References.

(1) Cf N.S.W. Dept. of Agriculture: Farmers' Handbook—Description of Soils, County of Cumberland.

(2) Bigge: Transcripts of Evidence. Mitchell Library. [This is unpublished manuscript copy material. The transcripts are boxed and partly indexed.]

(3) N.S.W. Magazine, October, 1843 (cf. *infra*).

(4) Sydney Herald, 16th May, 1831.

(5) This is a composite calculation. Macarthur's opinion was that at least one acre was required per sheep on his much superior property at the Cow Pastures.

(6) N.S.W. Magazine, October, 1843, pp. 513 *et seq.*

(7) James Atkinson, Esq., London, 1826: An Account of the State of Agriculture and Grazing in New South Wales; p. 13 *et seq.*

(8) Bland, Brown and Towney Selected Documents, pp. 503-4, cit. Fitzpatrick op. cit. p. 162.

(9) Ibid, p. 502; cit. Fitzpatrick, p. 162.

(10) Committee on Factory Children's Labour, 1831-32—Minutes of Evidence: Bland, Brown and Towney, op. cit. pp. 510-511; cit. Fitzpatrick, p. 162.

(11) MS. (Mitchell Library—Sydney)—Rev. W. Lawry to his parents, May 21, 1818—Bonwick Transcripts—Missionary Vol. 2, pp. 355-6.

(12) Bigge Transcripts of Evidence—Examination of Archibald Bell.

(13) Atkinson, op. cit. Miscellaneous references.

FOOD AND AGRICULTURE ORGANISATION.

At the end of 1947, a series of articles dealing with the Food and Agriculture Organisation of the United Nations was published in this Review. It is now desirable to bring this information up to date in the light of more recent developments in order that it may be possible to re-assess the work of F.A.O. in relation to the solution of world food problems.

World Food Situation.

(*a*) 1947.

In 1947, some improvement was indicated over the situation which had existed in 1946. However, recovery was not as great as was sometimes expected. The greater part of Europe was visited by the twin plagues of an unusually severe winter, which damaged and destroyed millions of acres of crops, and a very dry summer, which cut the yields of all important crops. The following tables give comparisons of areas and productions of specified crops in Europe for 1946 and 1947, compared with the 1934-38 average:—

TABLE I.

Area of Specified Crops in Europe—Average 1934-38, 1946 *and* 1947 (*).

(Million Acres.)

Crop.	Average 1934–35.	1946.	1947.
Wheat	73.4	65.0	61.0
Rye	33.1	24.5	24.5
Barley	23.2	20.5	22.2
Oats	36.1	30.9	32.6
Maize	28.6	25.7	28.4
Potatoes	24.9	20.0	21.0
Totals	219.4	186.6	189.8

(*) Excluding the U.S.S.R. and Albania.

TABLE II.

Production of Specified Crops in Europe—Average 1934-38, 1946, *and* 1947 (*).

(Million Bushels.)

Crop.	1934–38.	1946.	1947.
Wheat	1554.2	1208.8	907.5
Rye	751.9	440.9	409.4
Barley	634.9	515.8	515.8
Oats	1269.8	987.0	937.1
Maize	681.0	311.0	602.3
Potatoes	4930.9	3685.3	3600.8

(*) Excluding the U.S.S.R. and Albania.

A very serious aspect of poor crop conditions in Europe in 1947 was the reduction in the output of feedstuffs. In some countries, livestock numbers decreased during 1946-47, but reliable estimates are not available for all countries. The set-back in the recovery of livestock production resulting from the poor 1947 harvest had serious long-run effects on European agriculture.

Throughout the Middle East in 1947, grain production was lower than in 1946. Heavy attacks of locusts and a very mild and dry winter caused crop failures. In the Far East, production was variable from country to country. In India and Pakistan, the rice crop was estimated to be 6 per cent. smaller than in 1946, and the wheat crop 9 per cent. smaller. China on the other hand, had larger crops than in 1946, the increase being estimated at 5 per cent. in the case of wheat and about 2 per cent. for rice. In the two surplus rice-producing countries, Burma and Siam, crops were better than in 1946, although still below the pre-war level. On the whole, food production in the Far East was about the same as that of the previous year.

