

became an agricultural animal. At best, it seems, farmers are faced with a choice of evils. The labour force in agriculture declines by five per cent a year, and productivity per man must increase. If ploughs are to be retained, then tractors must become larger, fields must become larger and hedges must come down, which itself is a violation of the countryside as it is.

Criticism from conservationists has been quite deeply felt within the pesticide industry, which is on its own initiative lobbying the British Government to introduce a compulsory scheme for the registration of pesticides. The present scheme is voluntary. But manufacturers have shown little enthusiasm for the idea that defoliants should be subject to the terms of the Geneva Convention on biological warfare. Several defoliants of British invention are apparently being used in Vietnam. The current safety regulations cope fully with the toxicity of pesticides but take no account of persistence. Most chemicals are soon destroyed by bacteria in the soil, but "Picloram", a herbicide produced by Dow Chemical, is exceptional in its resistance to bacterial attack. There is therefore a risk that it might accumulate in waterways and spread to untreated ground. "Picloram" is being withdrawn from use as stocks run out, and moves are afoot to add a persistence clause to the pesticide regulations.

SI UNITS

Recalcitrant Physicists

BRITISH physicists, like engineers and chemists, seem reluctant to adopt the full-blooded version of the international system (SI) of units. Attempts were made to define the areas where there is fundamental disagreement at a meeting held last week by the Royal Society to discuss the use of SI units in physics.

Professor M. J. Lighthill, who ran the meeting, pleaded that physicists should be prepared to make some concessions for the sake of establishing a coherent common language for communication between scientists from different countries and from different disciplines. He realized that in some fields, like nuclear physics and astrophysics, the orders of magnitude involved are such that SI units are inappropriate, and that non-dimensional systems of units are so useful that they should not be abandoned, but he thought that in most other fields SI units could be successfully incorporated.

Professor F. C. Frank from Bristol agreed that the present system of units should be reformed and stressed that half measures, like the use of the kg-force instead of the lb-force, should be avoided. He thought that objections to particular SI units on the grounds of current familiarity or because their orders of magnitudes are less convenient than those of conventional units did not carry much weight. The SI unit cannot differ by more than a factor of 10 from the conventional unit, because a thousand times or a thousandth of each unit is another allowed unit. But valid objections could be made to the use of SI units in electromagnetism, he thought. Physically the quantities magnetic field and magnetic induction, and electric field and displacement, are similar, but they have different SI units. Another objection to SI is that in high precision work physical quantities like volume can be compared to precisions of parts in 10^7 , but can be determined in terms of

the basic SI unit to precisions of only parts in 10^4 .

Most physicists work in a particular field and do not need to communicate outside this field, and Professor R. G. Chambers, also from Bristol, agreed that different dialects should be allowed. He defended the spectroscopists' use of the Ångstrom and cm^{-1} which are not recognized metric units. The Inter-Union Commission for Spectroscopy which represents the views of most spectroscopists, issued a statement in July in support of the Ångstrom and cm^{-1} . Some members of the commission recommended the indefinite preservation of these units. Crystallographers also like the Ångstrom because it is a convenient unit for interatomic distances and chemical bond lengths.

Sir Harrie Massey, chairman of the Council for Scientific Policy, hoped that scientists writing books or contributing to journals would not be forced to use SI units exclusively. If an authoritarian editorial policy were adopted, he warned, authors would probably send their manuscripts to the United States. A spokesman for the Royal Society said that, in the pamphlet it has prepared on the use of signs, symbols and abbreviations in scientific journals, it recommends that editors should insist on the use of the recommended symbols for physical quantities, and the definition once in a paper of any non-SI unit used, and that they should progressively discourage the use of non-SI units.

The question of the units to be used for pressure remains a vexed one and Dr Fielden from the British Standards Institution explained that the BSI would like to see the N/mm^2 or MN/m^2 as the unit of pressure. Because some industries were already using the hbar (10 N/mm^2), however, the institute would probably issue standards showing both units for some time, hoping that the basic unit would gradually be accepted.

EPIDEMIOLOGY

Unpredictable Bug

HONG KONG influenza, now making its debut in Europe and the United States of America, has spread rapidly since it originated in Hong Kong and neighbouring areas of China in mid-July. Nobody can predict if and when a large-scale epidemic is likely to break out in Britain, although previous experience of influenza epidemics points to late December and early January as "target" months, and similar dates have been quoted for an expected increase in the incidence of influenza in the United States. Reactions range from cheerful optimism to great consternation—particularly on the part of Mr Eric Moonman, chairman of the Labour Party's Science and Technology Committee, who is questioning the Government's plans to deal with an epidemic.

Because the new strain of virus differs quite considerably from the older A2 strain which it has displaced, existing supplies of vaccine against A2 Singapore provide very little protection against Hong Kong influenza. Consequently, three British drug companies are manufacturing new vaccine for immunization—in the first instance—of the aged and chronically sick, in accordance with instructions from the Ministry of Health (Department of Health and Social Security). Beecham's Research Laboratories went into production at the end of August and started to distribute vaccine about 2 weeks ago. Crookes Laboratories Ltd also

went into production in August at its centre just outside Amsterdam, but a spokesman said this week that vaccine is not likely to be distributed until the end of the month. The virus unit of BDH Pharmaceuticals, which started distributing vaccine on October 16, has been experiencing difficulty in growing the new strain, and both Crookes and BDH are getting only about one dose of vaccine per egg, which is pushing up production costs. The companies say they are not planning to export vaccine until the home demand has been satisfied.

