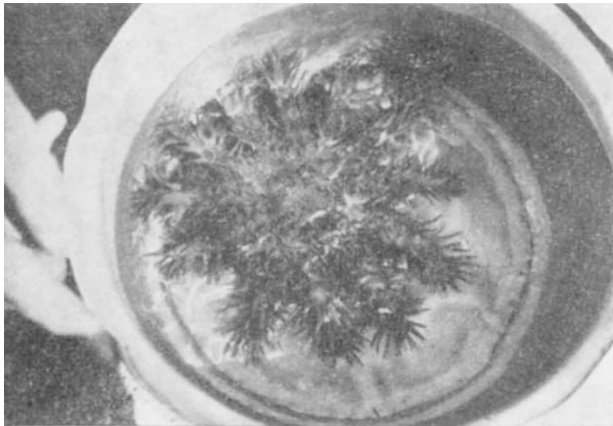


of living coral has been killed along 38 km of the Guam coast in the period. Fringe corals have been massacred at a rate of 1 km a month in places. As the invasion builds up, the starfish abandons its cautious nocturnal feeding habits and crops in daylight in "herds".

Drastic measures are being sought to halt the infestation in American and Australian Pacific areas—so far with small success. Off Guam this season, divers have been counter-attacking with undiluted formalin injected into individuals by hypodermic needle. These large starfish are well armed by the spines which give them their name against natural predators. Those it has, chief among them the triton shell *Charonia tritonis*, are inefficient. Their appetite is small and half-eaten starfish usually regenerate. Biological control is not promising.

The living coral of the Great Barrier Reef off Queensland is a substantial source of revenue as a tourist attraction, but the Queensland Government has another reason for controlling the crown of thorns menace. At its invitation, Japanese marine biologists carried out a joint survey with Australian colleagues earlier this year and one of the Japanese members, Dr Yasuo Suehiro, has put forward a novel proposal for control. His experiments suggest that the crown of thorns can be killed by the proximity of electric wires carrying as little as 4.5 watts. Other coral-living fish are not harmed by this voltage.



Crown of thorns starfish. Photograph taken by Andrew C. Campbell, Department of Zoology, University of Oxford.

Apart from the uncertainties about adequate control measures, there is another puzzle over the Pacific explosion. Why has it happened? Offshore blasting and dredging, which has produced smooth underwater surfaces which seem to favour the starfish larva at the animal's most vulnerable stage, has been blamed. There is also the suggestion that an increase in the pesticide concentration in Pacific waters has influenced the population balance. So has the hunting of sharks, another natural enemy. Much more information is, however, necessary. The distribution of the invasion in other island areas is obscure and the University of Guam has appealed for information from scientists elsewhere.

Crown of thorns starfish occur in the Red Sea but as yet the population is more or less static. Research workers from the zoological departments of the Universities of Oxford and Cambridge led by Dr C. H.

Roads of Cambridge have been studying the situation in the Red Sea this summer.

A study sponsored by the US Department of the Interior is announced in the current issue of *Science*. This is specifically aimed at protecting the Pacific corals from this predator, and the Westinghouse Ocean Research Laboratory of San Diego has a \$225,000 contract for the job. The Office of Naval Research will supply transport; the University of Hawaii has \$25,000 from the National Science Foundation to carry out a survey and the Smithsonian Institution will provide experts. Earlier there were discussions between Australian and US authorities for a collaborative project. What has happened to that?