Production in North America, while still well above pre-war levels, was reduced sufficiently to raise serious problems in respect to a continuation of large food exports, due to adverse weather in 1947. The United States had a record wheat crop, but the maize crop was lower than that of 1946 by 21 million tons. There was also a reduction in the output of oats.

For the world as a whole, production in 1947 was very little larger than in 1946. In the meantime, the annual increment of 15 to 20 million in the world's population took place.

As a result of these production conditions, only scattered ration cuts took place in 1947.

(*b*) 1947-48.

As the 1947-48 crop consumption year advanced, the extent of the world food situation became more clearly defined. One important favourable development was the excellent harvest gathered in the grain-producing regions of the Southern Hemisphere. The increased exports from these regions were unable to close the gap between world food supplies and world requirements, but provided a very great deal of relief during the spring months of 1948. Another favourable development was the unusually mild winter in Europe.

Although supplies still fell short of requirements, there was a definite improvement in the cereals outlook for 1947-48. Grain exports for 1947-48 were estimated at 34 million tons, an increase of more than 5 million metric tons over actual 1946-47 shipments. Grain shipments from the United States of America from July to December, 1947, totalled 8.5 million metric tons as compared with 5.2 million during the same period in 1946. The excellent grain harvests in the Danube Basin country and in the U.S.S.R. resulted in substantial exports.

The world rice position improved slightly. Rice production in the Far East as a whole was estimated at 2 per cent. above the 1946-47 figure. As far as fats and oils were concerned, very little improvement was indicated for 1948. On the other hand, sugar production increased rapidly since the end of the war and was estimated to be only about 4 per cent. below pre-war level.

Exportable supplies of meat were expected to be lower in 1948 than in 1947. Some increase in Australian exports was considered possible and Argentine exports of pork were expected to increase in the latter part of this year, but the effect of the severe feed crop declines on North American production more than offset these gains.

What did these indications of trends in production mean in terms of food consumption; In general, the regions in which the post-war deficits were heaviest—Europe, India and some other parts of the Far East—had a bad crop year. World exportable supplies of bread grains, rice, fats, pulses and sugar were somewhat larger than last year. However, the increase in bread grains, for instance, was not sufficient to compensate for the decline in production in the deficit countries. Supplies of livestock products were smaller than in 1946-47. These facts suggested that many food deficit countries might be in a worse position than last year.

Detailed estimates of actual food supplies in Europe indicated that the average for the year as a whole was significantly lower than during 1946-47 in eight countries: Bulgaria, Czechoslovakia, Denmark, France, Portugal, Spain, Sweden and the United Kingdom. Levels remained about the same in Belgium, Finland, Greece, Italy, Ireland and the Netherlands. Other European countries showed varying degrees of improvement. Smaller supplies of grains and potatoes accounted for most of the declines in the calorie value of the total food supplies in the first group of countries and for the continued low level in the second group. It is important to remember also that the average of food supplies for the entire population of a country can easily be misinterpreted. In most European countries, the farm population has a reasonably adequate consumption at all times, and the remainder of the population has correspondingly less, so that in times of shortage the urban population is mainly affected. A comparison of official food rations at the end of 1947 with those of a year earlier indicates that bread rations were lower in 1947 in Bulgaria, Czechoslovakia, Denmark, France, the Netherlands, Spain and Sweden. In several other countries, they were maintained only by using larger proportions of coarse grains. Rations of fats were approximately the same as in 1946 in most countries, except in southern Europe, where more abundant supplies of olive oil permitted increases. Belgium, France and Switzerland removed meat rationing in 1947, but in the United Kingdom meat rations had to be reduced. Milk rations were reduced in a number of countries during the autumn of 1947. Potatoes were rationed in the United Kingdom in 1948 for the first time and were rationed again in Czechoslovakia.

In the Middle East, the food supplies of several countries were below the previous year. Iraq, Syria, Lebanon, Transjordan and Palestine found it difficult to maintain minimum consumption levels. In Palestine, civil disturbances were interfering with the orderly distribution of supplies.