So far, epidemics caused by the new strain have occurred in Hong Kong, Singapore, Rangoon, Vietnam, the Philippines, several parts of India, the Northern Territory of Australia, Taiwan, Tehran, the Panama Canal Zone and Hawaii. In addition, the virus has been isolated, but has not caused epidemics, in several parts of Japan, England, Sweden, the United States and Australia. All information on the progress of the virus is sent to the World Health Organization's international influenza headquarters at Mill Hill, London.

Although the new strain is formally referred to as A2/Hong Kong/1/68, the view is held by some that it differs sufficiently from earlier strains for it to be classified as A3. Most of the antigenic differences are, however, quantitative rather than qualitative, and the virus shows some degree of cross-reactivity with A2 Singapore. In other words, the antigenic change or "drift" is not as extreme as that which occurred when A2 displaced A1 at the beginning of the 1957 epidemic. Attempts to forecast the probability of an epidemic on the basis of the immune status of the population have proved disappointing, and, as Professor G. Belyavin of University College Hospital Medical School pointed out, the presence of circulating antibody in the population does not seem to be a reliable guide as to whether the population is resistant to attack.

Immunization apart, hospitals could help to cope with an epidemic by providing extra beds and calling in extra nurses. In a report published last week by the King Edward's Hospital Fund (*Red Warning*), it is alleged that during the outbreak last winter, nearly a third of all patients who needed hospital treatment found considerable difficulty in obtaining a bed. They had to be "refereed" into hospital after repeated refusals to admit, even though one-fifth of all hospital beds were empty. The reasons for this are thought to be lack of planning for such an emergency, increased rate of sickness among hospital staff with little use of relief services, reluctance to admit patients from outside the hospital's delegated area, and a failure to understand the Emergency Bed Service coloured warning system. (The white signal indicates that the EBS is hard pressed and that serious difficulties might be anticipated in the immediate future; the yellow warning indicates a deterioration in the situation; and the red warning indicates a state of emergency.)

The report recommends that hospitals should immediately draw up a detailed plan for dealing with winter epidemics, including the appointment of a senior member of staff to control hospital beds during the period of the coloured warnings, the possibility of switching beds or wards temporarily to meet the needs of an epidemic, and the use of local nurses, auxiliaries and voluntary organizations to help during an emergency. It also recommends that the emergency plan should be reviewed annually.

Parliament in Britain

Channel Tunnel

THE original design for the channel tunnel is now seven years old, but Mr Richard Marsh, the Minister of Transport, assured the House that the plans were being kept up to date by technical studies, ranging from geology to aerodynamics, conducted by the British and French Governments and the railways. The two governments have considered the plans for a tunnel put forward by three groups but have asked for more information about the risk capital involved. Mr Marsh thinks that if all goes well a group could be selected next year, and detailed engineering design work could be carried out during 1969-70 so that construction work could begin in 1971 and be completed by 1976. Asked about the possibility of building a joint bridge-tunnel, Mr Marsh said that, in the present circumstances, this would not be feasible. (Oral answer, November 11.)

Weather Forecasting

ASKED to explain why the Meteorological Office is to have a new computer, Mr G. W. Reynolds, Minister of Defence for Administration, explained that it would make possible more accurate rainfall forecasting, and also forecasting for five to seven days ahead. The computer would provide better research facilities and permit greater efficiency and centralization in the organization of the work. Mr Reynolds added that since computers have been installed in the Meteorological Office, computed forecast pressure charts have been consistently more reliable than those produced by traditional methods. (Written answer, November 13.)

Natural Gas

ANSWERING questions about natural gas, Mr Freeson, Parliamentary Secretary to the Minister of Power, said that the real price of natural gas will on average be substantially lower than the present price of town gas, but he could not predict by how much. About a quarter of a million consumers were being supplied with natural gas by November 1, 1968, and the gas industry forecasts that the cumulative totals of consumers being supplied with natural gas by the ends of the financial years 1969-70 to 1972-73 will be roughly 1.75 million, 3.75 million, 6 million and 8.25 million respectively. The gas from the North Sea fields already found should last at least 25 years and more fields will probably be discovered. (Written answer, November 14.)

Agriculture

FOLLOWING protests that the re-appointed Select Committee on Agriculture had been allowed only six weeks in which to write its report, another motion, giving the committee an extra eight weeks of life, was put forward. Mr Bert Mason, a member of the committee, supported the motion but emphasized that there was a good deal more to be investigated. He hoped that in due course another select committee could be appointed to deal with the same department. Mr Fred Peart, the Leader of the House, said that he would probably soon have to make a statement to the House on those departments whose activities could usefully be investigated by select committees. He would like to see more experimental committees before the House finally decides whether the system of select committees should be a permanent one. (November 15.)