

The average number of passengers per car on the Channel services is only 2.7, so that Hoverloyd will be faced with a lot of empty seats if it is unable to do better than this. The fare structure is therefore designed so that passengers—as many as seven per car—travel free. This means that families or parties can travel very much more cheaply by Hoverloyd than by any other route. Four people in a medium size family car would pay £14 by boat, and exactly the same by Hoverloyd if they travelled on the peak-period “A” tariff. If they travelled off peak, the hovercraft fare would be only £11. One person in the same car, on the other hand, would still pay £11 on the hovercraft, but only £6.85 on the boat. Each foot passenger will be charged £2 10s on the hovercraft cheap rate, against £2 12s for the boat.

MANAGEMENT

Strategy for Technology

A SPECULATIVE lecture on scientific and technical strategy at the national and major enterprise levels—the seventh talk in a series devoted to management and technological problems—was given at the United States Embassy in London last week by Professor James Quinn of the Amos Tuck School of Business Studies at Dartmouth College, New Hampshire. Enlivened by a series of anecdotes, the lecture revolved around the problem of defining and following a scientific and technological strategy in a large organization, whether public or private.

The immense difficulties in trying to reduce this question to definable terms were reflected in the style of the lecture. Indeed, it would be tempting to surmise from the number of unanswered questions posed by Professor Quinn that the days of intuitive decision-making are not yet over. But, in the long run, the only justification for adopting a strategy at all, according to Professor Quinn, is that either guessing or hoping do generally produce worse results.

Much of the talk was devoted to outlining the concepts needed to relate technology to an industrial or government strategy. The distinction between measured economic growth and the idea of “maximum growth in human well-being” was expressed in terms of quality improvements, which are intimately connected with technology. An example might be the construction of quieter aircraft rather than more economic ones.

Professor Quinn went on to discuss the role of a technological strategy in attaining this goal, and was quick to concede that a large company—by virtue of its well-defined hierarchy and its more limited objectives—could evolve a strategy much more easily than a government. He showed a flow-chart of forecasting and strategy in a typical large company, and referred to Hannibal’s planning of his campaign against the Romans to bring out the prime ingredients of a strategy. These consist of evaluating opportunities and threats and committing resources in a unique and selective pattern. Occasional snippets of political affiliation crept into the lecture, such as the acceptance of competition both nationally and internationally as a fundamental of life.

In assessing the benefits to less developed countries of foreign investment and the installation of multinational companies, Professor Quinn stressed that the

managers in the parent country were by no means as free to dictate policy as might appear on the surface, and had to be influenced by the feelings of local labour and social conditions. The importation of technology was also of value to the host country, but the style of Professor Quinn’s treatment will have given many in the audience the impression that part of the argument was based on a need to justify the huge overseas investments of the United States.

TECHNOLOGY

European Cooperation

THE deadlock between France and the Netherlands on the question of technological collaboration between the Common Market and other countries was resolved at a meeting of the Council of Ministers of the European Community when a compromise procedure for associating with other countries was hammered out. The deadlock arose after the last French veto on British entry into the Common Market. The Dutch boycotted the Community’s Marechal Committee on technological cooperation, saying that it should be allowed to consider collaboration with countries that had applied for community membership. The French position was that only the member countries should be involved.

The way the compromise works is that the Marechal Committee will resume its interrupted study of the possible fields for international cooperation and will report to the council by March of next year. The ministers will consider the report and may at that stage make proposals to other “interested” European countries. The word interested in this context is an attempt to gloss over the question of who exactly should be included. The Dutch would like to see only the four applicants for membership involved, but the French, unwilling to concede this a step on the way to entry into the community, want to make the invitation more general. At the discretion of the council, the next stage would be for experts from the six and outside countries to meet to prepare the ground for discussions between ministers of technology in the countries concerned. A spokesman for the community thought that this meeting might materialize in about a year’s time.

The Marechal Committee will initially consider collaboration in seven fields—automatic data processing, telecommunications, development of new forms of transport, oceanography, metallurgy, meteorology and nuisances (including air and water pollution). Whether the fact that none of these areas is politically controversial will make agreement easy and pave the way for more significant cooperation remains to be seen.

OPEN UNIVERSITY

Who will be Paying?

THE proposals for the Open University have now become an issue in the constant battle between the British Government and local government authorities over the levels of local government expenditure. Whitehall can fairly be accused of telling local government authorities to cut their levels of expenditure, while at the same time blithely putting forward projects which saddle local councils with extra expenditure. Last week, the Association of Municipal Corporations

expressed alarm at the prospects of local education authorities being asked to provide financial support for Open University students together with libraries, premises and even staff. The association said that "it is clear that the possibility of cost to education authorities exists. The need for the forecast expenditure for 1969-70 and 1970-71 to be reduced to meet figures put forward by the Government departments, upon which the amount of Exchequer aid has been decided, makes it inevitable that all financial liabilities from the project must be the central Government's responsibility."