In the Far East, China's harvests in 1947 were large enough to make some improvement in food consumption possible in 1947-48. However, there were very many obstacles to efficient distribution. In India, food supplies in the larger cities became critically short in the autumn of 1947, and the millet and rice crops although providing a measure of relief, did not succeed in making the supply position very much less serious. Japan had a fairly good crop year. The surplus countries also had a favourable crop year.

The following table gives a summary of cereal rations in specified countries for the second half of 1947:—

TABLE III.

Cereal Rations in Specified Far Eastern Countries—Latest Reported for Second Half of 1947 (*).

Country.	Per cent. of Population Rationed.	Daily Cereal Rations.		
		Rice.	Other Cereals.	Total Cereals.
		(Grams.)		
Ceylon	88	198	65	263
Hong Kong	99	142	113	255
India	28	162	128	290
Indo-China	(†)	(‡)	250	(‡)
Japan	72	(§)	(§)	329
Malaya	94	128	78	206
Indonesia	5	113	...	113
Siam	5	340	...	340
South Korea (‖)	30	187	188	375

(*) There is no cereal rationing in the other major countries except in five coastal cities of China, in which rationing was initiated 1st March, 1948.

(†) Less than 1 per cent.

(‡) Rice not rationed.

(§) Variable proportions of rice and other cereals in total.

(‖) There are supplements for special categories of consumers in addition to the regular ration shown.

Since in most of the countries listed, the daily rations provided only 900 to 1,150 calories per person, and this comprised most of the daily food total, it is clear that the rations could not provide the energy necessary for a high level of productive activity.

(*c*) Prospects for 1948-49.

The winter crops for harvest in 1948 sown in the Northern Hemisphere indicate increased plantings in most of Europe and in North Africa. In general, planting conditions were favourable in Europe and in North America. In the United States of America, winter-wheat seedings set a new record.

Estimates of 1948 production of wheat, rye, barley and oats in Europe (excluding U.S.S.R.) and North America (Canada, United States, Mexico) are contained in the "Monthly Bulletin of Food and Agricultural Statistics" issued on 30th September, 1948, by F.A.O. The estimates are based principally on official data of governments.

Production of four main grain crops in Europe (excluding U.S.S.R.) in 1948 is estimated at 81.3 million metric tons. This compares with 63.0 millon metric tons in 1947. Thus the 1948 total represents an increase of nearly 30 per cent. over the previous year.

Wheat production, at more than 35.8 million metric tons in 1948, is 11.3 million metric tons higher than 1947. Total bread grain production (wheat and rye) is estimated at 49.4 million metric tons, compared with 35.5 million metric tons in 1947.

The increase of 13.9 million metric tons in bread grain production is only 4.8 million metric tons less than the net import of bread grains by Europe of 18.7 million metric tons during the 1947-48 crop year.

Feed grain crops in Europe in 1948 likewise show appreciable increases over 1947. Barley production for 1948 is estimated at 12.5 million metric tons as compared with 10.8 million metric tons in the previous year. The out-turn of oats in 1948 at 19.4 million metric tons is 2.8 million metric tons above the harvest of that crop last year. While estimates have not yet been made of total European maize production in 1948, the season has been generally favourable and indications are that crop will yield higher than in 1947.

Total North American production of bread grains (wheat and rye) at 47.6 million metric tons in 1948 is almost the same as in 1947. On the other hand, total production of barley and oats in North America at 37.7 million metric tons is well above the 1947 output of 31.3 million metric tons. With the much larger maize crop in the United States in 1948, total production of grain crops—for both human and animal food—is appreciably above that of 1947 in North America.

Little information is available about the condition of winter crops in the Far East. However, there have been encouraging reports from India and Pakistan. In the Southern Hemisphere, particularly in Australia and Argentina, part of the large harvest of grain at the end of 1947 and the beginning of 1948 remains to be exported during the second half of 1948, thus assuring a good start towards a high level of exports in 1948-49. This suggests that world supplies of bread grains may be substantially improved in 1948-49 if harvest conditions are favourable.

