

## Even More about Torrey Canyon

THE effect of the Torrey Canyon disaster of March 18 on marine life continues to be studied by biologists. Two teams—one from the Marine Biological Association at Plymouth, and one sponsored by the Ministry of Agriculture, Fisheries and Food—have, since April, been assessing the biological damage below low tide mark in the vicinity of Porthleven and Gunwalloe. The results of their observations are published in the Underwater Association Report for 1966–67.

It is now generally accepted that detergents, highly toxic emulsifying agents, do most of the damage to marine organisms. The data in the report indicate the symptoms of infected animals, and one noticeable feature is the differential vulnerability shown by some species. Among the Decapod Crustacea, the commercially important edible crab, *Cancer paganus*, and the lobster, *Homarus vulgaris*, are relatively resistant but become sluggish when seriously affected and crabs may lose their legs. Some molluscs, including the razor shell, *Ensis siliqua*, are extremely vulnerable and appear to enter a narcotized state before death. Black patches develop on the epidermis of certain echinoderms in weak concentrations of detergent, and in stronger concentrations the animals quickly die and fall into gulleys between rocks. Fish were noticeably absent in areas heavily treated with detergent and very few corpses were seen. The teams also investigated two important habitats—rock with *Laminaria* forest, and clean sand. Of the two, unhealthy and dead species were more common in the sand habitat: evidence of damage in the rock habitat was only seen for a limited distance offshore and, by the beginning of June, all corpses had disappeared and only healthy ones remained in rather depleted stores stocks.

The cause of the differential vulnerability is unknown. It may be caused by differences in habitat or differences in the feeding habits of the various organisms.

## Hazards below Ground

THE Federal Radiation Council in the United States has now set out to provide guidance for the control of radiation hazards in uranium mining—chiefly an enhanced risk of lung cancer. The principal cause of the increased incidence of lung cancer among uranium miners is continued exposure to the radioactive decay products of radon-222. These are polonium-218, lead-214, bismuth-214 and polonium-214. It is known that some of the radon daughters contained in the air breathed by miners are retained in the respiratory system. The development of lung cancer may follow some ten to twenty years later.

The council measures the hazard in working levels, defined as any combination of radon daughters in 1 litre of air that will result in the ultimate emission of  $1.3 \cdot 10^{-5}$  MeV of potential  $\alpha$ -energy. In unventilated underground mines, the concentration of radon daughters has been found to vary from a fraction of a working level to several hundred times the level. Although some degree of risk presumably exists at all levels of exposure, maximum incidence of lung cancer occurs when the cumulative exposure exceeds 1,000 working level months (WLM), when the miners are moderate to heavy smokers, and when they have worked in mines for ten or more years.

A significant reduction in the concentration of radon daughters in the air of underground mines has been achieved since 1960. The simplest control technique is by ventilation with fresh air, although studies have been made on possible procedures that might be used to prevent the diffusion of radon from rock into mine air. Another practice is to limit a miner's occupancy time in relatively high concentrations of radon or its daughter products. Despite the healthier working conditions introduced during the past decade, the council recommends that steps to make improvements should begin immediately and made operational as soon as possible. But the council recognizes that present regulations and technology are inadequate to ensure compliance with its recommendations. It puts its trust in research, development and education of the miner.

## Wider Patent Laws

DELEGATES from twenty-four countries—Argentina, Australia, Austria, Belgium, Brazil, Canada, Czechoslovakia, Denmark, France, West Germany, India, Italy, Japan, Mexico, Netherlands, Norway, Poland, South Africa, Spain, Sweden, Switzerland, UK, USA, and USSR—were meeting this week in Geneva to discuss the plan for a Patent Co-operation Treaty which has been prepared by the United International Bureaux for the Protection of Intellectual Property (BIRPI). Agreement could imply a big step forward towards a more rational patent law.

Many attempts have been made to do this. The Patent Group of the Union of the Industries of the European Community has already tried to unify the patent system of the Six, but that plan has, for the time being, been shelved. The Council of Europe has the Strasbourg Convention which standardized administration procedure in making a standard application form for all countries. The big problem is, however, to obtain wider coverage for patents; as things are, applications have to be made to each country separately and this takes much time and expense and even then may not be entirely satisfactory. The meeting in Geneva was to discuss plans for an international centre for patents where a patent application would be forwarded to by a national office. The centre would distribute the patent application to any country nominated by the inventor. How much work this centre would do is one of the topics debated this week. It has been suggested that the centre should issue a report of novelty: an immediate anticipation search should be carried out by the centre or the national patent office but using the same standards, and a certificate of patentability should be issued by the centre after a patentability examination has been carried out by the centre or the national patent office. The certificate would have indicative value only and national offices would be under no obligation to recognize it. The British attitude to these and other proposals should be clarified when the report of the Banks Committee on Patent Reform is published in the middle of next year.