The local education authorities have, of course, good reason to resent the prospect of having to pay anything towards the Open University. Some councils have this year been obliged to cut spending on education by reducing the number of teachers and increasing the size of primary school classes. In these circumstances, the education authorities appear to find the assertions of the Open University Planning Committee (which says that if the Open University increases local government expenditure the amount will be reimbursed, and that the local authorities will be represented on the university's council) less than reassuring.

Whatever the cost to local government of the Open University, local education authorities should find themselves a little better off from 1969, when the responsibility for all postgraduate awards passes to the central government. As things are, the local education authorities make about 2,200 awards a year to postgraduate students, chiefly for vocational training courses, which cost the local authorities about £0.4 million a year. As from October 1969, responsibility for these awards is to pass to the Government, which either directly or through the research councils already makes about 15,000 awards annually, costing about £9 million. The Treasury will apparently absorb the additional cost of £0.4 million under the new arrangement.

STATISTICAL CALCULATIONS

Forms for Confidence

A USEFUL aid for the teaching of statistics has been published by the Commonwealth Forestry Institute of Oxford University (Paper No. 41, 12s 6d). It consists of a set of preprinted formats ready laid out for the performance of simple statistical routines. The whole flow of each calculation is set out in a continuous fashion: labelled spaces are provided for the observed data and for every mathematical operation thereafter. The quarto-sized formats have obviously derived some inspiration from the example of programmed learning, and they should help to ease even the most obdurate student into the disciplines of elementary statistics. For that matter, they may be equally useful for field workers, giving a clear and lasting record for calculations that tend now to be done in snatched moments on the back of envelopes.

Twenty-six routines find a place in the collection, most of them of the type that arise in field biology and perhaps sociology. Chi-squared, linear regression, confidence limits and covariance analysis are all represented. It is strange that it should be a forestry institute that devised this aid—apparently the idea for it arose among field workers of the Uganda Forest Department in 1954.

LOCUST RETURN

Renewed Fight against Insects

THE unusually heavy rains in West Africa, Arabia and the Sudan seem to have received the blame for the resurgence of large desert locust populations and the consequent threat of plague. It is unfortunate that these swarms should have occurred just after the successful conclusion of the Food and Agriculture Organization's project for the development of improved control procedures. The 1967 report of the Anti-Locust Research Centre describes the steps taken by the centre to alleviate the swarm situation and also explains that contributions from the relevant governments and a further grant, this time for \$435,000, from the United Nations Development Fund will make it possible to continue the FAO control development project until 1970.

The importance of information on locust behaviour is reflected in the laboratory investigations at the Anti-Locust Research Centre. Studies on pheromones are designed to work out how these chemical substances act on the physiology and affect the behaviour of the locust. There is, for example, an aggregation pheromone which when secreted by the insect compels its neighbours to "stay put" and aggregate. Found in moulted skins, this substance is thought to be a peptide attached to the cuticle by hydrogen bonds. There is a possibility that it is a similar pheromone which causes genetic changes in the South African brown locust to produce a black skin colour and a gregarizing effect. Completely different, however, is the reproduction synchronizing substance which acts by causing speedier maturation of the pheromone producer.

Another adaptation employed by locusts to ensure efficient breeding is the production of a resistant egg which can survive until the environment provides the damp sand and the green grass essential for developing young. Light is also important; if a dry season is accompanied by a change in day length, the locusts may go into a reproductive diapause which will only be broken when the environment becomes more favourable. The mechanism behind much of the locust behaviour has yet to be investigated; but perhaps eventually synthetic pheromone and anti-pheromones may provide a useful weapon against the threat of rising locust populations caused by the unbeatable wind and rain.

DEVELOPMENT

Another World Plan

EACH year brings a new international organization devoted to aiding the developing countries. Enthusiasm for these bodies, unfortunately, is harder to sustain, and the gap between rich and poor nations continues to widen. At the same time, aid is falling—Britain, France and the United States have all made effective reductions of overseas aid recently. The First Development Decade, loudly heralded by the United Nations in 1960 as the beginning of the end of the world's imbalance of riches, is drawing to a close with some air of disenchantment. But there are some things to offset the gloom: the Overseas Development Institute announced last week that in 1967 the developing nations achieved for the first time what has been a UN target for some years—an overall growth rate of