

Administrative Studies at the University of Oxford and chairman of the board of governors, sees the main role of the centre as one of "putting people together with a view to learning from each other". Professor Halsey cited as an example research projects on socially deprived children already under way in Britain, West Germany and Sweden which will benefit from a central source of information and assistance. He also hopes that the centre will be able to add training courses for educational administrators to acquaint them with new developments and training techniques and equipment.

## Rent-a-Brain

How should rental charges for computers be decided? In December 1967, IBM United Kingdom announced its intention of increasing selling and rental prices for computers, and the proposed increases were referred to the Prices and Incomes Board which reported on them last week (Cmd 3669, HMSO, 2s.). In fact, however, the report covers only rental charges, for its terms of reference made no mention of selling price. It seems to have been agreed that, because of the international ramifications of IBM, it would have been almost impossible to judge whether the price increases were justified, so that the board has been left with the task of deciding whether the increase in selling price is a sufficient cause for an increase in rental charges.

This reduces the report almost to triviality, but not quite. For commercial reasons, which the board accepted but did not make explicit, IBM argued that it was necessary to maintain a delicate balance between selling and rental charges. Selling price usually works out at four years rental, a rule which evidently makes it hard for customers to choose. From IBM's point of view, the arrangement gives a good mixture—a steady income from rentals, and a quicker cash return on sales. It is also a hangover from an agreement in the United States in 1956, in which IBM, threatened by anti-trust legislation, agreed to offer machines for sale and lease at equivalent prices.

The Prices and Incomes Board has now accepted the logic of IBM's argument and, because the increase in selling price had not been challenged, it has been obliged to agree to a ten per cent increase in rentals for all new contracts. For older contracts, IBM argued that costs of maintaining the older machines had risen, and that, in any case, the real cost of a machine is equal to the revenue the machine would yield if it were transferred to a new customer. The board accepts the first of these arguments, but not the second. Its report says that older machines do not have any increased value in alternative uses. Rentals signed before January 1, 1968, should therefore be increased only enough to cover the costs of servicing them—7 per cent. Rentals on the machines which preceded the 360 range should be increased by even less—5 per cent—because it is presumed that software development on these older machines is not such a burden. This recommendation applies to all contracts on machines announced before April 7, 1964.

IBM is still considering these recommendations, and will be telling its customers how it feels later this week. If it does not accept the PIB argument, it will have to argue it out with the Ministry of Technology, which is still engaged on discussions arising out of a previous PIB

report on the prices of hearing-aid batteries. If agreement cannot be reached voluntarily, the current Prices and Incomes legislation allows the ministry to make an order, although it is much more likely that the issues will be settled amicably by discussion.

## Canada's New Telescope

THE fashion for large optical telescopes is afflicting the Canadians, who are now firmly set on the construction of a 150 inch instrument at Mount Kobau in British Columbia. The Queen Elizabeth II telescope, as it is to be called, is expected to be completed in 1975, when it will join the several large optical telescopes now being built in the United States, the Soviet Union, Europe and Australia.

This new crop of telescopes should prove easier to build than the previous generation of large instruments, which included the 200 inch on Palomar Mountain, chiefly because of the development of new materials for mirror blanks. The Hale telescope on Palomar Mountain, completed in 1948, has a 'Pyrex' mirror, as does the 98 inch Isaac Newton telescope at the Royal Greenwich observatory—both were cast from the same 'Pyrex' glass. Since then, however, two new materials having better thermal properties have been developed. The Canadian telescope, in common with telescopes for the Kitt Peak National Observatory and the European Southern Observatory, has a mirror of fused silica. The coefficient of expansion of this material is less than one-fifth that of 'Pyrex'. The second material is a glass ceramic called 'Cer-Vit', developed in the United States, which is to be used in the Anglo-Australian 150 inch (*Nature*, **218**, 418; 1968).

A crucial part of the design of a telescope such as the Canadian instrument is the support of the mirror in such a way as to avoid distortion of the optical surface. In the Queen Elizabeth II telescope a system of pneumatic bellows fixed to the back of the mirror provides axial support. Radial support is supplied by 32 counter-weight lever systems arranged around the periphery of the mirror. Only the axial support system operates when the telescope is pointing at the zenith and all the reaction is in the direction of the optic axis. As the telescope is tilted away from the zenith, the radial supports come into action to preserve the shape of the mirror. The designers of the Queen Elizabeth II telescope are hoping to allow for the frequent changes in seeing conditions at Mount Kobau by making the changeover from operation at any of the foci to another as rapid as possible.

## Proving Pressure Vessels

SOME time in September, tests will begin at the Heston Laboratories of Atomic Power Constructions of the one tenth scale models of the pressure vessel for the first commercial advanced gas cooled reactor at Dungeness. The vessel, in common with the last of the Magnox series of reactors, is made from concrete prestressed with steel. These pressure vessels are now thoroughly tested and proved by experience, and British nuclear engineers cannot be blamed if they feel somewhat self-satisfied; the experience in the United States with steel pressure vessels has not been so happy. The reliability of prestressed concrete pressure vessels is one of the

reasons why it is now possible for commercial nuclear power stations to be built near towns, and must also be a strong selling point abroad.

