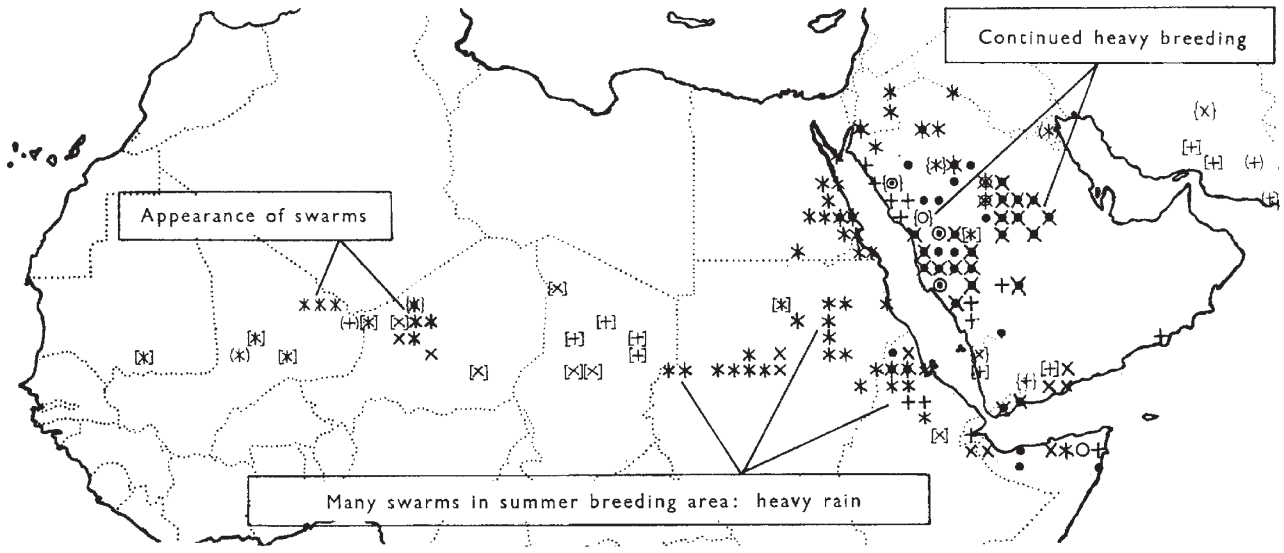


The reported distribution of locusts in Africa and Arabia during June and early July 1968 (from Desert Locust Information Service). Egglaying or eggfields ○; hoppers ●; adults, immature ×; adults, mature or partly mature *; adults, maturity unknown +.

only killing with bait and, despite help from the Anti-locust Research Centre and teams from Pakistan and Egypt, time has now run out and the swarms are beyond control.

Discouraging reports are also coming in from West Africa. Swarms of desert locusts have been sighted in northern Mali and Niger. In 1961, spraying in Morocco broke the swarm cycle of the desert locust in West Africa and from then until last year swarms were not seen in the area. Last year, swarms were controlled by the former French colonial organization, Organization Commune de Lutte Antiacridienne et de Lutte Antiavian (OCLALAV), but some locusts must have escaped. Although the Information Service had few reports of swarms in Algeria it seems virtually certain that locusts which escaped last year's control, bred in southern Algeria during the winter and have returned in swarms to Mali and Niger. Unless the control now in progress is effective, the desert locust looks like re-establishing its swarm cycle in West Africa.

In Defence of the Ångstrom

A GROUP which includes most leading spectroscopists issued this week a statement about the adoption of SI units. Their case is that two units banned by the SI system, the Ångstrom and the cm^{-1}, are so convenient that they should not be dropped. The full text of the statement is as follows.

"The Inter-Union Commission for Spectroscopy was established by ICSU (International Council of Scientific Unions) in order to ensure full cooperation between spectroscopists in chemistry and astronomy and physics, and possibly other fields. In particular, it was felt that questions of notation should not be decided by any single Union, but only after consultation between all parties within the framework of an Inter-Union Commission.

"Recently the question of the adoption of the SI System of Units (Système Internationale) has been brought to the attention of the members of the commission. While all the members of the commission are strongly in favour of most of the recommendations embodied in the SI system, it is felt that the proposal that the units Å and cm^{-1} should be abandoned is most unwise, since they have been used from the beginning of spectroscopy and all the immense literature in the field employs these units (which are metric). The enforcement of such a change could undermine the respect for the SI system as a whole and thus spoil an otherwise good idea. At any rate, after consulting many spectroscopists, the commission has come unanimously to the conclusion that no one should be forced by any journal to abandon the Å and cm^{-1}. Most of the members of the commission would go further and recommend the indefinite preservation of these two units in spectroscopy, since both are metric and of a very convenient size.

"The importance of the Ångstrom as a unit is, moreover, not confined to spectroscopy. It is a very convenient unit for interatomic distances and chemical bond lengths, and its elimination in this connexion is undesirable."

The statement, issued under the aegis of the Inter-Union Commission for Spectroscopy (which represents the International Astronomical Union, the International Union for Pure and Applied Physics and the International Union for Pure and Applied Chemistry), is signed by twelve eminent spectroscopists. They are, for the IAU, A. H. Cook, B. Edlen, J. C. Phillips and M. J. Seaton; for the IUPAP, G. Hertzberg, A. Kastler, M. Migeotte and W. C. Price; and for the IUPAC, V. A. Fassel, R. N. Jones, R. C. Lord and H. W. Thompson. It is probably fair to say that resentment about the demise of the Ångstrom unit has been simmering ever since scientists realized that it was to go; but this is the first time that the opposition has received such strong institutional support. Chemists may now be encouraged to set up their own barricades —in defence of the calorie.