## Facing the Food Shortage

AN international seminar on Change in Agriculture is to be held in September 1968 and is being organized by the University of Reading with the co-operation

of the Rockefeller Foundation. The steering committee under Professor Bunting of Reading consists of eminent agriculturists from both sides of the Atlantic. It is drawing up a timetable for ten days of intensive and, it hopes, constructive work on improvements in agriculture. Case studies of various agricultural projects in areas of both high and low productivity will be presented, in the hope that some general principles will emerge as to how best to improve farming methods in unproductive areas. Technical knowledge is available to improve crops, in some cases to three times the present level, but the best means of applying new methods are as yet undefined. It is hoped that constructive suggestions will emerge during discussion at the seminar, which will be attended by about 150 people, including economists, educationists, sociologists and agriculturists. The steering committee hopes that by restricting the attendance at the seminar, results will be produced. Detailed reports of the proceedings will be published.

## Airlines Grounded

THE latest victims of economic hardship in the United Kingdom are the airlines, whose operating figures for the first half of 1967 do not show the usual healthy upward trend. Compared with the same period in 1966, the number of passengers carried has risen by only 2.2 per cent to 5.46 million—in recent years, increases have been nearer 10 to 15 per cent a year. Although the airlines have increased their capacity by 8.6 per cent to 7,051 million seat miles, passenger miles have only increased by 5.3 per cent to 3,915 million. Freight carried has dropped by 13.5 per cent to 149,309 short tons, although total load has risen by 5.2 per cent to 523.4 million short ton miles.

The worst hit seem to have been the shorthaul services within Europe. Comparing the June 1966 and June 1967 figures, British European Airways have carried 6.6 per cent fewer passengers, and the load factor is down from 67.4 per cent to 60.1 per cent. In the same period, freight fell by 26.8 per cent and mail by 29.1 per cent. The private companies fared even worse; freight fell by 36 per cent, and mail by 60 per cent. Although the seamen's strike in June 1966 gave the airlines extra traffic which they could not expect to maintain, the figures show that the weight of cargo carried has increased very little over the past five years. Longhaul services, fortunately, do not seem to have been as badly affected. BOAC carried 3.3 per cent more passengers, and 6.1 per cent more mail, but 10.7 per cent less freight.

The real blow to the airlines seems to have been in the holiday business. The inclusive tours to Europe expanded only modestly this year, although the annual increase has usually been between 40 and 80 per cent per year.

Since inclusive tours can be paid for in sterling, it is unlikely that the £50 currency limit can be blamed. In any case, it is the less expensive tours which have been hardest hit, which suggests that general economic conditions have dictated a holiday at home for many who might otherwise have gone abroad. Within Britain, improved rail services have affected airline traffic. With these latest statistics, it is easy to see why the Air Transport Licensing Board recently sanctioned increases in fares.

## Social Science at Boston Spa

ELEVEN miles of library shelving were added to the existing twenty-five when Mr Patrick Gordon-Walker, Secretary of State for Education and Science, opened a new extension of the National Lending Library for Science and Technology at Boston Spa, Lincolnshire, on October 5. At the same time, a new service for social scientists was inaugurated. From now on the library will hold journals and periodicals devoted exclusively to the social sciences as well as those previously held in which the subject was mentioned. There are at present no plans to build up a stock of social science books but, following the report on libraries by the University Grants Committee, the future policy of the library is under discussion.

More than 500,000 requests have been dealt with in the past year, for photocopying papers, as well as borrowing books, and the stock of 650,000 volumes makes the library the largest scientific lending library in Europe. A new list has just been published of the 28,000 current periodicals that are held by the library.

Efficient use of scientific information becomes more important each year as the volume of literature increases, and the staff of the library have for several years been organizing courses of instruction in this field. The first courses, five years ago, were held for research students, but became impossibly over-subscribed. The present plan is to instruct academic staff and university librarians in the hope that they can run courses for their own students. In the meantime, the library is using modern handling techniques such as conveyor belts, and is streamlining cataloguing methods so that requests for information can be dealt with in the fastest possible way.

## Foundation for Prosperity

THE Wolfson Foundation has decided in principle to set aside up to £500,000 over the next five years for agreed projects in applied science education which in the judgment of the trustees are most likely to improve the economic position of the United Kingdom and help the modernization of British industry. It is intended that universities should apply for quite substantial sums of money to carry out specific projects of this kind and it is apparently understood that the total sum now allocated is unlikely to be able to support more than half a dozen projects or so. At the same time, the trustees of the foundation are breaking new ground by their determination to seek out, by discussion with universities, proposals for projects that will qualify for support. In deciding where to place money, the foundation has apparently decided that it will give particularly favourable consideration to universities which have established in the natural course of events close relationships with local industries.

The motive behind this new development is the argument that the Government and the foundations have in the past twenty years done much to stimulate academic research and have, unwittingly, contributed in the process to the strong emphasis on academic problems now apparent in university research of various kinds. In its new work, which will consume somewhat less than half of what the foundation is likely to spend in the next five years on higher education as a whole, the Wolfson Foundation is looking for kinds of research