Very little improvement in world livestock production can be expected.

A statement issued by the Food and Agriculture Organisation at the end of the Fourth Conference held recently at Washington states that the food position—at least in the western world—has been greatly eased, but adds that the world still depends on the luck of next year's harvest. However, the report goes on to give a number of reasons why caution is necessary in appraising the future outlook. This year's harvest was far above what could be expected in an average year. Also, the world's increased dependence on supplies from North America increases the element of risk, because of the extreme output fluctuations which may occur in the United States of America and Canada. Furthermore, world food stocks are at a barest minimum and will still be low at the end of 1948-49. F.A.O. findings on other regions are:

(1) *The Far East* may be able to bring new land into cultivation to a limited extent but its main effort must be concentrated upon increased yield.

(2) *New Zealand* is specialising more and more on animal products and relying increasingly upon Australia for its supply of cereals.

(3) Maintenance of high production levels in North America would be welcome, provided that satisfactory solutions can be found for International trade and payments problems.

Summing up, the report indicated that the general outlook is for a restoration by 1950 of something like pre-war food consumption in most of Europe and the Far East, but it again reminds member nations that this is little more than a holding position with world population showing constant large increases and that the long-range objective of F.A.O. is to raise food consumption standards not only up to the pre-war levels, which for about two-thirds of the world meant starvation levels, but also to raise these increased numbers of people up to the minimum standards of consumption for health, universally agreed upon.

Before leaving the subject of the world food situation, it is probably desirable to give more detailed attention to certain areas.

Europe.

Europe emerged from the war with losses and damage which were not fully realised at the time. Perhaps the most comprehensive appreciation of Europe's present and prospective outlook in the field of food and agriculture is that contained in F.A.O.'s "European Programmes of Agricultural Re-construction and Development." This publication gives the position of Europe to-day, the probable outcome in 1950 and 1951 of present plans, and compares them with the position which existed before the war. Even assuming that the plans materialise, the outlook although improving, is still unsatisfactory, and it seems that it will be much later than the early 1950's before Europe re-establishes, for its increasing population, the standards of living of the late 1930's or improves them to the still higher standards already operative in the United States and other more prosperous countries.

The establishment of pre-war acreages of cereals, for example, will not in itself improve the position due to the shortage of equipment, fertlizers and similar factors. In livestock production, Europe is unlikely to attain even by the early 1950's the pre-war levels.

Japan.

In this area, it is claimed that Japan's food deficits will increase in coming years and that the problem of feeding Japan's increasing population will become much more difficult. Prospects for food imports from Asia are promising, but Japan is likely to remain dependent on grain imports from the United States until at least 1950 or 1951. For the immediate future, imports of rice and other cereals from the Far East would be small. Some rice may be obtained from Siam. There is little hope that reclamation projects will make available enough land to grow sufficient food to meet Japan's requirements. It may be possible to increase crop yields slightly, but by 1960 Japan may have to import 25 per cent.

of her food requirements. Comment in Japan on these points has stressed the need for Japan to vary her exports to Asian countries in order to obtain food supplies from that area.

It is expected that the rice harvest this autumn will be the biggest in the past ten years. Estimates of this year's crop total almost 315 million bushels compared with last year's total of approximately 295 million bushels. Full food rations for the next four months will be met. Forty thousand tons of Egyptian rice will be imported. Most of the food imports over the next few months will consist of American flour. In the last 2½ years about 3,800,000 tons of food have been imported at a cost of almost 500,000,000 dollars. Until November, 1948, no staple ration increase was possible. It is anticipated that from 1st November, food rations totalling 1,440 calories per day as against the present level of about 1,330 calories will be possible.

India.

It is clear that the relaxation of food controls in India from December last was a mistake. Recent developments in the Indian food position are far from satisfactory. The recent incidence of heavy floods in northern India from the Punjab to Assam have caused considerable damage to crops. Even the surplus areas of Pakistan, where food might have been obtained to alleviate Indian shortages, have been affected, and Pakistan is reported to have approached the Food and Agriculture Organisation for food grains. Widespread troubles in Burma are also recognised as a disturbing element. Then again, the central food reserves of the Government of India are said to be showing signs of depletion. All these factors led to the announcement on 24th September by the Indian Food Minister that it was intended to re-impose food controls over price, procurement and distribution of all food grains. The grains to be controlled are rice, wheat, maize, barley grain, jowar, bajra and ragi.