Fuel Economy

BRITAIN is about to be the first country with a computerized statistical model of an entire sector of the national fuel economy, though quite how it is used

remains to be seen. For the past eighteen months the Ministry of Power has been working on a model of Britain's fuel economy, and within six weeks hopes to have the five sub-models—one for consumer demand and one for supply from each of the four fuel industries —which will give a picture of the fuel situation in Britain over the next 20 years, for any given set of conditions.

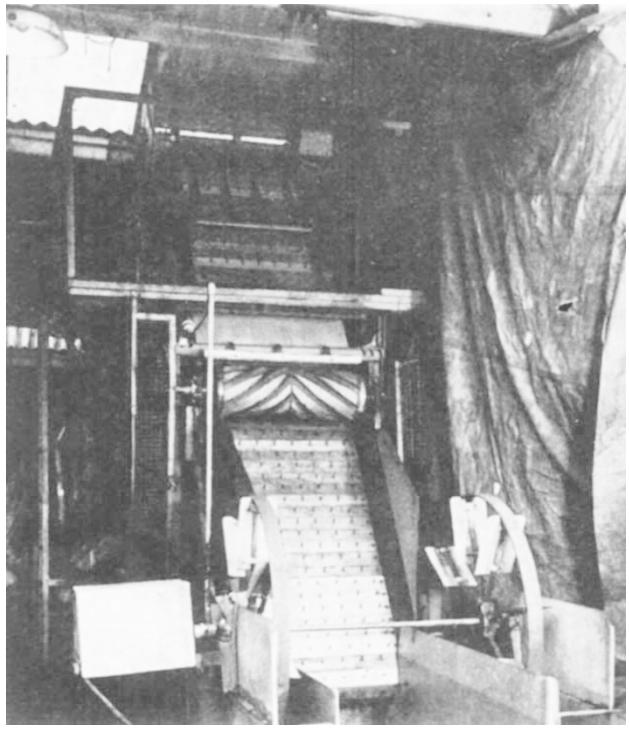
The impetus for the model came in 1966 after the discovery of natural gas in the North Sea, when Mr Richard Marsh, then Minister of Power, called for a wide-ranging review of fuel policy. This led to a statistical analysis of various possible long-term demands for fuel in different circumstances—variations of oil taxes or developments in nuclear power, for example. The four industries—gas, oil, coal and nuclear power—were asked to estimate how each would be affected, what decisions would be made regarding such factors as investment and manpower and what their prices would be. These analyses gave interesting results but each set of results took four to six months to work out and had to neglect far too many factors. The new model is an attempt to formalize the sequence so that, for each given set of assumptions, the computer can turn out an estimate of the final demand in hours rather than months.

For each set of conditions, the consumer demand for energy from one sub-model will be fed into the other sub-models for each fuel industry which, given the wage rates and other industrial costs, will give the total industrial cost to meet that demand. With demand and cost determined, the final price for fuel will emerge and can be fed back into the model to see how it will affect the initial assumption about consumer demand; one would hope that the solutions would eventually converge into a steady state condition for each particular case. The model, by the very nature of the fuel situation, must be representational rather than optimizing, for there are too many social factors involved that cannot be quantified.

Eat More Leaves

THERE are now some hopeful signs that a machine for extracting edible protein from leaves, developed by Mr N. W. Pirie at Rothamsted Experimental Station as long ago as 1953, may at last start work in two underdeveloped countries. A British charity called "Find your Feet", with the moral support of the World Health Organization and the Food and Agriculture Organization, launched a campaign last week to raise funds to send one machine to East Africa, probably to Uganda, and another to India. Three machines have already been sent from Rothamsted to India and one each to Nigeria, New Guinea and Ireland, but all six have so far been used solely for experimental work at research stations. The sponsors claim, however, that evidence from feeding trials in Madras, available only in the past two months, has proved that the material is an acceptable and effective protein supplement for children. This could tip the scales in favour of the machine, for practical experience has so far impeded its introduction.

The remarkable simplicity and cheapness of the machine—it costs about £8,000 and annual running costs are about £10,000—are two important selling points in underdeveloped countries. By siting machines in villages, elaborate storage facilities and distribution networks can be dispensed with. In the operation of the machine, leaves of a crop are mixed with water and fed first into a pulper and then into a press which separates the protein solution from the fibrous material. The protein solution is then mixed with steam and the denatured protein floats to the surface as a green scum which can be filtered off, washed and dried. The recovery of protein ranges from 50–75 per cent, and even the 25 per cent remaining in the fibrous residue can be used for animal feeds. The machine has a maximum capacity of one ton per hour and, at Rothamsted, 40 pounds of pure dry protein can be extracted from a ton of clover, wheat or mustard leaves.



The leaf lift at the start of the process.

According to Mr Pirie, the green protein extract has a mildly grassy flavour which can easily be masked. It is intended only to be a protein supplement and not a complete diet, and has about the same nutritional value as fish meal or meat, but less than milk or eggs. It has more of the essential amino-acids than the protein from cereals or other seeds and, given a continuous supply of leaves, a single machine should produce enough high class protein to provide 40,000 to 60,000 people with one-tenth of their daily requirement.

The machine is, of course, of little use in semi-arid regions, but it is ideally suited to humid tropical regions with no winter. Weed plants and tree leaves can be processed, but the problems of harvesting rule them out as practical and continuous sources of raw material. The problem to be solved is therefore that of deciding on a suitable crop sequence to provide a continuous supply of leaves throughout the year. Potatoes, cassava, jute, peas, beans, wheat, beet and sweet potatoes have all been used successfully in trials, and it is claimed that the yield of protein per hectare