

developed it would not be the ones to reap the best profits.

One of the most compelling—and depressing—contributions was made by Mr John Chown, tax correspondent of the *Financial Times*. He demonstrated how very difficult it is to find gaps in the taxation system in Great Britain, and said that even if all the other obstacles to innovation disappeared, the tax system alone would be a positive disincentive. One who agreed wholeheartedly was Mr B. Newsam, managing director of Telecommunications Instruments Ltd, who appeared to prove by an economic model all his own that innovation was impossible—or at least unprofitable, which is the same thing for the small businessman. Happily there was some disagreement with this view, but most people agreed that the private inventor in Britain works in a climate which is extraordinarily hostile to innovation. This, it seems, is an area where tax incentives could make a real difference.

#### DEFENCE

### Combat Aircraft for Europe ?

THE “mini-TSR-2”—otherwise the advanced combat aircraft (Britain’s name) or the MRCA, the name the Germans use—seems to have run into trouble. This is not likely to be relieved by the ascendancy of the Deutsch-mark and the aggressive explosion of the German aerospace industry that goes with it. “What it is I know not, but it shall be the terror of the Earth” seems to have been the message conveyed by British Defence Minister, Denis Healey, in his recent talks in Bonn. The plan seems to have been that it should provide the dream military aircraft to carry Western Europe through the mid-seventies. The British dream was expected to appeal to Germany, Italy, Holland, Belgium and possibly Canada and be worth “hundreds of millions of pounds” in Mr Healey’s estimation. Politically it would be valuable as cement for a joint

project on the lines outlined earlier this year in the so-called Harmel plan proposed by the Belgian Foreign Minister, said Mr Healey.

The first difficulty seems to have been that Britain wants a two-seater strike-interceptor to fulfil its needs in the seventies while the other countries in the deal have less ambitious requirements calling only for a single-seater machine. Actual numbers likely to be involved also put Britain at a disadvantage—the maximum British requirement is for 300–350 aircraft while Germany wants from 400 to 450. At the same time the British Aircraft Corporation is seen by Mr Healey as the best candidate firm for the main construction, not least because of its expertise in the development of swing-wing joints. Germany’s Bolkow–Messerschmitt company thinks otherwise, and the German Federal Government’s view appears to have hardened despite German Defence Minister Dr Schroeder’s expressed view that it would be inadvisable to give German industry too big a role in the plane’s system engineering and design. The official line was certainly influenced by the inept offer by British ministers to trade promises of support for a German-inspired airbus project for agreement that British industry should have the main slice of the advanced military aircraft contract. Despite all this, Mr Healey still expects agreement with Germany on the advanced aircraft and the distribution of contracts to be completed before the end of the year.

#### TURKEY DISEASE

### No Shadow over Christmas

THE Ministry of Agriculture seems satisfied that Britain’s Christmas dinners are in no way threatened by the six cases of Arizona paracolon which have occurred since August on turkey farms in Yorkshire, Montgomeryshire, Cheshire and Norfolk. The cases are nevertheless the first ever recorded in Britain, and



Part of the new Saltfleetby-Theddlethorpe Dunes National Nature Reserve in Lincolnshire. The 293 acres of land, stretching along 4.5 miles of the Lincolnshire coast between Saltfleet Haven and Mablethorpe North End, have been purchased from the Ministry of Defence, as announced by the Nature Conservancy last week. A further 795 acres of foreshore have been leased from the Crown Estate Commissioners. The main dune ridge at Saltfleetby is thought to have been in existence for several centuries and its plant communities are more mature than those elsewhere on the Lincolnshire coast. Not only is the land valuable from the point of view of rare plants growing on the lime-rich sand, but because salt-marshes and dunes develop rapidly on this stretch of coast, it is particularly suitable for ecological and physiographic studies.

the disease seems to have been introduced from the US where it is endemic. Bacteria of the Arizona paracolony group are closely related to the salmonellae, but are fortunately not particularly pathogenic to man except in very high doses. Arizona paracolony is clearly not the foot and mouth disease of the poultry world. In the US, for example, poultry farmers have learned to live with it as a nuisance rather than a major plague, although it can be economically serious; once established in a stock, it is virtually impossible to eradicate and can cause losses among young birds of anything between 10 and 90 per cent. Clearly it is important that it should not be allowed to gain a permanent foothold, and the recent outbreaks, which seem to have caught everyone unawares, reveal a gap in import arrangements which are designed to protect against its introduction.

