with the population of these courses in 1964 but was nevertheless much less than the estimated optimum capacity of all the courses which amounted to 260 or thereabouts. Indeed, the working group has estimated that the same courses could have accommodated roughly 400 people in 1965 if they had been stretched to full capacity.

Office for Information

SUPPORT by the British Government for the development of information services in science is growing steadily. The Office for Scientific and Technical Information (OSTI) emerged as an independent unit under the Department of Education and Science from the fragmentation of the Department of Scientific and Industrial Research in 1964–65. Last year (1966) the expenditure of the office amounted to £300,000. A scientific staff of 13 is now employed. For the time being, the office seems to have adopted as an article of faith the view that it should wherever possible work closely with similar organizations abroad and particularly in the United States. Much of its activity so far has consisted of the application to British circumstances of information services already being developed in the United States.

Most of the activity of OSTI consists of letting contracts to outside bodies. Most often this means universities, but research associations, learned societies, and industry are also eligible for assistance. As part of the plan to collaborate with information services abroad, OSTI is supporting the trial in Britain of the MEDLARS information retrieval service devised by the United States National Library of Medicine, and the corresponding system in chemistry sponsored by *Chemical Abstracts*. But the office has also helped with grants to the University of Sheffield for research on the automatic detection of structural similarities among chemical structures (£17,500 for the three years), the formation of an information centre for high temperature processes at the University of Leeds (£13,555 over three years) and what is called a National Reprographic Centre for Documentation at the Hatfield College of Technology (£32,691). The terms of reference for OSTI seem to be generously wide. They have, for example, allowed it to provide a grant for the support of *Physics Abstracts*, at present published by the Institution of Electrical Engineers. The intention is that the grant should enable the abstracting journal to investigate new techniques of compilation and dissemination. *Physics Abstracts* is also supported on a continuing basis by the United States Government by means of a grant through the American Institute of Physics.

OSTI policy is determined largely by the Advisory Committee for Scientific and Technical Information under Dr. F. S. Dainton, Vice-Chancellor of the University of Nottingham. The committee, eleven strong, consists of six academics, three industrial scientists, a librarian and an independent consultant linked with a scientific journal. The committee seems to meet about three times a year and includes assessors from other Government departments including research councils, the Ministry of Technology, and the Atomic Energy Authority. Although the committee is advisory, it has the responsibility for deciding how resources should be divided. As yet, fortunately, the budget seems to have kept up with the flow of good ideas.

Design for Brittle Materials

ENGINEERS have long fought shy of using brittle materials. Ductile materials are better understood, more reproducible, and have the overwhelming advantage of being able to relieve stress by expansion if the design stress is accidentally exceeded. Some brittle materials, of course, are in common use—concrete, glass, and cast iron—but they are normally used in bulk at low stress. This reluctance to use brittle materials will, however, have to be overcome, for some of them possess properties—strength at high temperatures, and corrosion resistance—which are important in hypersonic aircraft, spacecraft and gas turbines. This group of materials includes tungsten, chromium and compound materials, ceramics and glasses. A new publication by K. W. Mitchell of the Fulmer Research Institute, commissioned by the Inter-Services Metallurgical Research Council, examines the criteria for designing in brittle materials (H.M.S.O., 12*s*.).

If it were necessary simply to design components which will not fail under normal conditions, the problem would be relatively easy. But in practice, of course, weight and cost have also to be considered. For ductile materials, designs are commonly based on mean or average stresses calculated by normal methods of stress analysis, but for brittle materials a more detailed examination of the stress distribution is desirable since the design must provide for unexpected loads. Conventional theories of elasticity are not strictly applicable except as a first approximation, and failure stresses must be defined in terms of a statistical distribution for the material in the condition and the size needed. There is a great shortage of published information about the properties of brittle materials; companies which have gained their knowledge by practical experience are reluctant to divulge it freely. Then little is known about the mechanism of failure of brittle components; apart from testing at constant temperature, it is necessary to examine the effect of rapid heating and cooling, which may set up thermal stresses in the material. Surface condition is also important, since surface cracks increase stresses locally. The problems of lubrication and wear resistance are mentioned in this report but not considered in detail. And throughout this field, there seems a need for more information, and not only about successful designs; reports of failures can prevent others repeating them.

Changes at Harwell

THE United Kingdom Atomic Energy Authority, committed to diversification, is to undertake responsibility for two new research centres at Harwell. The new centres, announced on February 6 by Minister of Technology Anthony Wedgwood Benn, will be responsible for Non-Destructive Testing and Ceramics Research. When fully established the centres will cost £200,000 and £420,000 per year respectively, and five-year plans have been drawn up for both projects.