numbers and diverse interests of postgraduates, often makes special postgraduate courses impracticable and uneconomic. The sub-committee is obviously right in saying that closer interdepartmental collaboration is the answer to these problems.

The sub-committee has also unearthed figures which show the alarming, in fact disgraceful, paucity of seminars and colloquia in biological departments. Only 78 per cent of the departments hold seminars during term—18 per cent weekly, 18 per cent monthly and the rest presumably less often. That 82 per cent of British biological departments only average at best a monthly seminar, and that 22 per cent apparently have no regular seminars at all, speaks for itself. Small wonder that the report urges that such meetings, which are vital for any thriving department, should be more frequent and inter-departmental where possible.

"Good supervision is the keynote of a good PhD system." It is typical for the postgraduate student to see his supervisor several times a week, if not daily.

The sub-committee considers that "supervision cannot be improved fundamentally by legislation" but nonetheless it says it would be useful to formulate minimum requirements for meetings between students and supervisors. In its subdued way, it also proposes that having committees of three to five supervisors, as is common in the United States, should be considered. This system exposes the postgraduate to a wider range of factual knowledge and, more important, to a wider range of experimental skills and approaches without necessarily excluding the personal responsibility of one supervisor for one particular student. Indeed, where there is a clash of personalities, the committee system would be an enormous improvement. As things are, it is extremely difficult for a student to change his supervisor, no matter how badly they get along with each other.

As to the PhD examination itself, although there is concern, especially among recent PhDs, that the standards of the degree and the methods of examination are too variable, the report makes no recommendation for change. Arguments for and against the supervisor being an examiner, and whether or not all examiners should be external, are equally balanced, and most departments were not in favour of classifying the PhD degree except for possibly giving a mark of distinction to outstanding theses. It seems that 99 per cent of PhDs in biology are completed in three years and only 1 per cent take longer, so the sub-committee, unlike the physics sub-committee, does not recommend provisions for fourth year grants. Again in contrast to the physics sub-committee, the biologists believe that, so long as standards are not diminished, changes in the present three year honours degree are not necessary. The first degree in biology apparently still provides a satisfactory grounding for PhD training.

Old Age

RETIRED people now make up more than 12 per cent of the population of Britain. During this century the four-fold increase of people in this age group has far outpaced the increase in lower age groups, although the life expectancy of a 65 year old has only increased by 2 years, while that for a baby has increased by 24 years. More than three-quarters of the 300,000 old people who live alone do not have the help at home which

they think they need and many thousands are in need of medical attention. The Office of Health Economics (OHE) has been studying the facts, figures and problems of old age and makes suggestions as to how the lot of old people can be improved, in its latest paper *Old Age* (OHE, 2s. 6d.).

The main priority, the report suggests, is to improve the quality of old people's lives rather than to prolong them. At present, care of the old costs more than £1,650 million a year in Britain, £400 million of this being medical care which takes 30 per cent of the National Health Service budget. Healthier old people will not only mean happier old people, but a lighter burden on the community. If people over 65 become generally healthier, the retiring age could be raised. Two particular lines of approach are discussed in the report—the provision of better welfare services for those who are now old and further attempts to prevent illness that will incapacitate people when they get old. Research is required in both directions. As well as the obvious investigations into disease and the nature of ageing, the sociological effects of old age must be studied in connexion with housing, health and ignorance of how help can be obtained. The OHE recommends that a national council could be set up to co-ordinate the various aspects of research, as a multidisciplinary approach would be most effective.

The OHE, sponsored by the pharmaceutical industry, is an independent organization which undertakes research on various economic and social aspects of medical care. *Old Age* is its twenty-sixth publication, earlier papers having covered such topics as mental health, polio, drug addiction and medical manpower. The director of OHE, Mr G. Teeling-Smith, suggests that although the study of old age has less glamour than work with children, it can improve the quality of the retirement years that face us all.

Defence Research

from our Parliamentary Correspondent

WITH three public sessions gone, and perhaps twice as many in private, the Select Committee on Science and Technology has learned one thing at least: the civil servants responsible for defence research are unanimous in their approval of the way it is done. Mistakes, it seems, are a thing of the past, banished by the adoption of the Gibbs-Zuckerman procedures, as the techniques of assessment are called. This may be true, but the committee would be doing less than its duty if it believed it without independent corroboration. Unfortunately, all those who are familiar with the system have an interest in saying how good it is. What the committee needs is a company disenchanted with the Ministry of Defence. During the most recent session, on March 21, a possible candidate emerged—the hovercraft industry, which seems to have met with little encouragement from the ministry.

On March 21, the committee interviewed five representatives from the ministry. Most of the questions were on organizational minutiae—the operational requirement committee, eight strong, meets weekly, while the weapons development committee, nineteen strong, gets together every fortnight. The witnesses agreed to supply three case studies showing how three projects came to fruition—the CVRT armoured vehicle, the Nimrod aircraft project, and the Type 42 destroyer.

