The report shows that the project has been slow to get off the ground. In 1960, the ENEA set up a committee to examine the feasibility of the process; in 1961 Austria indicated willingness to do the experimental work, on fruit and fruit juices. In 1962 the draft programme was drawn up; in 1963 a draft agreement was submitted, and it was finally signed in September 1964. Work began in January 1965, but the irradiation facility was not finished until September this year. Initially work will be concentrated on fruit juices, both because of their convenience and because the yeasts which are mainly responsible for the spoilage of fruit juice are a well studied group of micro-organisms. The experimental work is divided into three main fields: radiosensitization studies on yeasts and moulds, technological studies including radiation chemistry and wholesomeness tests.

Like other methods of food preservation—smoking, drying, canning or freezing—irradiation affects the taste of the food. Results at Seibersdorf with grape juice have not yet established which compound is responsible for irradiation taste, but the indications are that the undesirable taste is not caused by protein degradation. Some evidence indicates that flavour changes can be minimized by irradiation at very high dose rates, and preliminary results from work in Switzerland with an accelerator indicate that apple juice can tolerate a high dose rate without significant flavour change. Of rather more importance is the work necessary to establish that the new process is safe for human consumption over long periods. At Seibersdorf animal feeding trials are being made with three types of animals—rats, mice and miniature pigs.

Work with apple juice has established that only one compound, furan or a furan derivative, was specifically produced by the irradiation process. But compounds already present in the unirradiated juice, like acetaldehyde, may be increased. The concentration of acetaldehyde continues to increase during storage, while cupronaldehyde, present after irradiation, appears to decline in concentration during storage. The irradiated apple juice, the report says, could be stored successfully at room temperature for 200 days.

Architects and Engineers

THE building industry has for a long time been troubled by differences that exist between the members of the various professions that work together in a building team. Architects and engineers have tended to become isolated from one another because of differences in their professional training. An attempt is now being made to find ways of breaking down the barriers between them, so that the skills and total knowledge of individuals can be used more effectively than at present. A joint education group was set up in 1966 by the Council of Engineering Institutions (CEI) and the Royal Institute of British Architects (RIBA) to find ways of improving the understanding during training between the disciplines of architecture and engineering, and to consider the possibility of training people to be both engineers and architects. The nine-strong group of two architects, four engineers and three RIBA staff has just produced its interim report, which covers the first of these problems and gives a preliminary statement of the second.

Much of the present lack of communication between architects and engineers is caused by differences in the educational systems. Both professions require at least six years' training, but the academic content varies. Engineers take a three-year academic course followed by three years' practical training, while architects have a year of practical training after their third year, in the middle of their academic course, so that theory and practice are interwoven. But the most fundamental difference is in the approaches of the professions. Engineers are given highly technical training with little concern for the human side of the problems. Architects, on the other hand, consider the human factor to be of prime importance, but are sometimes short on technical expertise. Some subjects that are common to both disciplines have up to now been treated differently. In structures, for example, architects are concerned with strategy, and engineers with tactics. This means that architects study the causes and effects of certain choices, while engineers are there to see that the choice which is finally made stays up. Despite his greater technical knowledge, the engineer must leave design to the architect.

The problems of communication are not new, but there are now signs of progress. The CEI, which represents the majority of the engineering institutions, is aiming to provide a common theoretical basis for all engineers which can then be applied to any specialist field. This approach does not encourage integration with architecture, but the fact that the CEI is involved on the education project indicates its awareness of the situation. The Council for National Academic Awards, which awards degrees to students at polytechnics, has the power to accept or reject courses into the degree category. It therefore has considerable influence on the content of non-university courses. The group has several suggestions to make for increasing understanding and co-operation, based on the idea of students working together. Project work could be carried out by architecture and engineering students together, and some parts of the syllabus could be shared. The group believes that "orientation" courses for engineers entering the building field are worth investigating. Teachers from one discipline who appreciate the problems of the other could also help. The ultimate solution as described by the group rests on the establishment of educational institutions where architects and building engineers can work together. This would require engineers to commit themselves to the building field at an early stage—to good purpose, the group thinks.

Free Enterprise under the Sea

AMIDST all the rumours of new Government support for oceanography in Britain, it is refreshing to find some young men who are prepared to back their hunches and build for the future under the sea without waiting for the cat to jump.

At Lintott Engineering Ltd's Horsham works last week, Britain's first mobile submersible was given its first demonstration. Called SURV, for Standard Underwater Research Vessel, it was initially the concept and design of M. J. Borrow, R. E. Lloyd and J. M. Metcalf of Underwater and Marine Operations Ltd (Woking), who have seen it through to the fully engineered prototype constructed by Lintott and demonstrated last week after two months of sea trials.

