text). I found the balance of heuristic suggestions, motivating remarks and actual proofs satisfactory. Nevertheless, the book gives very little information about the background of the subject in economics, statistical decision theory and elsewhere. The book is therefore suitable for mathematical specialists reading the subject for its own sake and for others, well prepared mathematically, who already know why they want to read about game theory. Advantages of this approach are clarity and conciseness. Furthermore, the book fills a gap. Not many recent books on game theory as such are available, although there are good ones where the theory appears embedded in its applications. Some older books are good, but the author of this one includes newer results.

There are ten chapters and two appendices—on convexity and on fixed point theorems, which are subjects that are basic to game theory and which it is convenient to include for reference. The problems provided are tough, being mainly outlines of theorems which the author has not included in the text. Problem one of chapter one calls for the reader to carry out a construction using the axiom of choice. I would have liked this austerity to be tempered by the presentation of more illustrative exercises, but this is a matter of taste.

I recommend the book for mathematicians who want to read and to have on their shelves a concise introduction to the ideas of game theory. Its usefulness to other readers will depend on their mathematical background and their interests. Game theory has been proposed as a way for people to make decisions, as has the related statistical decision theory, although business men (for example) may not really be using such processes. Perhaps technological development suggests a growing new class of readers. Pilots in a dogfight are playing a differential game (chapter five, section five) in which each one chooses a curve in space. It is doubtful whether they consciously use this fact, but it is used by the designers of the missiles that are replacing them. As this and (one hopes) more peaceful uses develop, mathematically oriented engineers and scientists will require a knowledge of game theory, and this plain mathematical treatment may be what they want.

W. A. O'N. WAUGH

Obituaries

Dr B. M. Schofield

DR BRENDA M. SCHOFIELD, lecturer in physiology at the Royal Veterinary College since 1954, died in London on December 2. She was educated at the University of St Andrews, where she graduated BSc in 1948 and received her PhD in 1951. She was then departmental demonstrator in pharmacology at Oxford for a year and, although concerned with the study of sundry aspects of the pharmacology of the iris and the coronary circulation, her research interests remained centred on the uterus. To this end she went to the Carnegie Institute of Embryology in Baltimore where, under the stimulus of George W. Corner, S. R. M. Reynolds and the late Professor A. St G. Huggett, the physiology of this organ was a fast developing subject. In these surroundings she found scope for her wider interests and it was here that she came into contact with Dr A. I. Csapo, who stimulated her enduring interest in the biology of the uterus.

Brenda Schofield was a diligent and careful worker who got the most out of any problem. Her published work, for which she was awarded the DSc of the University of London a few months before she died, covers a considerable range of topics. First came researches into the innervation of the cervix and cornu uteri, and the influence of ovarian hormones on the isometric activity of uterine muscle. Then followed the application of this knowledge to investigations on the blocking action that progesterone exerts on the myometrium, a finding that well explained the relative inactivity of the pregnant uterus. This led her to study the "local" effect of placental progesterone on the placental bed and problems associated with the functionally asymmetrical myometrium of late pregnancy. She showed that the systemic and local progesterone effects may combine in various species, resulting in species differences in uterine activity during pregnancy. Recently she had been investigating the experimental production of "ring-womb" in the pregnant ewe. There can be few who have united more completely a broad acceptance of the need to study problems of great practical interest and urgency, and a research flair for getting at the fundamental mechanisms of the problems involved.

She was a member of several scientific societies, but her favourites were the Physiological Society, the Society for the Study of Fertility, the Society for Endocrinology and the Blair Bell Society, of which she was a founder member. She was a great supporter of the International Physiological Congresses, and attended all the meetings between 1950 and 1968. She had many interests outside physiology—music, modern art, travel and an abiding concern for the welfare of the young, which found expression in her ardent support for the Pestalozzi Children's Homes. She loved the countryside and the flowers, and it was this passion which took her on her travels to wild and lonely places.

She had a passionate hatred of hypocrisy and pretension and was always ruthlessly outspoken in her condemnation of any such suspected defect. As time went by, it was also apparent to those who knew her well that she was becoming dissatisfied with the crudities of modern life and, in particular, felt unhappy about the decline of manners and morals in our time. The student body was ever her particular concern: their deportment, manners, dress—little escaped her vigilance—and on their application and training she often expressed herself strongly.

Hers was a generous, courteous and upright nature, with a great sense of responsibility in everything she undertook. Her chief personal attribute was one of kindness and sympathy, yet there was always about her a certain brusqueness. But within was a different and much shyer person, deeply appreciative of human comradeship. Her values were courage, loyalty and integrity and she assumed them in others. But this personality, so likeable and so sincere, had, in addition to immense courage, another characteristic—an iron will which did not permit the indulgence of self-pity—and up to the very end, even when she knew the meaning of her illness, she continued to work on her manuscript. Her church was very real to her and was a support and an abiding interest, and she lived always a happy and fruitful life in the midst of a devoted family.

Dr G. G. F. Newton

DR G. G. F. NEWTON, who died suddenly on January 1, aged 49, made some valuable contributions to the study of antibiotics.

