

## HIGHER EDUCATION IN PHYSICS

**D**URING the past few years a spate of reports and letters bemoaning the difficulties of academic scientists has reached the journals and the newspaper Press. Although many different views have been expressed, their sheer number shows that there are urgent problems which must be tackled. Two years ago the Institute of Physics and the Physical Society established a committee, under the chairmanship of Prof. R. V. Jones, to study problems facing university physics departments, especially those affecting their growth. This committee submitted some striking evidence to the Robbins Committee on Higher Education in 1962 (see *Nature*, 193, 922; 1962) and has now completed its work.

The final report\* deals with a wide range of problems, and the conclusions are well supported by detailed arguments based on data drawn from many sources, including a special enquiry among all university physics departments. Although some of the problems are specific to physics, this report should be closely studied by all scientists and those responsible for the administration of scientific work.

Certain conclusions are clearly of the greatest importance. For example, the physicists are unanimous in their view that there must be active research work, both pure and applied, within all university physics departments, "in order (a) to attract physicists of calibre adequate to carry out teaching, and (b) to transfuse this teaching with the inspiration of the living and exciting subject that physics is". University research is seriously hampered to-day by lack of skilled technical help and, frequently, by lack of funds for equipment and travel. If the expansion of student numbers, which the Government desires, is to be achieved, then this report makes a convincing case for increased support for research.

At the present time a great deal of basic physics research in Britain, both pure and applied, is carried on in Government research laboratories. Unfortunately, very little of this, often excellent, work benefits either undergraduate or postgraduate education. This is not the case in the United States, where, during the Second World War, the Administration farmed out to research teams in universities problems that would have been tackled by Government establishments in Britain. This difference in approach has had a lasting effect in both countries, but it is now urgent that some way should be found for gradually changing the pattern of Government spending on research in Britain. A larger fraction than at present must be directed to the support of university research.

If the universities are active centres for research and if the research workers can obtain reasonable financial support for projects, which are blessed by their fellow scientists, then it should be possible to recruit the teaching staffs required to implement the Government's target of 150,000 full-time students in universities by 1966-67. To achieve this total, up to 40 per cent of the Ph.D. output must be attracted to the profession of university teacher. As already argued, this requires adequate funds for research, much more technical help than at present and undoubtedly some improvement in the present salary structure.

\* *Problems Facing University Physics Departments*. Pp. 26. (London: The Institute of Physics and the Physical Society, 1963.)

Despite the 1963 revision of the quinquennial grant (1962-67), it is clear that the University Grants Committee has failed to persuade the Treasury to give the universities an adequate growth-rate for the annual grants. For example, during the 1957-62 quinquennium student numbers increased by 4.5 per cent per annum. This growth was achieved with financial grants increasing at 12 per cent per annum, and there is evidence that standards, such as the staff/student ratio, have declined slightly. The Government plan for the present quinquennium calls for a student growth of 6.2 per cent per annum, but the financial grant grows only at 11 per cent per annum. To quote the report again: "if the final numbers are achieved, it will only be at the expense of the staff/student ratio and basic support for research". This must not be allowed to happen. Britain needs to increase opportunities for higher education, but all concerned must be prepared to pay the proper price.

The Office of the Minister for Science should give close attention to this report, and it is to be hoped that the Government will take urgent measures to improve the situation. The long-awaited reports of the Robbins Committee and the Trend Committee on the organization of civil science ought to deal effectively with many of the more serious problems raised by the physicists.

## BEARING OF MODERN RESEARCH ON EVOLUTION

## Evolution

*The Modern Synthesis*. By Sir Julian Huxley. Second edition with a New Introduction. Pp. li + 652. (London: George Allen and Unwin, Ltd., 1963.) 42s. net.

**A** CLASSIC is defined as a work that defies the passage of time and preserves its intrinsic value and interest, even when the conditions under which it was conceived are no longer the same as those in which it continues to be appreciated. This is the secret underlying the work of Leonardo, Shakespeare, or Brahms, and it means that although a classic may be dated it is not out-dated. In the humanities, works of art are created by human genius and remain as they were although standards of criticism applied to them improve. In the natural sciences, however, although an outstanding analysis or synthesis may be likened to a work of art, it is immersed in a constantly moving stream of progress represented by advances in knowledge in every direction. The great experiments devised and performed by pioneers in science, the discoveries resulting from them and, to some extent, the publications in which they were described, remain to be admired for all time, although possibly now read more often by historians of science than by practising scientists; but text-books or attempts to provide round-ups of the state of science at any given time for the benefit of students wither into obsolescence and fall into disservice at increasing rates as the *tempo* of successful scientific advance increases.

A special position is occupied by Darwin's *Origin of Species*, sometimes regarded as a fine monument of Victorian achievement that some scientists, in the enthusiasm of their pursuit of new lines of research, would be prepared to leave to the historians. This would be a pity, because that extraordinary book, for all the pro-