

### Statistics of the Universities of Great Britain.

TO the Returns\* from Universities and University Colleges for the academic year 1929-30 the University Grants Committee prefixes an introductory note which serves to bring up to date the quinquennial review issued by the Committee last year and commented on at some length in NATURE of Aug. 2, 1930.

The total number of full-time students, of both sexes, which increased by 7 per cent in the preceding five years, shows a further increase (to 45,603) of nearly 3 per cent; whilst the proportion of women students, which declined during those years from 31.4 to 29.1 per cent, shows a further drop to 28.3 per cent. The regional distribution of the increment registered in 1929-30 was: England 914 (879 men), Wales 96 (108 men), Scotland 245 (251 men). It is pointed out in the Committee's note that the figures for 1929-30 are swollen by the admission of 232 students to two-year courses of training as teachers at university colleges, at the special request of the Board of Education, in view of the projected raising of the school age.

London has increased its lead as the university having the greatest number of full-time students (9141). The next twelve in order, Cambridge, Glasgow, Oxford, Edinburgh, Wales, Manchester, Liverpool, Durham, Leeds, Birmingham, Aberdeen, Bristol, show no change in their relative positions in this respect. All universities except Aberdeen and Reading show some increase.

The number of full-time students from homes outside the British Isles was 4573, being 10 per cent of the total and 4 per cent more than in the preceding year. More than one-third of these are from foreign countries, and the number of such foreign students tends to increase somewhat rapidly. It increased by 26 per cent in the five years 1923-29, and by 9 per cent from 1928-29 to 1929-30. The corresponding increases in the numbers of students from countries in the British Empire beyond the British Isles were 14 per cent in the five years 1923-29 and only 1.3 per cent in the following year. Why the pull of the home universities is waning in these countries while waxing in foreign countries is a question on which light could perhaps be thrown by the delegates who are to meet at Edinburgh in July in the fourth Congress of the Universities of the Empire. The universities which have the largest numbers of students from countries within the Empire outside the British Isles are London (1060), Edinburgh (456), Cambridge (352), Oxford (296), Glasgow (177), and Manchester (79). In addition to full-time students, there were 653 part-time students whose homes were outside the British

Isles but within the Empire, and 852 foreign part-time students.

The distribution of the full-time students among the various subject groups in 1929-30 was: arts, 53.4 per cent; medicine, 19.1; pure science, 16.5; technology, 9.1; agriculture, 1.9. This shows but little variation from the preceding year's distribution. The decline in the number of men medical students, which had been continuous since 1923-24, was arrested in 1928-29, when there was an increase of 205, which was followed by a further increase in 1929-30 of 310. The similar decline in the number of women medical students continued down to 1929-30, when there was a small increase, from 1108 to 1136.

Full-time advanced students numbered 2128, of whom 1763 were men, an increase of 46 (men 55). The greater number of these students were at work at Cambridge (355), University College, London (228), Imperial College of Science, London (227), King's College, London (123), London School of Economics (121), Oxford (172), and Edinburgh (133). Their distribution among the various subject groups was as follows: mathematics and pure science, 42.4 per cent; arts, 39.2 per cent (35 per cent of the men and 58 per cent of the women); technology, 11.5 per cent; medicine, 4.7 per cent; agriculture, 2.2 per cent. Chemistry, including applied chemistry and biochemistry, claimed 487 students, engineering 216, physics 140, botany 87. In addition to these full-time students, 1683 part-time students (1351 men and 332 women) were engaged in advanced work.

A table showing the numbers of full-time staffs employed in the teaching departments gives the following totals: professors, 798; readers, assistant professors, and independent lecturers, 334; lecturers, 1147; assistant lecturers and demonstrators, 827; and others, 243. The number of lecturers is somewhat understated owing to the Oxford and Cambridge returns excluding lecturers holding no full-time university appointment, many of whom actually devote their whole time to teaching. Omitting Oxford and Cambridge, the table shows that for the instruction of every hundred full-time students there were available, on an average, the following full-time teachers: professors, 2; readers, etc., 0.9; lecturers, 3.3; assistant lecturers and demonstrators, 2.1; and other teachers, 0.7—total, 9. Taking England alone, exclusive of Oxford and Cambridge, the ratio of full-time teaching staff to full-time students was 10.8 per cent; in London alone it was 9, in Wales 11, and in Scotland 5.7.

Statements of income and expenditure show totals of £5,338,064 and £5,280,530 respectively. Commenting on these accounts, the Committee observes that of the fifty-two institutions included in the returns, only two or three show deficits representing any serious financial weakness.

\* University Grants Committee. Returns from Universities and University Colleges in receipt of Treasury Grant, Academic Year 1929-1930. Pp. 22. (London: H.M. Stationery Office, 1931.) 1s. 3d. net.

### Second International Congress of the History of Science and Technology.

MEN of science from all parts of the world who are interested in the history and evolution of their subjects will be meeting at the Second International Congress of the History of Science and Technology to be held in London on June 29-July 4 under the presidency of Dr. Charles Singer. The Congress is held under the auspices of the Comité International d'Histoire des Sciences, with the collaboration of the Comité International des Sciences Historiques, the

Newcomen Society for the Study of the History of Engineering and Technology and the History of Science Society. Inquiries concerning membership and meetings of the Congress should be addressed to one of the honorary secretaries, Mr. H. W. Dickinson, or Mr. Walter Adams, The Science Museum, South Kensington.

The Government is showing great interest in the Congress. The President of the Board of Education,

the Right Hon. H. B. Lees-Smith, will open the proceedings at the inaugural meeting on Monday, June 29; the Director of the Science Museum, Sir Henry Lyons, has generously invited the Congress to make the Science Museum its headquarters throughout the week; and other Government departments, such as the Royal Botanic Gardens, Kew, the Royal Observatory, Greenwich, and the Natural History Museum, have offered hospitality to members of the Congress.