They were confident that good ideas, whatever their origin, got a fair hearing, and that bad ideas could be weeded out before they had gone too far. Some members of the committee suggested that the only pressure brought to bear on the projects was financial pressure. The witnesses agreed that financial pressure alone was enough to put a heavy constraint on defence research, but in addition there was an automatic weeding process.

Mr Eric Lubbock suggested that the British hovercraft industry had had less than fair treatment from the ministry. Although they had made a number of proposals, few had been taken up. Mr Stuart Watson, for the Navy, agreed that the industry had been "pestering us with ideas". The result had been to agree to the building of BH7 hovercraft for the Army and the Navy, although the Army version had now been cancelled because of the withdrawal from the Far East. As for bigger hovercraft, they would have to be shown to fulfil a real military requirement. Mr Lubbock thought this an extraordinary answer. Would the hovercraft not be suitable as a search vessel for submarines, or as a fast armed vessel? The witnesses reiterated that all possible had been done to help the hovercraft industry.

London's Water

THE bacteriology, chemistry and biology of London tap water are subjects which most Londoners must prefer not to have to think about when they drink their morning cup of tea. A great deal of work, however, has to be done before the water from the River Thames and the River Lee is even remotely drinkable and stringent standards are operated to make tap water as pure as possible. Some of the routine and research work done by the Water Examination Department of the Metropolitan Water Board during 1965-66 to achieve these standards is described in the forty-second report of the department just published (Metropolitan Water Board, 32s. 6d.).

Continuous sampling and testing is carried out to check the quality of supplies. In 1966 almost 133,000 samples were dealt with—the highest number of samples ever handled by the department. "Ideally all waters intended for drinking should show no coliform bacteria in 100 ml. and it should be the aim of every water undertaking to provide water of this quality", according to Report No. 71 of the Ministry of Housing and Local Government and the Ministry of Health. London water seems to pass the test—out of more than 11,000 samples of treated water leaving the board's filtration works and well stations in both 1965 and 1966, 99.98 per cent were 100 per cent bacteriologically pure as far as *Escherichia coli* was concerned. Results of the coliform test were not quite as good in 1966 as in 1965; 99.68 per cent of samples were free from coliform bacteria compared with a percentage of 99.88 in 1965. This slight decrease in purity can probably be explained, the department says, because a more sensitive test for the isolation of coliform bacteria was introduced at the beginning of 1966.

Detailed descriptions of the work of the various sections of the department are given in the report. The bacteriological section has been continuing its examination of water for *Salmonella* organisms; their presence in the water after storage and primary filtra-

tion and on the surface of slow sand filters suggests reinfection of the water by gulls. *Salmonella* organisms have also been isolated from detergent foam. The chemistry section has found that there has been a reduction of the residual amounts of synthetic detergent material in the board's river sources of supply after the complete substitution in packets of washing powder retailed in Britain of anionic detergents which are biologically degradable.

An important part of the department's work is concerned with public health, such as the examination of waterworks employees for the detection of carriers of waterborne diseases. It was reported in the previous annual report that a case of bilharzia had been found among the board's employees, and this has prompted speculation as to whether the disease could possibly spread in Britain. It is thought unlikely but not impossible, and a note of warning is given on the careless introduction of snails—the intermediate hosts for the helminth parasite *Schistosoma*—from countries where the disease is endemic.

No More Noise?

FROM July this year, British motorists will be subject to yet another roadside spot check. At present drivers have to proceed soberly, in a safe vehicle and at a moderate pace, but by the summer they will have to be quiet as well. Although the regulations announced this week by Mrs Barbara Castle, Minister of Transport, put the maximum allowed decibels at higher levels than those recommended by the 1962 Wilson Committee on Problems of Noise, the limits are experimental and may well be lowered in the future. Noise meters will be used in much the same way as the radar speed checks, with police stopping the vehicles which pass the set limits—90 db for motor cycles over 50 cc, 87 db for passenger cars and 92 db for heavy goods vehicles, agricultural vehicles and buses. During the initial period drivers of lorries with burnt-out silencers and car fiends with "organ-pipe exhausts" will be cautioned only, but later on, offenders will be liable to fines of up to £50 for a first offence.

The noise meters are said by the Ministry of Transport to be very accurate. They will be calibrated by approved laboratories and checks will be made from time to time against gadgets with standard noise output. A three decibel allowance is made in the noise limits for roadside tests to allow for such things as sounds reflected from other vehicles. From 1970, all vehicles will have to be constructed in such a way that they do not exceed the noise limits when tested at full throttle. The two year time lag is being allowed to give manufacturers time to adapt their models.

Golden Touch

THE Royal Institution launched last year an appeal for £225,000 and did it so successfully that £270,000 has already been received and the money is still coming in. The donors include some 300 foundations, companies and individuals. The money is to be spent on building a new lecture theatre and museum, renovating the present theatre and laboratories and expanding the institution's educational facilities.

The Royal Institution was founded in 1799 by a native of Massachusetts, Count Rumford, for the pro-