

Britain there already has to be multiple use of land; for example, mountain moorland may be used for grazing, for open public access and parts may be a nature reserve.

An attempt to reconcile such conflicting uses through a new technique of rural planning was discussed at a meeting in London last week called by the Countryside Commission. Even if the technique goes no further than the drawing board, it was unique in Britain as a planning exercise. Its most valuable contribution was that for the first time important authorities concerned with the countryside showed that they can work together on a coordinated plan. In this particular plan, or research study as the people concerned prefer to call it, the Ministries of Agriculture, Housing, the Forestry Commission, the Nature Conservancy and the planning department of Hampshire County Council were involved. The study was based on evaluating the area covered by each land using interest, assessing the degree to which they may be complementary or in conflict, and on this basis suggesting land management policies which allow each interest to make the most efficient use of resources compatible with the other interests.

These studies first defined the interests involved in the study area—the East Hampshire designated Area of Outstanding Natural Beauty—and then graded the land according to the importance each interest placed on it (the interests were agriculture, forestry, wildlife and landscape). By superimposing the grading (or evaluation) maps, it has been possible to describe the zones by the importance of each interest relative to the others. Within these zones, it has been possible to define the level of activity of particular interests which are acceptable to the others without damage. In the study area, there were relatively few cases of severe conflict of use.

## OIL POLLUTION

### Where Cleansing goes Wrong

AFTER the wreck of the Torrey Canyon in March 1967, some 8,000 seabirds were taken to cleansing stations in Britain—but well under ten per cent and probably only about five per cent of these birds were rehabilitated and returned to the sea. Even this figure gives too optimistic a picture of the cleansing operation, for a large proportion of the so-called rehabilitated birds were recovered dead within a few days. Although exact figures are hard to come by, the Torrey Canyon episode revealed the complete inadequacy of the current methods of rehabilitating oiled birds, and oil pollution of the sea will continue for as long as oil is transported. Legislation can never totally eliminate accidental pollution and it is estimated that even the much vaunted “load on top” system of washing tankers, although a great improvement on previous practice, produces pollution at a rate of 400,000 tons a year.

As a direct result of the Torrey Canyon disaster, a Sub-Committee on the Rehabilitation of Oiled Seabirds of the Advisory Committee on Oil Pollution of the Sea decided to set up a research unit at the University of Newcastle upon Tyne to study oil pollution of birds. At the moment the unit consists only of Professor R. B. Clark and Dr J. R. Kennedy, and all the money

has been raised from charities—the World Wildlife Fund, the RSPCA and the Royal Society for the Protection of Birds. As a first step, Kennedy and Clark were commissioned to produce a review of the literature on the problems of rehabilitation, to outline promising lines of research and to produce separate proposals for definite research projects. Now that this has been done, the advisory committee will—with luck—be able to persuade the oil companies, the Government or the research councils to finance a full sized research unit at Newcastle.

In their report *Rehabilitation of Oiled Seabirds* (10s), which is in the main a catalogue of unanswered questions about bird physiology, Clark and Kennedy point out that the best index of the real effect of oil pollution on seabirds is the effect it has had on breeding populations. Using this criterion, the large auks of the North Atlantic are the most threatened birds. Razorbills, for example, have in the last 20 years become almost extinct in many of their former breeding grounds off the coasts of Newfoundland and Labrador. Guillemots, which suffered worst from the Torrey Canyon disaster (see *Nature*, 215, 1123; 1967), are, at the present rate of mortality from oiling in the east Atlantic, in danger of extinction from many of their former breeding grounds. Clark and Kennedy take the gloomy view that there is little hope of greatly reducing levels of pollution and the only answer is to improve methods of rehabilitation. Not everyone may be so pessimistic about reducing pollution at its source, but it is undeniable that, with existing methods, cleansing “satisfies a human need but has no biological significance whatsoever”.

The problem is that little is known of the biology and physiology of seabirds; even the most trivial information, such as the normal fluctuations in body temperature and weight, is generally lacking, and normal diets are only sketchily understood. As a result, when oiled birds are taken to cleansing stations remedial measures are at best inspired guesses. There are also problems of persuading cleaned and very often tamed birds to return to the breeding population. Clark and Kennedy believe that the two most crucial phases in rehabilitation, which must be significantly improved, are the first few days of acute illness and the time it takes to restore the water repellent properties of the plumage. They suggest investigating the use of tranquillizing drugs to reduce stress and feeding energy-rich liquid foods during the early stages of rehabilitation. To hasten the restoration of water repellency of plumage they suggest hormonal treatment to increase the secretion of the preen gland. Waterproofing of the plumage is in fact being studied at Newcastle, but it is obvious that with the existing funds they will barely scratch the surface of the problem. There will be little improvement in cleansing methods until an adequate research programme is set up.

