

education and daily worship should continue. With this wide support for continuing religious education in schools, there is no justification for altering the existing statutory requirements." Elections in totalitarian countries sometimes produce as much as 90 per cent in favour, but can the minister seriously believe that when 6 per cent of the population are practising Christians, 90 per cent of them should wish their hypocrisy to be institutionalized in the curriculum, or does the minister merely believe it, like Tertullian, because it is absurd?

There are three broad grounds on which religious instruction could be justified. First, the lore and language of the Bible are part of the cultural heritage, but on this point its claims for attention are no greater than those of Latin and Greek. Second, religious instruction may be justified on the view that the Christian religion is in some sense true, and that children should be indoctrinated with religious truths as an equipment for life beyond the grave. Third, it may be argued that the ethical behaviour required by society can best be put across with the support of a religious framework.

Whether or not any particular religion is true is so obviously a matter for dispute that it should be clearly recognized as such. Daily school services, which are hard in practice if not in theory to opt out of, may be all right for consenting adults but are an offence against the dignity of children. Nor can compulsory religious instruction be justified except in the crudest terms; those who believe it necessary cannot have much faith in the persuasiveness of the creed they wish to inculcate. Religion, in any case, is in the first instance a private matter that to begin with should be taught in the home if anywhere. The state has fully exercised its duty if it provides religious instruction only for those children past some discretionary age who have decided they wish to pursue such matters further.

There are those who believe that, religious content apart, divinity classes are an effective method of moral suasion. But Bible stories, whatever their literary or mythological value, are a confusing and inefficient way of exemplifying moral problems. And it is on the ethical issue that Mr Short's speech sounds most antique. Children today have many problems to solve. There is the question of sexual behaviour, and whether, for example, they should take "pot". New ethical problems will arise, of which organ transplants are probably only the harbingers, and which as adults the present generation will have to solve. There is a great deal of instruction to be given on factual, ethical and philosophical matters if schoolchildren are to be properly equipped for decisions affecting both their own lives and the nature of their society. But what does the Minister of Education and Science have to offer? Must the example of Onan help to implement the Family Planning Act? Will the fate of Abimelech keep the family escutcheon bright? Has the sacrifice of Jephthah's daughter any pertinent message for the 20th century? Can the minister really believe that schoolchildren will grow up to face the same ethical

problems as confronted pastoral Hebrew tribes of the second millennium B.C. and, if so, that they should be taught, even in a diluted form, the same rules for dealing with them?

The truth is, of course, that there is a case for asking that schools should teach material directly relevant to the ethical issues which children will have to face when they grow up, but no means of knowing just what that should be. To be sure, there are some good models from which an acceptable curriculum might be fashioned. Several independent schools systems in Britain and elsewhere have done noble pioneer work, while people like Dr F. H. C. Crick have made valuable suggestions from outside the classroom. Mr Short would do the educational system of which he is apparently so defensive a greater service if he were to initiate some sensible curriculum development in this area—that is a practical task to which his present office could lend valuable support. Whether religion as such has any place in publicly operated schools is another question, but it must surely by now have seemed to Mr Short a little odd, to say the least of it, that he should have to huff and puff as vigorously as he has done in favour of religion in British schools when other countries, at least as devout, consider that religion has no place in schools.

NUCLEAR POWER

European Collaboration

THE European Nuclear Energy Agency still hopes to devise a way of producing a collaborative fast reactor programme for Europe. It is clear, however, that the final decision about the viability of the project will not be taken until the end of March, when both the technical groups have reported their findings to the top level committee. The two teams have been studying two different approaches to the cooling of the reactor. One, at the Karlsruhe nuclear research centre in West Germany, has been thinking about the possibility of a steam cooled fast reactor, while another technical group at Winfrith in the United Kingdom has concentrated on gas cooling. So far, neither group has published its findings, though both reports are believed to be complete. In order to justify taking the project any further, the technical groups would have to show substantial advantages over the molten sodium cooling which has already been adopted for the British fast reactor, among others.

According to the annual report of ENEA, just published, the Winfrith technical group has concluded that gas cooling would be a promising alternative, but that it raises important problems of fuel element development. The report suggests that the development could be carried out in the first place in existing irradiation facilities, but that special facilities would be needed later. Once the fuel element development work had been done, however, it ought to be possible to move straight to a commercial fast reactor, omitting completely the prototype or demonstration stage.