Guy Newton went from Oundle to Trinity Hall, Cambridge, in 1938, but his career was interrupted by the Second World War. He volunteered for a special service unit, operated behind the enemy lines and won the Military Cross. He returned to Trinity Hall in 1946. Although an outstanding oar who might have obtained a blue, he gave up rowing to concentrate on work and took part II of the tripos in 1947. In response to an advertisement by Sir Howard Florey in *Nature*, he then went to

the Sir William Dunn School of Pathology at Oxford to help with work on new antibiotics and obtained a D.Phil. in 1951. He subsequently joined the external staff of the Medical Research Council and later became a university Senior Research Officer and a Fellow of St Cross College, Oxford.

The most important of Newton's contributions to scientific research concerned peptide or peptide-like antibiotics. He isolated the polypeptide bacitracin, which found some use in medicine, and was closely involved in the work which established its amino-acid sequence and showed that it contained a novel thiazoline ring. After research had begun in Oxford on the antibiotics produced by a species of *Cephalosporium*, he played an important part in work which led to the isolation of penicillin *N* and the determination of its structure. It was during this work that crude preparations of penicillin *N* were found to contain a new but related compound, cephalosporin *C*, which was resistant to staphylococcal penicillinase. Newton made important contributions to the determination of the structure of cephalosporin *C* and to experiments which showed that different cephalosporins could be obtained by replacing its acetoxy group with certain nucleophiles and by removing its D-α-aminoadipoyl side chain to yield 7-aminocephalosporanic acid. From the basis provided by this work pharmaceutical companies in the United States and Britain were able to produce cephalosporins of clinical value, and the National Research Development Corporation negotiated royalty agreements which have provided it with a considerable revenue. Newton was able to use a small part of this money to set up a trust fund for medical research. Guy Newton was an unselfish and completely unpretentious man of absolute integrity. His conscientiousness and meticulous attention to detail contributed in no small measure to his scientific achievements.

Correspondence

Misunderstood Profession

SIR,—As an ordinary member of the NUT who has taught in secondary modern and independent schools for some ten years, I find your editorial "Misunderstood Profession" (221, 304; 1969) not only untrue but objectionable in its incitement to strike action for improved pay.

In the opinion of many teachers, too much of the NUT's energy goes into problems of pay scales and too little into conditions of service for teachers and the interests of the pupils.

Someone who is not a member of the teaching profession said recently that teachers' pay is not unreasonable for the number of hours worked compared with industry. Although I would like to refute this statement on the grounds that long hours are spent in marking and preparation which makes up for the longer holidays, in my experience a very large proportion of teachers never prepare a lesson, seldom mark a book and generally stick rigidly to work in school hours only. To justify increased pay, the profession should put its own house in order in this respect and such obligations should be taught in the teacher training colleges.

If you are looking for a justifiable criticism of the NUT, it can be found in the way in which it virtually ignores the teacher/pupil ratio in primary and secondary schools and has supported the Government in its intention to raise the school leaving age, before it has provided an adequate number of teachers to cope with the existing school numbers.

In my experience, the NUT remark which you treat with a douche of cold water, that most teachers enter the profession for idealistic reasons, is undoubtedly true, but they very soon get their idealism knocked out of them when faced with six classes of forty or more children each day.

The matter of class size is one of the main justifications for the independent schools. Parents know that classes will be of a size which allows the teacher to teach and not spend the whole of his time just maintaining discipline. There are schools in many areas, particularly in London and the larger cities, where children can go right through school and come out virtually illiterate at the end; class size is almost the sole reason for this situation.

Yours faithfully,

MARY SCOTT

The Spindles,
Telham Lane,
Battle,
Sussex.

Brighter Statistics

SIR,—Your comments (*Nature*, 221, 504; 1969) on the University Grants Committee statistics on costs per student are, in one respect, misleading. You state that "some very small biological departments prove to be extremely expensive", and quote as one example that Sussex, with 32 undergraduates and 11 graduate students, costs £2,000 per head. It is possibly true that small departments are uneconomic, but it is wrong to quote Sussex to prove it.

The figures quoted are for our first year of opening, 1965–66, when there were only a small group of first-year undergraduates in the school. In 1967–68, there were 269 undergraduates and 66 postgraduate students in the school, and the cost per head was appreciably below the figure of £930 which was the national average in 1965–66 for biological sciences.

Yours faithfully,

J. MAYNARD SMITH

University of Sussex,
Biology Building,
Falmer, Brighton,
Sussex.

University News

Dr J. R. Dunning has resigned from his post as dean of the Columbia University School of Engineering and Applied Science and has become the first holder of the Thayer Lindsley professorship in applied science.

Dr J. Friend has been appointed to the chair of botany at the **University of Hull.**

Professor O. V. S. Heath is to retire from the chair of horticulture at the University of Reading; he will continue as director of the ARC Unit of Flower Crop Physiology.

Dr D. S. Dugdale has been appointed to a personal chair in the Department of Mechanical Engineering at the **University of Sheffield.**

Appointments

The **Earl of Bessborough** has been appointed the deputy chairman of the Metrication Board. The chairman is Lord Ritchie-Calder.

Dr H. M. Mark, chairman of the Department of Nuclear Engineering at the University of California, has been appointed director of NASA's Ames Research Center, California.