

possessed of a genuine passion to see life as a whole and no less genuine faith that in the study of the "works of creation" they were enlarging man's knowledge of the wisdom of God. They pursued a synthetic philosophy, and the progress they made in the half-century of their greatness was large in extent and true in direction. Though they accepted data which we with nearly three centuries of further study rightly reject, it was their catholicity of outlook, and their willingness to prove all things, that made possible the speed and range of their achievements. If they had been less hospitable to old or new, if they had refused fresh notions through subservience to the past or renounced authority recklessly and in revolt, they would neither have laid the foundations for scientific inquiry nor effected so large and permanent a revolution. Canon Raven believes that it is arguable that there has never been so fine an attempt to formulate a synthetic philosophy as that which the Cambridge Platonists projected and Culverwel succeeded in expressing. Like the best of the medievals, they saw the world as emblematic or sacramental: like the best of the moderns, they strove to see it objectively and accurately.

### Hospital Staffs and Working Conditions

THE urgency of the recent appeal for more nurses, midwives and domestic hospital workers is clearly set forth in the Government booklet "Staffing the Hospitals, an Urgent National Need" (H.M. Stationery Office, 1945. 3d. net). This booklet gives details of the unanimous agreement reached between the Government and the various hospital organisations. The Minister of Health, the Secretary for Scotland and the Minister of Labour and National Service say that "the situation is serious already. It is likely soon to become critical unless thousands of new recruits can be obtained quickly." The Government and the hospital authorities have agreed upon salary increases, improved working conditions and prospects, the formation of a national reserve of nurses, much-needed reforms such as the employment of married and part-time nurses and permission to live out of hospital, the training of more male nurses and the formation of a grade of 'ward orderlies' to assist the nurses. A National Joint Council for England and Wales has been formed to regulate the terms and conditions of service of hospital domestic workers. Further details of the proposed reforms are given in a memorandum issued with the booklet just mentioned. Certainly reform of the lot of the hospital worker has been, as every medical man will testify, overdue for many years. Without it we can scarcely hope to obtain enough workers to operate any national health scheme.

### Generation and Regulation of Electric Power in Aircraft

A PAPER by I. O. Hookmeyer (*J. Inst. Elec. Eng.*, 93, Pt. 1, No. 31, February 1946) records the development of the generation of D.C. power in aircraft by windmill- and engine-driven generators, from its inception to the present day. Features of generator design which have called for special consideration, or have been the subject of failure, are discussed. Sections are devoted to the choice of speed range, brush wear at high altitude, systems of ventilation, design of end-frames, and bearing failure. Some mention is made of generators designed for power supply to radio equipment, as distinct

from general power services. These generators, which include high-voltage D.C. machines and high-frequency A.C. machines, have been combined with low-voltage D.C. machines, both in tandem and with a common magnet system.

The latter part of the paper deals with voltage regulation in so far as generator design is influenced by the system adopted; self-regulating generators of various types have been used from time to time in the past. Brief mention is made of the design of the several types of regulator which have been used, including Tirrill and carbon-pile types. The paper shows how the control of the system voltage had been conditioned by the inclusion of an accumulator, and how it has not been possible to devise a system which gives the constant line voltage required for current-using devices, and, at the same time, permit of adequate control of accumulator-charging current. Systems of paralleling, and their effect on line voltage, are also described.

### Small Two-phase Induction Motor

A SPECIALLY small motor, developed in the Admiralty Compass Department for use in applying torques for controlling the precession of the gyros of the Admiralty Gyro Transmission Unit Mk. II, has now been described. The motor is totally enclosed and has an aluminium alloy shell and end shield. The rotor is mounted in ball bearings and the weight of the complete motor is 5½ oz. It is suitable for use in tropical countries. The stator core consists of radiometal laminations 0.010 in. thick. The stator windings are of the double-layer concentrated type, the individual coils being preformed and inserted in the 12-slot core to form a 2-phase 6-pole system. The squirrel-cage rotor is formed by copper strips secured in narrow slots in the laminations; the twenty-one slots are skewed by one slot pitch to eliminate cogging. The shaft is of stainless steel. The deep narrow rotor bars and open-ended slots assist in providing a relatively flat speed-torque characteristic, since at high slip frequencies the current in the bars is concentrated towards the outer edge giving effectively greater rotor resistance at low rotor speeds. As a torque motor, the machine was required to operate on 333 c./s. and works continuously under standstill conditions, with a temperature rise at 20 volts/phase of about 30° C. As a follow-up motor, at a frequency of 400 c./s., one phase is constantly energized, while the second phase is supplied from the output of a valve amplifier in proportion to the misalignment of following. Under these conditions a fixed phase voltage of 30 volts gives a temperature rise of about 30° C. in normal operation.

