

The Scottish Universities

By SIR JOHN GRAHAM KERR

OF the seven universities which existed in Great Britain before the middle of the last century, no less than four were situated in Scotland. Moreover, the Scottish Universities have been, to a much greater extent, universities of the common people than those of England. The ambition in humble and remote households to send a son to the university was far more usual in Scotland than in England, and it was because of this that the Scottish Universities tended to develop along lines somewhat different from those followed by Oxford and Cambridge. They have been above everything else teaching institutions. The ambitions of their professors have lain in the direction of developing the technique of teaching rather than in that of developing great centres of scholarship and research.

It must not be inferred from this that the Scottish Universities have made only negligible contributions to the sum of human knowledge and achievement. Very much to the contrary! To take, for example, the University of Glasgow, we find the last century and a half of its history marked by a galaxy of brilliant discoveries. The discovery of carbon dioxide, as a component of the atmosphere, was made by Joseph Black, Professor of Chemistry, who anticipated Lavoisier in the discovery (1754) that atmospheric air was not a simple substance. Latent heat and specific heat, two fundamental doctrines of physical science, were also first formulated (1761) by Black. A little later (1765) there emanated from the University work-shop an advance in the application of physical science which meant more for the progress of mankind than almost any other, when James Watt—mathematical instrument maker to the University—made the steam engine economically practicable, and thereby laid the foundations of modern

industry as well as of the steam-navigation. A little later Adam Smith, Professor of Moral Philosophy, published "The Wealth of Nations"—fundamental in the development of the science of Economics.

Then in the middle years of the nineteenth century, came Lord Kelvin, Professor of Natural Philosophy, with his formulation of the laws of Thermodynamics and his many inventions relating to electricity and its use in submarine telegraphy, and to navigation—such as his compass and sounding apparatus, his tide gauge and predictor, and his improvements in methods of determination of position at sea. He played the main part in organizing the international system of electrical standards, while from his laboratory in Scotland there flowed a continuous stream of contributions to physical science which gave inspiration to workers all over the world.

Finally, to take a different department of science, it was the Professor of Surgery—Joseph Lister—who in 1867 carried out in the wards of the Glasgow Royal Infirmary those investigations on hospital gangrene and on the antiseptic method to prevent it upon which the whole edifice of modern surgery is built.

Of the four Scottish Universities, three—St. Andrews (1411), Glasgow (1453) and Aberdeen (1494), were Papal foundations, whereas the fourth, Edinburgh (1582) originated as the "College of Edinburgh" founded by the Town Council under general powers granted by Royal Charter from King James VI of Scotland.

Each of the four Scottish Universities is housed in an imposing series of buildings which have undergone great extensions of recent years—more especially as regards laboratories for the scientific departments, and hostels or halls of residence for students. The latter have reached their highest development in the case of St. Andrews University, where they accommodate a larger proportion of the students than elsewhere. In all

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the universities, however, with the exception of Aberdeen, there is an increasing tendency to replace the old Scottish system, in which students away from their own homes lived an independent life in private lodgings, by a modern system of officially recognized hostels.

The evolution of the modern university has, in Scotland, as elsewhere, entailed enormously increased expenditure. In part this is due to the great expansion of the teaching staff, to meet the needs of increased specialization, and to secure more intimate tutorial instruction in smaller classes; but to a greater extent this is due to increased recognition of the importance of the scientific subjects, with their expensive equipment and methods of practical instruction. For expenditure on the necessary scale the endowments of earlier days have been quite inadequate, and they have had to be supplemented by large grants from the British Government. In the last pre-war days, 1938, these amounted to £384,796—or slightly over 39% of the total income of the four universities.

An important fraction of the university income consists of the fees paid by students, amounting in the last pre-war years to 29% of the whole income. As these fees have to be relatively large, and the Scottish student is often unable to afford them, many pious benefactors have provided funds to enable the impecunious student to meet his liabilities with bursaries and scholarships, awarded usually on examination results.

About the beginning of the present century, the Carnegie Trust for the Universities of Scotland came into operation to administer the interest of a fund of some two million pounds sterling bequeathed by Mr. Andrew Carnegie, a Scottish millionaire and philanthropist. The income from this fund was to be divided equally—one part was to be devoted to help pay students' class fees, and the other to be employed in making grants to the individual universities for various purposes.

Grants under this second heading have proved of incalculable benefit to the Scottish Universities. They have made important contributions towards the cost

of new university buildings and equipment. Research also has been greatly aided by the institution of an elaborate system of scholarships and fellowships, in Science (including Medicine), History, Economics, and Modern Languages and Literature, which have been the means of introducing a large number of Scottish students into the field of original research.

The Scottish Universities cherish particularly their relative freedom from state interference. Their teachers are free to teach as they like. The dismissal of a professor on the ground that his teaching is objectionable to authority is so difficult as to be practically impossible.

In conclusion it should be mentioned that the activities of the Scottish Universities are strongly reinforced by more or less independent institutions grouped around them. Among these are the great voluntary hospitals, which provide the clinical facilities necessary for training in medicine. In Edinburgh, in particular, the Royal Infirmary provides an essential component of the Medical School, famous for its modern contributions to the advancement of medicine, surgery, and obstetrics, from the days when Simpson, its Professor of Midwifery, in 1847, was the first man to use chloroform. In Glasgow, too, the Medical School is ministered to by a group of great hospitals, in one of which the antiseptic methods of modern surgery were born.

Education in relation to industry is provided for by well-equipped Technical Colleges in Glasgow, Edinburgh and Aberdeen, while in the neighbourhood of the last-mentioned city is the important Rowett Institute for research in animal nutrition.

The Scottish Universities form a group of active virile institutions in which their country takes pride. They provide admirable training for the various professions: and, especially in the case of medicine and other branches of applied science, they attract students from all parts of the world.

In the last pre-war academic year (1938-39) 10,889 students attended courses at the four Scottish Universities.