the Chemical and Physical Factors of the Environment".

SHEFFIELD METALLURGICAL ASSOCIATION (at 198 West Street, Sheffield), at 7 p.m.—Mr. R. B. Heywood: "Photoelasticity Applied to Design Problems".

SOCIETY OF INSTRUMENT TECHNOLOGY (at the Royal Society of Tropical Medicine and Hygiene, Manson House, 26 Portland Place, London, W.1), at 7 p.m.—Mr. J. O. V. Vick, Mr. C. Lamond and Mr. W. Lindsay: "The Organisation of an Instrument Department in an Industrial Works".

Wednesday, October 29

INSTITUTE OF WELDING (at the Institution of Civil Engineers, Great George Street, London, S.W.1), at 6 p.m.—Mr. J. L. Adam: Presidential Address.

SOCIETY OF CHEMICAL INDUSTRY, NUTRITION PANEL OF THE FOOD GROUP (at the Chemical Society, Burlington House, Piccadilly, London, W.1), at 6.30 p.m.—Prof. A. Haddow and Dr. L. A. Elson: "Food and Cancer".

ROYAL INSTITUTE OF CHEMISTRY, LONDON AND SOUTH-EASTERN COUNTIES SECTION (at Woolwich Polytechnic, Woolwich, London, S.E.18), at 7 p.m.—Mr. J. G. N. Gaskin: "The Examination of Questioned Documents".

Thursday, October 30

LINNEAN SOCIETY OF LONDON (at Burlington House, Piccadilly, London, W.1), at 5 p.m.—Rev. Prof. C. E. Raven: "Early Records of British Plants with special reference to Thomas Lawson (1630–91)"; Dr. W. S. Bristowe: "Notes on the Habits and Prey of Twenty Species of British Hunting Wasps".