### General Purpose Source-unit for Spectrographic Analysis

FOUR main types of light source are used for the spectrographic analysis of metals and alloys. They are the low-voltage D.C. arc, the high-voltage A.C. arc, the condensed spark either controlled or uncontrolled, and the low-voltage discharge initiated by a low-energy, high-voltage spark. Since they require only simple and inexpensive equipment, the D.C. arc and the uncontrolled condensed spark are generally used in Britain, the arc for work of high sensitivity but not high accuracy because of its instability, the spark for accurate analysis. For the accuracy and wide field of application required by present-day

analysis it is necessary to have available not only the arc and the condensed spark but also the wide range of excitation conditions intermediate between them. A. Walsh (*Bull. Brit. Non-Ferrous Metals Res. Assoc.*, No. 201, 60, March 1946) has constructed such a source unit, which provides a simple condensed spark, a low-voltage D.C. arc, and, by using a triggered low-voltage discharge, a whole series of intermediate excitation conditions. The circuit, described fully in the paper, is similar in principle to that of Hasler and Dietert (*J. Opt. Soc. Amer.*, 33, 218; 1944) but totally different in detail, particularly in regard to the method of triggering and the electrical constants of the discharge circuits. The results of some experiments performed with the new source unit on aluminium-base, zinc-base and lead-base alloys are given in tabular form. These indicate that a high degree of reproducibility is obtainable with the new type of source and that the accuracy is higher than is possible with a simple condensed-spark unit.

#### 116 A White Blackberry

W. A. MURRELL (*J. Hered.*, 36, 21; 1945) has found that the white sand-blackberry is recessive to the normal colour. It is fruitful and may under cultural conditions be improved in flavour and size; it has the advantage that it does not stain the hands and teeth. It has been found to be self-incompatible, and at present will only set when crossed with the normal sand-blackberry.

#### 116 Embryos from Unborn Mothers

W. L. RUSSELL and P. M. DOUGLASS (*Proc. Nat. Acad. Sci.*, 31, 402; 1945) have been able to transplant mouse ovaries from embryos *in utero* to females 4 days old. After mating these host females, normal offspring were obtained from the transplanted ovaries. This fact will prove useful in various investigations.

#### Wellcome Veterinary Research Fellowship: Mr. J. B. Polding

MR. J. B. POLDING has been awarded a Wellcome veterinary research fellowship by the Veterinary Educational Trust, to undertake work upon the metabolism of *Brucella abortus*, the causal organism of bovine contagious abortion. Mr. Polding, who has previously carried out investigations in Malta and in India on undulant fever in man and on bovine abortion, will work in the Biochemistry Laboratories at Oxford under the supervision of Prof. R. A. Peters and Dr. D. D. Woods. The award of this fellowship brings the total of research awards made by the Trust to nine. The problems being investigated include a study of structure and function in domestic animals, worm infestations of equines, staphylococcal infections of animals, blowfly problems of the sheep, contagious bovine abortion, resistance of animals to parasitic infestation, and equine infertility. It is hoped shortly to make a further appointment for work upon animal nutrition.

#### Conference on Fuel

THE Fuel Efficiency Committee of the Ministry of Fuel and Power, under the chairmanship of Dr. E. S. Grumell, has arranged a conference on "Fuel and the Future" to take place in London during October 8-10. During the intervening months, a campaign to promote fuel efficiency and fuel economy is being

undertaken by the Ministry through various agencies, and the Conference is intended to focus attention on development during the next five to seven years, and on the fuel savings that can be made, in industry, non-industrial premises and homes, with the aid of the new equipment now becoming more readily available. Most of the sessions will be held at the Central Hall, Westminster. The opening session on October 8 will be addressed by the Minister of Fuel and Power and by the Minister of Health. Afterwards the Conference will meet in eight separate sections, six of which will be concerned each with one group of industries having related fuel problems, one with the problems of architects in connexion with new housing, and one with women's views on domestic heating. On the morning of October 10, there will be general discussions on the "Sizing and Grading of Coal" and "District Heating", while in the afternoon the Minister of Fuel and Power will take the chair at the closing session, when the sectional chairmen will survey the proceedings of their Sections. Particulars of the meeting can be obtained from the Ministry of Fuel and Power, Fuel Efficiency Directorate, Queen Anne's Chambers, Tothill Street, London, S.W.1, or to any Regional Office of the Ministry of Fuel and Power. The Institute of Fuel is co-operating in the Conference and has accordingly arranged for the Melchett Lecture to be given on October 8; the annual reception, dinner and dance of the Institute are to be held on October 9.

#### Indian Plywood Tea Chests

IN the published results of research work, clarity and brevity should be among the objectives aimed at if the work is to be appreciated by the non-expert. More especially is this the case where the results of the research are to be useful in industries and so forth. In the article entitled "Indian Plywood for Tea Chests" published in *Nature* of December 1, 1945, certain types of plywood tea chests are referred to. In *Indian Forest Records*, vol. 3, No. 4, dealing with this subject, in the summary, nine different types of tea chests are said to have been subjected to systematic scientific tests. In the text itself they are quoted in a table under the heading "Type of Box" as 'O, 14-14-14': 'S, 14-14-14' and so forth. In the summary it is said, "The 'O, 14-14-14' and 'S, 14-14-14' types of plywood tea chests are found to be stronger . . ." The writer of the article in *Nature* took this to mean 14 in. x 14 in. x 14 in. in size; since, in the pamphlet, both the 'O, 14-14-14' and the 19 in. x 19 in. x 24 in. are referred to as "plywood tea chests". Apparently the figures given under "type of box" (namely, O, 14-14-14) refer to the thickness of individual plies in parts of an inch, and not to the size of the chests in inches. It is a pity that this was not made clear in the pamphlet.

#### Announcements

THE seventy-fifth anniversary of the foundation of the Observatory of Cordoba is being celebrated by a joint meeting arranged by the Observatory and the Argentine Physical Society to be held during September 20-23, 1946.

WE have been asked to state that the closing date for applications for appointments at the Indian Institute of Science, Bangalore (advertised in *Nature* of July 6, p. iii), has been extended to August 6.