It is intended as a broad purpose underwater tool for the engineer and research worker at continental shelf depths, and carries two men. The makers claim that its performance "covers all aspects of undersea work including bottom surveys of sea-bed conditions before, during, and after laying of oil and gas pipelines and submarine cables". They also see applications for geology, marine biology, fish farming, surveillance, and as a search and recovery vehicle. There are provisions for outside manipulations and coring. (It might well have come in handy as an aid in the hazardous operation to recover the Royal Navy *Buccaneer* that plunged into 300 ft. of water off the Lizard a couple of years ago.)

To do all this, a cylindrical pressure vessel of 5¼ ft. diameter with 1⅛ in. thick mild steel walls has been chosen. This has a theoretical collapse depth of 3,500 ft. The pressure hull is enclosed in a glass fibre shell to make SURV as rugged to surface treatment as a glass fibre boat. The prototype has been rated for 260 p.s.i., equivalent to 600 ft. depth, and is expected to be progressively reclassified down to 1,000 ft. which lies within its design safety factor. The crew environment is "near normal", that is, they breathe air at atmospheric pressure, and submerged endurance is 36 h which in an emergency could be extended to 48 h if the crew sit still. Arrangements for neutral buoyancy and two independently rotatable motors mounted on each side give the craft exceptional manoeuvrability. It can move forward and backward, turn and keep station at a given depth—in addition of course to vertical manoeuvres—all of which was convincingly demonstrated in the Lintott tank last week. It is not exactly nippy, however. Maximum speed is 2½ knots submerged or at the surface. For surveying this is still a considerable gain on the free diver's performance. In air, SURV weighs 6·1 tons excluding crew, not likely to impose much strain on harbour facilities or support ships and so qualifying it for operations in almost any dart of the world, the sponsors hope.

The cost of preparing the first SURV for operations is understood to be about £60,000—roughly 50 per cent of the cost of similar American submersibles, of which General Dynamics' vehicle is the nearest in design. At present SURV's sponsors look to hire rather than outright purchase to recoup their outlay. Hire price, which includes their own "driver", is negotiable but likely to fall within the range £300–£400 per day. So far, they have enquiries but no firm offers. The presence of two members of the National Institute for Oceanography at the demonstration was considered encouraging.

World Health

WITHIN the past few years there has been unhappy evidence that some diseases, far from declining as public health standards improve, are actually increasing. Cholera El Tor, plague, yellow fever, trypanosomiasis, ancylosomiasis, viral hepatitis and venereal disease have all increased, according to the third report on world health, compiled by the World Health Organization (WHO, Geneva, £1 15*s*.). Against this must be set some real achievements—tuberculosis, for example, which killed one person in nine in the United Kingdom at the turn of the century, caused only one death in 180 between 1960 and 1964. But there is a great discrepancy between the achievements of the developed countries and those of the underdeveloped world. Europe has been free of cholera since 1923, but during the past ten years it has flared up again in India and Africa. Until 1960 there was a decline, from 212,000 cases in 1950 to 33,000 in 1960, but since then the disease has come back strongly, with a total of 94,000 cases in 1964; the worst hit countries are India and the Philippines.

There is clearly no room for complacency when diseases can re-establish themselves as strongly as that. But the underlying trend is more hopeful; infant mortality rates, always a good indicator of public health standards, show improvements almost everywhere. In some cases the improvement is dramatic, with mortality rates down by 50 per cent or more. Other countries show smaller improvements, in some cases because mortality rates for babies were already low, but many developed countries which have achieved low rates have reduced them even further. New Zealand shows a reduction in infant mortality of 18·7 per cent since 1954, and Canada a reduction of 17·6 per cent. Crude death rates also show a reduction in recent years, with some interesting exceptions. The United States, Argentina and Cuba all show increases of death rate since 1954, and in Europe death rates have tended to remain much the same over the past decade. Elsewhere, decreases have been common.

In developed countries, cardiovascular diseases account for about 40 per cent of all deaths. High blood pressure, the report reveals, is almost universal; only a few very primitive populations and populations living at high altitude are free from it. Cancers of the respiratory system have also become a serious health hazard; in the UK deaths from cancers of this type have increased by 69 per cent since 1954. But there are some striking variations between countries which might be expected to be similar; in Finland the death rate per 100,000 for respiratory cancers was 58·1 in 1963, while in Norway the figure was only 18·7.

Accidents, while not strictly a health problem, are becoming more and more important as a cause of death. In the age group from 1 to 35, they now rank as the leading cause of death. In developing countries, accidents are less significant, but they are beginning to increase in importance, and sometimes rank as the sixth or seventh commonest cause of death.

Response to Aldabra

THOSE who have been campaigning, in the weeks past, to dissuade the British Government from using the island of Aldabra as an air staging post seem now to be entirely willing to press for the facilities that will be needed if the island ecosystem is to be properly studied. It seems, however, to be agreed that the first step should be a clarification of the political status of the island. Administratively, the island comes under the umbrella of the British Indian Ocean Territory, which was originally created for defence purposes. Obviously the British Government could do much to reassure the ecologists by formally detaching Aldabra from that organization.

As yet there is no plan for the long-term conservation of Aldabra, but the Royal Society is eager to help in preparing one. The Nature Conservancy is also a