The problem is that the disease is exceptionally difficult to diagnose. Often there are no definite symptoms, although some of the birds affected in the recent outbreak began to go blind. The birds sicken and die of septicaemia, and diagnosis depends on laboratory tests for the bacteria. To complicate matters further, birds which survive infection become symptomless carriers and can transmit the disease in fertile eggs.

Since the British Government adopted vaccination instead of slaughter as a control of fowl pest, importation of live poultry under licence and subject to fairly strict control has been permitted. Under the existing regulations, imported birds or eggs have to be covered by a veterinary certificate and are held in quarantine for six months and regularly inspected. By all accounts the Arizona paracolony was introduced in a batch of day-old poults of the Williams strain which were imported from the United States to quarantine premises in Wales. This strain, Big W to American breeders, has two characters—broad breasts and a good food conversion ratio—which British poultry farmers are anxious to introduce, but unfortunately the strain is particularly susceptible to Arizona paracolony. Apparently some of the poults imported for breeding were carriers of the disease and went undetected during quarantine; it was their progeny which were found with the disease on the six farms.

At present, Arizona paracolony is not a notifiable disease and the ministry has no power to enforce inspection of birds or slaughter. Mr J. Mackie, in a written parliamentary answer for the ministry on November 20, said that an eradication campaign was not practicable but the ministry has recommended farmers not to breed from the Williams strain or from birds exposed to the risk of infection. In the meantime, the ministry is considering whether to introduce further safeguards. The recent outbreak has proved that the existing ones should be tightened; one possible alternative would be to insist that all imported turkeys should not be released from quarantine until the first generation progeny had been proved free of the disease.

#### INSTITUTIONS

### Interdisciplinarians

It will come as a surprise to many British scientists and engineers to learn of the existence of a special body, set up by a group of scientific institutions, whose

aim is to probe and develop scientific work which does not fall uniquely into any of the conventional disciplines. The status of the body is that of an informal committee, and it is known as the Interdisciplinary Working Party (IWP). It seems that the absence of publicity has its origins in the nature of the IWP, which has an almost pathological dislike of officialdom and the other strings normally attached to being a "committee". The chairman of the group, Dr J. A. Ratcliffe, stresses that each of the nine members of the IWP represents nobody but himself and has no outside obligations.

The history and aims of the IWP are straightforward. In February 1967 the scientific institutions representing chemistry, biology, physics, metallurgy and mathematics invited the Council of Engineering Institutions to participate in the activities of an IWP. The idea was that this unit should be independent and should have an informal action group to galvanize the institutions into interdisciplinary functions—meetings and conferences, for example. The management of the working party has been in the hands of the Institution of Metallurgists since the IWP was set up in July 1967. It is due to be transferred to the Institution of Mechanical Engineers in the new year, and there may also be a new secretary to replace Mr D. W. Harding.

The original committee consisted of eight members taken from universities and industry and appointed by the scientific institutions. Extra members can be added to the group either by invitation or by recommendation, and there has been one addition to date. The IWP has already had some success in enticing the Institution of Metallurgists to hold several meetings of an interdisciplinary nature, covering subjects like "Tribology" and "Plastics, Materials and Ceramics". The secretary and chairman of the IWP are both confident that the functions of the group will increase in the coming year.

#### FERTILIZERS

### Hazards of Progress

INCREASING use of artificial fertilizers has resulted in a tendency to separate crop and animal farming. In a lecture "Fertilizers and Animal Production" Dr K. L. Blaxter of the Rowett Research Institute told the Fertilizer Society on November 28 that during the past fifty years the role of livestock on the arable farm has changed from a central feature of an ancient fertility rite to a separate enterprise to be judged solely on its economic validity. This has meant that in arable farming less attention has been paid to the effects of arable manuring practice on animal production, although the stock farmer still depends absolutely on the quantity and quality of the crops produced for his animals to feed on.

There is evidence, Dr Blaxter said, that, although most farm crops and grass are grown for consumption by stock, fertilizer policy is decided according to the economics of the primary crop response rather than the secondary animal response. This can lead to problems, because crops giving high yields as a result of treatment with fertilizer may not provide the best nutritive value for the stock feeding on them. Sodium, iodine and selenium, for example, are essential to animals but not to plants. If the optimal needs of many plants for cobalt, magnesium and iron are met,