#### ANIMAL HUSBANDRY

### Doctoring the Animals

1967 was a very hard year for the Ministry of Agriculture's animal health services (*Report on the Animal Health Services in Great Britain, 1967*. HMSO, 10s 6d). The two series of outbreaks of foot and mouth disease in Hampshire and Warwickshire in January and September turned out to be mere curtain raisers for the great epidemic of the 1967-68 winter—the worst occurrence of the disease this century—at the height of which more than 700 veterinary surgeons from the ministry's field and research staff, from private practice and from overseas were fighting the disease. Nobody needs reminding of the complete disruption of agriculture in the worst affected areas, but a little publicized casualty was the ministry's campaign to eradicate brucellosis by vaccination of calves. The free calf vaccination service, started in May 1962, was going well until the foot and mouth disease arrived. But despite this setback, more calves were vaccinated in 1967 than in any previous year and the brucellosis accredited herd scheme, started in April 1967, should result in the formation of a reservoir of disease free herds and ultimately in eradication of a disease which in 1960-61 affected 2 per cent of the British dairy herd.

Initial response to the brucellosis accredited herd scheme has exceeded the initial response to the tuberculosis attested herd scheme which, combined with a slaughter policy, has all but eradicated that disease. In 1967, only 0.049 per cent of the 6.25 million cattle tested gave a tuberculin response and these 3,047 reactors and 326 contacts were slaughtered. On the other hand there was minor resurgence of anthrax in 1967. The number of outbreaks confirmed, 438, was almost double that in 1966 although deaths from the disease remained low, on average 1.11 deaths per outbreak. As in previous years, the great majority of outbreaks, 390 out of 438, were attributed by ministry vets to contaminated imported foodstuffs.

Eradication of swine fever is, however, something the ministry's veterinary staff can rightly be proud of. The last outbreak of the disease occurred in June 1966, and on June 29, 1967, the Minister of Agriculture proclaimed the complete eradication of the disease which only five years earlier affected 1,874 farms in Britain; and the vaccination policy against Newcastle disease and fowl plague is rapidly eliminating these diseases. Results obtained since 1962, when vaccination began, suggest that if more than 75 per cent of the poultry in Britain are vaccinated the disease will disappear; in

1967, for example, there were only two cases of the peracute form of Newcastle disease and 196 cases of the acute and subacute forms restricted to five counties.

WOMANPOWER

### Too Few Doctors

ALTHOUGH girls seem to clamour eagerly for medical training, which they complete with higher honours than their male counterparts, there are dismally few women in positions of responsibility in the medical profession. The answer, according to Dr Elizabeth Shore, writing in the current issue of *Health Trends*, published by the Department of Social Security, is to provide more suitable part time posts for young married women doctors, to keep them in the profession while their children are young.

One in every four medical students graduating in Britain last year was a woman, and statistics show that her examination results are likely to have been better than those of her male colleagues. But in spite of this promise, only one hospital consultant in fourteen is a woman, only one woman in eleven in general practice is in charge of the practice and only thirty-one of 477 medical officers of health are women; this is only one