## INFORMATION RETRIEVAL

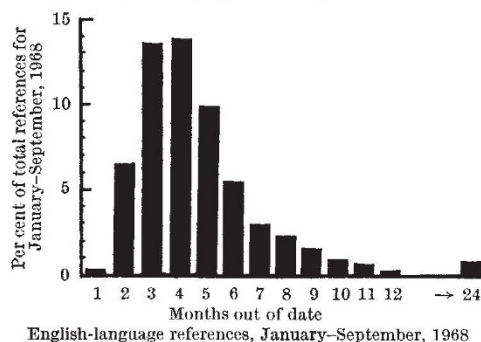
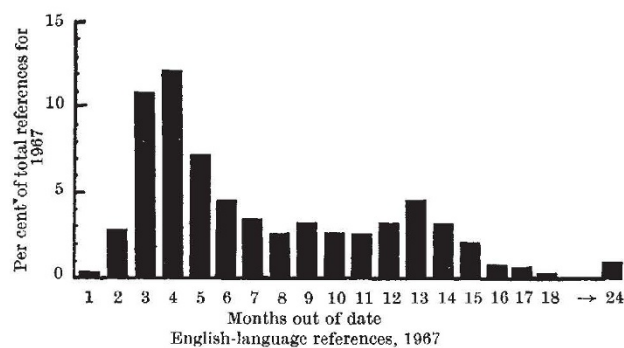
### Delays on Medlars

ALTHOUGH there seem to have been substantial indexing delays affecting Medlars (Medical Literature Analysis and Retrieval System) in 1967, the situation has considerably improved this year. According to Dr A. J. Harley, who is in charge of the UK Medlars service, this improvement is likely to continue as more

indexing is decentralized. Already, indexing for 50 out of 200 British medical journals—8–10 per cent of the total input to the Medlars system—is done at the National Lending Library at Boston Spa, the headquarters of the UK Medlars service. This in effect means that the indexing records for these journals arrive at the National Library of Medicine in Washington at about the same time as the journals themselves.

The situation was not, however, as cheerful in 1967—at least not according to two librarians in Oxford, L. S. Francis of the Department of Zoology and P. J. R. Warren of the Radcliffe Science Library who are critical of *Index Medicus* for 1967 in a recent issue of the *Bulletin, Medical Section of the Library Association, London* (No. 75, page 5, November 1968). They took random samples of references (about 1.25 per cent of the total) from the author sequence of the monthly issues of *Index Medicus* for 1961 and 1967, and tabulated the difference between the month of publication quoted in each reference and that of the issue in which it appeared. The results for 1967 are shown in the first histogram. Compared with 1961, the results for 1967 came out very badly—the 1961 *Index Medicus* had 100 per cent of its references listed within 12 months, whereas in 1967 only 98 per cent of the references had been listed in two years. To be sure, there were 25,000 more references listed in *Index Medicus* in 1967 than in 1961 (165,000 compared with 140,000—an increase of 18 per cent).

Since the publication of this article, Mr Francis and Mr Warren have updated their survey to September 1968 and find that the time lag for English-language material is decreasing (see the second histogram). This is not so for the foreign language publications indexed in *Index Medicus*, which were found to be very out of date in 1967. Dr Harley agreed this week that foreign language material is appearing late in *Index Medicus* and is consequently being retrieved late in a Medlars search. He said, however, that the situation was definitely improving for the most important



foreign language journals, particularly those in French, Russian and German, for which there is now only a few months' indexing delay.

## INDUSTRY

### Talking about Innovation

BRITAIN has a small group of highly articulate industrialists. Intelligent, literate and thoroughly cultivated men, they seem to spend a good deal of their time talking to each other at conferences like the one organized last week by Lord Jackson and the *Financial Times* on technological innovation. The past two weeks have seen a spate of conferences like these, and Dr F. E. Jones, managing director of Mullard, has been at them all. At last week's conference, his subject was the problem of managing a multi-national company, but he is equally good at national science policy or successful research management. Mr S. L. Bragg, chief scientist with Rolls-Royce, is another regular, and this time he spoke on the development of the RB 211 engine.

The conference, which lasted two days, covered the whole field with commendable thoroughness. Dr Ieuan Maddock, from the Ministry of Technology, described how the ministry was prepared to "go out and invade the industrialist's territory". Dr J. Leicester, of the British Launderers Research Association, put in a word for the RAs. A study made of 14 projects carried out by research associations had shown that for an investment of £395,000, returns of £4.8 million had been achieved in a single year. He also spoke kindly of the work Harwell is doing for industry, but wondered if there might not be a risk of confusing the industrialist by the plethora of sources of advice.

There was also talk on the first day of the "interface" between industry and the universities. Professor H. Ford of Imperial College said that old attitudes—which held that industry did not innovate, and that universities stifled innovation wherever they found it—should be thrown away, to be replaced by the concept of "involvement". Professor T. T. Paterson from the University of Strathclyde described how the university carries out research work on contract to industry, and Dr H. Rose of International Research and Development discussed sponsored research at IRD.

On the second day, several speakers gave examples of innovation in practice. Mr Bragg discussed the concepts underlying the Rolls-Royce advanced research laboratory. One of the crucial factors, he said, was that the people who have ideas should be allowed, or compelled, to follow them through to production and marketing. Dr A. A. L. Challis from the petrochemical and polymer laboratory of ICI described the discovery and development of bipyridyl weedkillers—non-persistent and extremely active herbicides which could be used to replace ploughing as a means of weed control. Used on mountainsides in Wales, he said, the weedkillers had enabled sheep to increase in weight by 90 lb, while control animals showed only a 9 lb gain. But the pace of work in proving a major development like this was, he confessed, "agonizingly slow". The danger was that by the time the herbicide was proved to everybody's satisfaction, the patent rights would have run out, so that those who had