mittee's report has now been published*, and as the proposed new medical school is the first to be established in Britain since the Welsh National School of Medicine, set up in Cardiff in 1893, the report is of considerable interest.

The report begins with a brief review of medical education in the past and then discusses the purpose of a university medical school, which should, it considers, like the university itself, have two chief functions: the pursuit of knowledge and the education of the young—that of training for a profession, although a vocational objective, is added. It is accepted, as a fundamental tenet, that the new medical school will encourage research, particularly in the growing points of medical science, and also that teaching and research are complementary. The Committee adopts three guiding principles and attempts (1) to shape the pre-clinical part of the course to conform in pattern and objective with that of other science departments in the University; (2) to integrate and co-ordinate so far as possible pre-clinical and clinical departments and studies; (3) to plan the government, staffing and services of the hospital, to meet the needs of both the University and the community.

The curriculum and buildings of the new medical school should be designed in such a way as to develop and strengthen the links between: (1) the medical school and the rest of the University; (2) the pre-clinical and clinical parts of the school; (3) the hospital and the community it serves. The Committee suggests that the medical school and hospital should be known as the "University of Nottingham Medical Centre". Because teaching and research are so closely associated it is imperative that the new medical school should offer facilities for research in terms of time, space, staff, equipment and money which will attract only the best.

The total of 100 medical students per annum is accepted as the number at which the new school should aim, but the building should be flexible enough to enable this number to be increased. No dearth of good candidates is expected, but over-specialization at school has serious consequences for medicine. Boys and girls wishing to study medicine, who have passes in Advanced-level Examinations in both arts and sciences or arts subjects alone, should be encouraged; suitable arrangements should then be made to teach them the chemistry, physics and biology required for the study of medicine. Students should be selected for their intelligence (as revealed by Ordinary- and Advanced-level Examination passes) and for their personal qualities and capacity for citizenship, as shown by their school records and by interview. Every effort should be made to reduce the segregation from other students, inevitable to some extent in a medical student's studies, by sharing in common residence, meals, sports and social facilities. Every inducement should be given to students to incorporate themselves into the general life of the university. Certainly, the present science library should be extended to cater for medicine.

As regards the curriculum, the report suggests that this should be designed to cultivate a student whose curiosity is enhanced and not diminished, who is familiar with the broad field of medical science and who has acquired the habit of learning. He should also have assimilated the ethos of medicine. The curriculum should be planned with the view of avoiding the chief defects of contemporary medical education, such as overcrowding, lack of integration between subjects taught at the same and different times, and too many examinations. Accordingly, it is recommended that lectures should not be excessive in number and attendance should, so far as possible, be voluntary. The student should have sufficient free time to read and work on his own initiative, both in the library and in the laboratory or wards. Details of the curriculum should be planned by an inter-departmental committee of teachers, appointed by the Faculty of Medicine with an independent chairman. This committee should include junior staff, and should seek opinion from students, and keep the curriculum continuously under review. To synthesize the contributions of different disciplines, lectures on different aspects of a single problem should be delivered consecutively and followed by group discussions. Clinical demonstrations should be given throughout the pre-clinical period so as to emphasize the unity of knowledge and alleged vocational aspects of the curriculum, but it should not be allowed to dominate the educational aspects. Medical examinations should be reduced to the minimum compatible with the regulations of the General Medical Council.

It is suggested that the curriculum should consist of a period of three years' training for the biological scientist, whose interest is centred on man, followed by two years of clinical training and two pre-registration years. For those students who have not studied science at school, the University should provide an introductory year of science. The first-degree course in medical biological sciences is visualized as forming the third limb of a tripod, of which the other two would be a school of general biological sciences, within the faculty of pure science, and a school of agricultural biological sciences within the faculty of agricultural sciences. The teaching hospital should provide for the needs of the community and of the University and its services, and include geriatrics, psychiatry and infectious diseases in a certain area. The size of the units may require modification to meet the teaching and research needs of the University. The teaching hospital and medical school should be designed and constructed as a unit, to permit as free as possible an interchange of people and a maximum flexibility. It is suggested that the governing body of the new teaching hospital should be constituted by the Regional Board and the University (as equal partners), and that it should be responsible for obtaining the necessary finance from the Ministry of Health and the University Grants Committee. It is also recommended that the Department of Community Health should contain a sub-department of general practice, the function of which would be to help in the organization of general practice in the area, and to encourage the provision of better working conditions for general practitioners and thus better service for patients. The medical school and the teaching hospital should be designed as an entity. The Committee would regard a start in temporary accommodation as both extravagant and undesirable, as it may result in loss to the University of some of the best senior staff—on whom the future of the medical centre depends.

* University of Nottingham. Report of the Medical School Advisory Committee. Pp. 76. (Nottingham: The University, 1965.) 6s.

NATURE CONSERVANCY IN BRITAIN

IN a paper, "Advances in British Nature Conservation", now preprinted from the Society's handbook for 1965*, Mr. E. M. Nicholson, director-general of the Conservancy, summarizes some of the recent changes in the concepts, practices and scale of conservation of natural areas in Great Britain in recent years.

Conservation has now ceased to be the affair of a local minority and has become a major nation-wide project. The vague idea that reserves are a good thing and

* Society for the Promotion of Nature Reserves. *Advances in British Nature Conservation.* (Preprint from the Society's Handbook for 1965.) By E. M. Nicholson. Pp. 16. (London: Society for the Promotion of Nature Reserves, 1964.)