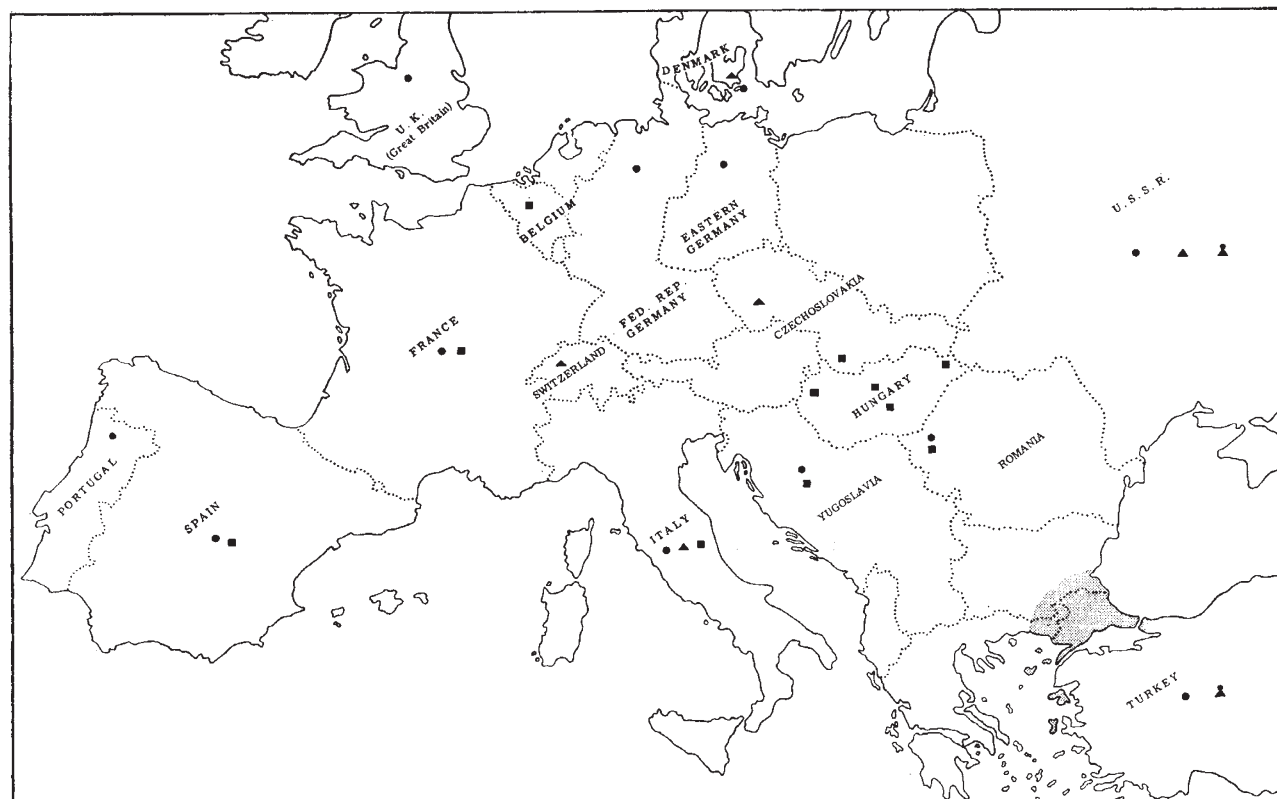
in seventy-three of all women doctors in local authority service.

The great problem for young women with families is that they cannot cope with full-time work, and because this is all that is available to them they remain unemployed and fall behind in their knowledge and expertise. Surveys have shown that in 1962 more than 1,000 unemployed women doctors would have liked to work, principally on a part-time basis. Another 1,000 women in part-time posts would have liked more work if it were available.

The demand for part-time work for medically qualified women has led the Department of Social Security to ask hospital authorities to seek out women and offer them suitable posts. The Medical Women's Federation, too, has launched a publicity campaign to alert women doctors and medical students to new opportunities for part-time work, and the women themselves are beginning to recognize the conflict between family life and certain branches of medicine in their choice of career. Specialities such as anaesthetics and radiology, which do not involve full-time clinical responsibility, are clearly suitable for women; and Dr Shore suggests that women students should consider seriously specialities such as pathology, psychiatry, physical medicine, dermatology and ophthalmology.

STATISTICS

### Where Animals have Diseases



This map of the occurrence of foot and mouth disease in central Europe comes from the latest *Animal Health Yearbook*, published by the Food and Agriculture Organization of the United Nations at 28s. Information available in December 1968 about the worldwide distribution of animal diseases and the measures taken to control them is collected into 128 tables. These tell, for example, that Australia has a low sporadic incidence of malignant foul brood in bees and has adopted a slaughter policy. The United Kingdom, on the other hand, has a moderate incidence of this disease and encourages voluntary therapeutic treatment.

In the map shown, the symbols representing the various foot and mouth viruses are as follows : ●, virus O ; ▲, virus A ; ■, virus C ; ▲, virus A\* which is A (Middle East) or A<sub>22</sub> (Turkey and Near East) or A<sub>1</sub> (USSR). The shaded area is a buffer zone where FAO is sponsoring a vaccination campaign.