Three vexed problems in scientific method will occupy the attention of members at the morning sessions on Tuesday, June 30, Thursday, July 2, and Friday, July 3. The first discussion will have as its general theme, "The Sciences as an Integral Part of General Historical Study". Prof. Gino Loria, of Genoa, will take the chair at this meeting. Mr. G. N. Clark, of Oxford, late editor of the *English Historical Review*, will open the discussion. Among those who will take part are Profs. A. V. Hill and A. E. Heath and Dr. Dampier-Whetham. On the same morning a discussion will be held on the teaching of the history of science. Prof. Welch, of Johns Hopkins University, will take the chair, and contributions have been promised from Profs. Loria, Wolf, and Aldo Miel, of Paris.

The discussion on July 2 will be on the "Historical and Contemporary Inter-relationship of the Physical and Biological Sciences". Prof. William Ritter, of California, will take the chair, and opening papers have been promised by Prof. J. S. Haldane, of Oxford, and Prof. W. H. Welch, of Johns Hopkins. Prof. Baas-Becking, of Leyden, Dr. Joseph Needham, and Prof. Lancelot Hogben will be among the speakers. The final discussion (July 3) will be upon the "Interdependence of Pure and Applied Science". Sir Henry Lyons will occupy the chair, and contributions are promised from Sir Napier Shaw, Profs. F. G. Donnan and C. H. Desch, Mr. R. V. Vernon, of the Colonial Office, and others.

The United States will be well represented by delegates from the following institutions, among others: Columbia University; Brown University, Providence; Yale University; Rochester University; Bryn Mawr College; Colorado University; Clark

University, Worcester; Smith College, Northampton; Georgetown University; Boston University; Dartmouth College, Hanover; Michigan University; University of California; Bates College, Lewiston; Pomona College, Claremont; Duke University, Durham; University of Cincinnati; State University of New Jersey; New York University; Massachusetts Institute of Technology; Goucher College, Baltimore; Utah State Agricultural College; University of Minnesota; Haverford College; Ohio State University; Mount Holyoke College; The Harvard Railway and Locomotive Historical Society.

Of other universities outside the British Isles, representatives have been appointed from Alberta, the Muslim University of Aligarh, Allahabad, Basel, Berlin, Bombay, the Université libre of Brussels, Calcutta, Cape Town, Dacca, Guatemala, Hamburg, Hong Kong, Leyden, Lucknow, Università Cattolica of Milan, Montevideo, Madras, New Zealand, Nova Scotia, Oslo, Punjab, Rangoon, Stellenbosch, Toronto, Tasmania, and a number of others. Among other institutions that will be represented are the Gesellschaft für die Geschichte der Naturwissenschaften of Berlin, the Institut für Geschichte der Medizin und Naturwissenschaften of Leipzig, and the Kulturwissenschaftliche Bibliothek Warburg of Hamburg. The Academy of Material Culture of Leningrad expects to send three representatives.

A full programme has been arranged for the social entertainment of members and guests. Receptions are to be given by the Royal Society, the Royal Society of Medicine, the Royal Institution, and the Institute of Historical Research. Special excursions are to be made to the Universities of Oxford and Cambridge, which have offered hospitality to members of the Congress. The Provost of University College, London, will entertain members at an Independence Day luncheon on July 4. Special visits will be made to the Royal Botanic Gardens, Kew; the Royal Observatory, Greenwich; Barbers' Hall; and the Royal College of Physicians.

A Ladies Committee, under the chairmanship of Mrs. T. F. Tout, is arranging a programme of visits for ladies at the Congress who will not be attending the morning sessions.

### Water Power Developments in the United States.

RETURNS which have recently been issued by the Geological Survey of the United States Department of the Interior (*Report No. 50,669*) afford some interesting particulars of recent developments in the utilisation of the water power resources of the country. Up to Jan. 1, 1931, the total capacity of water-wheels installed in water power plants of 100 horse power or more was nearly fifteen million (14,884,667) horse power, representing an increase of more than a million (1,076,889) horse power, or 7.2 per cent, during the year 1930. In an article in *NATURE* for April 18, the corresponding figures for Canada were shown to be 6,125,000 horse power and 397,850 horse power. An estimate based on present practice in the installation of plant for the utilisation of water power indicates that about nineteen per cent of the available resources in the United States have been exploited, as compared with about fourteen per cent in Canada.

This estimate, however, as also that in the case of Canada, though taking into account the results of the latest surveys and investigations, cannot be regarded as final. In a number of the States, more particularly those in the south and centre, additional information is required before a definitely reliable figure can be

arrived at. A moiety of the available power of the Niagara River and of the international section of the St. Lawrence River is included, though it is pointed out that an international agreement will be necessary in order to permit of the full development of these supplies.

Washington comes first among the individual States in extent of potential supplies, and is followed fairly closely by California, Oregon, and New York. A large proportion of the potential resources of the last-named State is available continuously, as distinguished from the bulk of the supplies elsewhere, which are of an intermittent character. This is due to the equalisation of the flow of the Niagara and St. Lawrence Rivers. The same remark applies to the States of Arizona and Nevada, where the resources are mainly on the Colorado River, the flow of which can be controlled.

The 14,884,667 horse power realised to date in the whole of the Union is the product of 3344 individual installations, of which nearly one half (1588), with a capacity of 13,108,830 horse power, are public utility and municipal undertakings, the remainder being devoted to manufacturing and miscellaneous purposes.