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valuable to naturalists has been replaced by a concept of their role as living museums, and outdoor laboratories, to be fully and systematically studied by scientists, with the view of understanding their ecosystems, biological productivity, population dynamics, successional and land-use history, and so forth. The assumption that any necessary management of reserves can be satisfactorily achieved empirically has been replaced by a comprehensive, two-tier programme of concerted basic and applied ecological researches, designed to elucidate the full range of fundamental principles involved, and to develop the necessary series of techniques and prescriptions for their application. It is also now recognized that not only natural and semi-natural habitats displaying various stages of ecological succession are equally deserving of care and protection in the interests of science, but also modified or induced ecosystems and sites, already used for, or well suited to, ecological investigations. Local distributions are now being systematically and comprehensively mapped, as well as changes and trends in populations. The lack of interest of universities in ecology and conservation has been replaced by a rapid growth of specialized postgraduate courses, and there has been a major increase in the number of students taking doctorates in ecological subjects and a general growth in university field studies, partly at the centres of the Field Studies Council.

The essential role of basic and applied ecology in the training and practice of the land professions, such as forestry, agriculture, fisheries, estate management, landscape architecture and town and country planning, is now becoming recognized, as well as the need for increased understanding of the character, scale and causes of human impacts on Nature, both through studies and analysis and through improved communications between the different interests concerned. Applied ecology is now recognized as being the guidance of the proper control of the use of potentially polluting substances, such as toxic chemicals, as well as the promotion, through concerted action and the wise multi-purpose use of land and natural resources, of the general adoption and observance of modern conservation practices.

Mr. Nicholson's thesis is that scientific ecology has now reached the point of transforming the concepts of management of natural areas, and is beginning to make a serious impact on the use and management of land, education, and interests concerned with the use of renewable natural resources. He illustrates this by summarizing the British contribution on an international plane and by reviewing the position in the various counties of England and Northern Ireland. The distinction between conservation movements in Britain and other countries is based far more on the naturalist tradition, on which professional work in biology has lately been superimposed. The centre of gravity of the whole movement is shifting steadily from the saving of species, and even of habitats, to a broader view of conservation as involving the scientific care and good management of man's entire natural environment.

ORIGIN OF ATYPICAL METEORITES FROM THE ARIZONA METEORITE CRATER

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THE well-known Arizona Meteorite Crater is an impact feature having a diameter of nearly 1 km. Estimates of the mass of the meteoroid which produced it have ranged from 30,000 (ref. 1) to 2·6 million[2] metric tons. The (spherical) diameters corresponding to these estimates are 20 m and 86 m. The main mass of this meteoroid has never been located. Inasmuch as most of the meteoroid probably vaporized or mixed with the surrounding rock during the explosion, it seems rather unlikely that much of the mass will ever be found. However, a fraction did survive the explosion in the form of many thousands of fragments ranging up to 640 kg in weight. The overwhelming preponderance of these have been 'normal' coarse octahedrites with kamacite band-widths ranging up to 4–5 mm. Less than 12 of the recovered fragments had structures corresponding to those of medium octahedrites. These atypical meteorites have been called Canyon Diablo No. 2, Canyon Diablo No. 3 and Monument Rock[3]. There is no doubt that these three types differ significantly both from the normal Canyon Diablo meteorites and among themselves[4] in structure and chemical composition.

Four explanations have been offered which can account for the atypical samples. The first of these is that the meteoroid was not a solid mass on impact with the Earth but consisted of a swarm of much smaller objects[5]. The possibility of such a swarm seems rather remote[3], and will not be considered further here. A second possibility is that the meteoroid consisted of a main mass of coarse octahedrite structure and several satellites with the medium octahedrite structures[3]. A third explanation is that there were four distinct falls: a large crater-forming coarse octahedrite mass, followed by three separate medium octahedrite falls[3]. The fourth possibility is that all were part of the same mass which had varying physical structures and minor element contents[6,7].

Until recently, no definitive results had been obtained as to which of these explanations was correct. On the basis of cosmogenic rare-gas measurements[6], Heymann was able to show that Canyon Diablo No. 2 was probably buried in the main mass of the meteoroid and exposed to cosmic-ray bombardment for 540 $\pm$ 100 million years at a pre-atmospheric depth of 50 cm. The remote possibility, however, existed that it was a distinct fall with a cosmic-ray exposure age of 64 $\pm$ 12 million years. The results of the rare-gas measurements on Canyon Diablo No. 3 were rather less conclusive. Either this meteoroid was part of the main mass and had an exposure age of about 1,000 million years or it was originally in a 10^5 kg object having an exposure age of 540 $\pm$ 100 million years (either a protuberance on the main mass or as a separate 10^5 kg mass). Similar alternatives[7] were proposed in order to explain the observed rare-gas contents of sample 24, a normal Canyon Diablo. However, a subsequent $^{40}K/^{41}K$ measurement by Voshage[8] of sample 24 yielded a value in substantial agreement with the exposure age of 540 million years. This result casts considerable doubt on the validity of the exposure age of 1,000 million years for Canyon Diablo No. 3. Most of the known measured medium octahedrites have exposure ages in the 500–600 million year range[8,9] and it is therefore not possible from Heymann's measurements to decide whether Canyon Diablo No. 3 was located in a 10^5 kg projection from the infinite mass ($\gg 2 \times 10^5$ kg) meteoroid or was a separate fall. A number of recent investigations[3,7,10] have established the fact that all known normal Canyon Diablo meteorites found on the Crater rim have been shocked to at least 130 kb. Since all three atypical types were recovered

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