The rest of the ENEA annual report strikes an optimistic note. There has, it says, been a renewal of interest in joint undertakings, particularly those in which industry has a part to play. The organization's

three major projects, Dragon (a high-temperature gas-cooled reactor at Winfrith), Halden (a heavy water reactor in Norway) and the Eurochemic fuel reprocessing plant in Belgium, all seem to have reported reasonably satisfactory years. Eurochemic, however, is unlikely to become self-supporting by 1970 because the amount of reprocessing capacity available is still likely to exceed the demand. The ENEA remains optimistic, however, that, as the demand goes up, the plant can be expanded until it becomes profitable.

UNIVERSITIES

Making Money on the Margin

AFTER protesting vigorously against the British Government's decision to charge fees of £250 a year to overseas university students instead of the £70 paid by British students, the Committee of Vice-Chancellors is still pressing for an increase in the fees of British students in its negotiations with the Department of Education and Science and the local education authorities. These negotiations, however, have dragged on for more than a year, and there is still no sign of a conclusion. Meanwhile, Mr C. F. Carter, vice-chancellor of the University of Lancaster, has devised a scheme to take advantage of the situation which other impoverished universities should be able to follow. Beginning with the next academic year, the University of Lancaster is to enrol for one year about 60 American students. This is an economic proposition because they will each pay fees at the rate of £250 a year, not £70 a year.

Several British universities take a handful of American undergraduates each year but, as Mr Carter says, vice-chancellors felt that they could not enrol sizable numbers of American students when they were only charging them £70 a year, for fear of the inevitable outcry that British taxpayers' money was being used to subsidize American education. The £250 fee, however, comes very close to covering the marginal cost of each student, and the benefits of having 50 or 60 American students each year far outweigh the small extra cost to the university. It is not simply the junior common room conversation that stands to benefit. Lancaster intends to spend the fee money, about £15,000 if everything goes according to plan, on extra staff for the departments with an increased teaching load. This means that the whole university will benefit enormously as the departments reach critical mass. The university does not intend to have special courses for the American students, who will be completely integrated in the university. Mr Carter expects that they will all be starting the third year of their four-year courses and so should fit in well with the second year at Lancaster. The university can also offer its own residential accommodation. Unlike most British universities, which are perennially short of lodging space, Lancaster has a large amount of university accommodation, financed by loans from insurance companies, which it is anxious to keep fully occupied.

It is too early to know how many of the departments at Lancaster will be involved, but Mr Carter hopes to have some American students in most fields. Once the scheme has started, there may have to be some quota system for each subject, not only to justify the distribution of additional staff but also because the scheme will only work so long as it does not involve

capital expenditure on equipment and laboratories, for example. Equally important, to guarantee the pay of the extra staff, Lancaster will have to reach some reasonably long term agreement with the American universities it is negotiating with—at present there are six including the University of Colorado, which may well send 20 of its students. This should be easy to achieve, however, because apart from the desire of many American universities to send their students abroad for a year, it will cost no more for many of the students to travel to Lancaster and pay the £250 than to stay in the United States.

INSTRUMENTS

Another Technology Gap

THE Organization for Economic Cooperation and Development has just published one of the documents prepared for the technology gaps meeting held in Paris in March 1968. The report sets out to compare the scientific instrument industries in Europe, Japan and the United States, and to identify the reasons for the greater success of the American companies. The first conclusion the report reaches is that there are no general and deep-rooted disparities between the technologies used by the various instrument industries; it is simply that the American companies manage to put the new technologies into the marketplace more quickly. In this sense, the report echoes the other papers produced for the OECD meeting, and it was doubtless some consolation for the delegates to know that the Americans are not cleverer, but simply slicker, than Europeans.

That is as far as the consolation goes. The report points out that in some American firms, 70 per cent of the order book consists of products which did not exist five years ago—a level of performance which was unequalled elsewhere. The report sees evidence that in the past five years the sales of American manufacturers have expanded more rapidly than those of European companies, in part because of the setting up of production facilities abroad. Few European companies have been able, or willing, to do this. The size of the American companies, which are in general bigger than their European rivals, also helps, and the greater size of the domestic market makes it possible to make the most of economies of scale. Indeed, the American market represents on its own no less than 50 per cent of the entire world market. It is also easier, the report suggests darkly, for Americans to sell in Europe than it is for Europeans to break into the American market—the Buy American Act, it says, raises “an unnecessary difficulty” to selling in the US.

At the same time, the report concludes that the American companies use better marketing techniques than their European counterparts, including shorter delivery times, closer personal contacts with customers and a more sophisticated use of market research. The easier availability of capital in the US is another cause, the report says, and it adds that contacts between universities and industry are better in the US than in Europe. In short, while the scientific instrument industry in America is genuinely science-based, in Europe it still remains something of a craft. There are clearly no easy remedies for the situation, nor indeed any evidence that Europeans want the kind of society which generates success on the American scale.