Smaller models of the Dungeness *B* vessel, made to a scale of about 1 to 26, have already been successfully tested at Heston. These models were shown to have a failure pressure more than three times greater than the design pressure for the Dungeness vessel. On the larger scale models, the CEBG requires a safety factor of 2.5, which APC is confident of achieving. Testing will consist first of elastic tests up to the proof pressure of 550 pounds per square inch, which is 15 per cent greater than the design pressure. The process of testing involves more than 300 gauges built into the fabric of the pressure vessel. Once the elastic tests have been completed satisfactorily, the vessel will be tested to destruction. At failure, the vessel begins to crack without exploding violently—either the steel reinforcement can fail, or some parts of the concrete fail under compressive loading. In either case, the failure can be followed on the strain gauges. The actual vessel at Dungeness *B* will have even more gauges, and will itself have to be tested when it is complete, but only to the proof pressure.

## ELDO Escalates

THE ELDO conference of ministers met in Paris last week to discuss what is to be done about the rising cost of the development of a European launcher. The overspending, which primarily concerns the project to build a rocket capable of launching a European communications satellite in the early 1970s, is expected to reach \$100 million. A revised version of the programme which should cut this figure to \$50 million was favoured by the conference, and all the ELDO countries, with the exception of Britain, stated their willingness to pay the excess. The British delegate reiterated the announcement made in April that, once Britain had paid its share of 27 per cent of the original estimate of the cost of ELDO, it would make no further contributions. This means that Britain is not going to help pay the extra \$50 million either. Other members urged Britain to join them in finding the extra money, but their pleas do not seem to have softened the British stand.

Britain was not the only country unhappy about the situation. Italy was worried that the revised programme would mean less interesting work for them to do. Both ELDO and ESRO have been plagued by this kind of problem, which is a result of the distribution of contracts among the member states, and this question is to be looked into before the next meeting. Germany and France were anxious about the effect the revised programme would have on their plans to launch the Symphonie communications satellite, while Belgium said the new plan should be part of a coherent and integrated European space effort. The outcome of all this seems to have been to leave things as they are, with a promise to look into the problems before the next session.

## Student Housing

THE chief requirement for student housing is privacy; this is the implication of a recent survey of residents—

92 per cent students—in eight recent housing schemes (Building Research Station, *Hostel User Study*). Only 10 per cent of the students in single rooms would even consider sharing, and those who did share expected a considerable reduction in rent, both to compensate for the inconvenience and to prevent the landlord from benefiting financially from the double rent.

Single room sizes in the schemes vary from 96 to 144 square feet, with rooms between 125 to 135 square feet acceptable to more than 90 per cent of the residents. The survey concluded that 95 foot square rooms were suitable for short stays or the "single girl's first time away from home", while rooms above 110 feet square were large enough for general use by all students. Some individual control over both lighting and heating seemed to be necessary to most of the students and the survey urged that lighting be brought up to recommended standards as quickly as possible.

Common rooms were inadequate in most of the schemes studied, especially rooms where music could be played. One scheme with only one games room—one dart board and one table-tennis table—for 504 students was hardly used at all, probably from a sense of hopelessness. While common rooms for television, meetings and entertaining were used by most residents, students and management both welcomed the possibility of breaking down residence facilities into smaller units of up to twenty-five people each, with their own lobby, entrance and kitchen-common room.

The problems of student housing in overcrowded cities such as London as well as in the new universities and colleges means that much more research needs to be carried out on student needs. As this survey points out, "young people coming into accommodation provided for them expect room standards higher than those they are prepared to accept in lodgings and flatlets that they find for themselves".

## Director Appointed

DR GORDON FRANK CLARINGBULL will direct the British Museum (Natural History) from December 1 when Sir Terence Morrison-Scott retires. His appointment by the trustees after an open competition is one from the museum ranks—Dr Claringbull has been the keeper of the Department of Mineralogy since 1953 and a member of the museum staff since 1935. This should appease the Museums Association and others who expressed displeasure at the appointment of an outsider to the directorship of the British Museum.

The director of the Natural History Museum, though responsible to the trustees for all matters concerning the management of the museum, is at the same time the accounting officer and is directly responsible to Parliament for the funds voted to the trustees—£1,011,000 for the year 1968-69. This dual responsibility means that the trustees have to get the Prime Minister's approval before they can announce the appointment of a new director.

Dr Claringbull will head a staff of about 600, of whom around 350 are scientific staff. They are not strictly civil servants, as they are appointed and employed by the trustees, but for all practical purposes they are treated as civil servants. Another peculiarity is that, since 1946, the scientific staff have been on scientific civil service gradings, the keeper class being