The method of control will broadly be to mark off surplus areas, deficit areas and self-sufficient areas and allow movement of grains between Provinces and States only on a Government to Government basis. The intention is to bring 70 million persons under the scheme by October, 1949.

The suggestion has been made that controls will have early tendencies to lessen India's needs for food imports, but according to the Australian Acting High Commissioner, it is doubtful whether this will be the case. He is of the opinion on the contrary that there is a general feeling that India is still a long way from being at all self-sufficient in food grains and that even although she deplores the drain on her foreign exchanges which imports involve, she will need to continue with them for some years to come.

The Development of F.A.O.

The Food and Agriculture Organisation has continued with its utmost efforts to organise the activities of all its member nations to fight the world food crisis. There have been many important developments in F.A.O. in the last twelve months:

(a) New Members.

The following countries have been granted membership of F.A.O. since the initial signing of the F.A.O. Constitution:—

Austria	Ethiopia	Pakistan
Burma	Finland	Portugal
Ceylon	Hungary	Siam
Costa Rica	Ireland	Switzerland
El Salvador	Italy	Turkey

This represents a total of fifty-seven nations and includes the vast majority of the nations of the world. Significant non-member countries are Argentina, Russia, Germany and Spain.

(b) New Director-General.

Sir John Boyd Orr, the original Director-General of F.A.O., gave up the post in the middle of 1948 and it became necessary to select a new Director-General. The unanimous decision of the F.A.O. Executive was to select Mr. Norris E. Dodd as the new Director-General of F.A.O. Mr. Dodd is a farmer and agricultural administrator. He served as Under Secretary of Agriculture of the United States of America and assumed office in F.A.O. in June, 1948. The Deputy Director-General is Sir Herbert Broadley.

(c) Conferences.

The Third Conference of Food and Agriculture Organisation took place at Geneva on 25th August to 11th September, 1947. Australia was represented by the Director-General of Agriculture, Mr. F. W. Bulcock. The highlights of the Conference were the adoption of the report of the Washington Preparatory Commission on Food and Agriculture on which Australia had a seat. The adoption of the report means that the world charter for agriculture has been adopted by over fifty nations and provides a world code in agriculture and nutrition for the first time in history.

Discussions also took place in connection with the relationship of F.A.O. to the International Trade Organisation. There were those who expressed the opinion that F.A.O. should be the dominant force in world agriculture, but against these it was urged that as the same nations comprised F.A.O. and I.T.O., the activities of each body should be co-related, each exercising influence in its own sphere. This view became that of the great majority of the Conference. A further matter of importance was the re-construction of the Executive of F.A.O. on a national instead of an individual basis.

The facts upon which the Geneva discussions were based may be summarised as follows:—

(*a*) That scarcity of foodstuffs, timber, textiles, seeds, fertilisers and draught power equipment would continue throughout most of Europe and Asia for another year at least;

(*b*) that bad weather in Europe during the past winter gravely reduced crops;

(*c*) that diets in Western and Central Europe would be lower in 1948, and in Asia they would remain at the present very low levels at best;

(*d*) that to even hold the present position would require drastic action, as minimum export needs for Europe, North Africa and Asia had been assessed at 34-38 million tons of grain based on the maintenance of the present ration, and this estimate did not provide for any increase in livestock feeding or increases in working reserves;

(*e*) that estimated available supplies would not exceed 29 million tons, but that supplies of sugar, potatoes and fats might improve;

(*f*) that the bread grains deficiency would amount to at least 5 to 9 million tons.

Two other Conferences of outstanding importance were:

(1) International Timber Conference, Czechoslovakia, in May, 1947.

(2) Rice Meeting, Philippines, in March, 1948.

The World Food Council held three sessions before the Fourth Conference which opened in Washington early in November. At the third session of Council held in August, 1948, a programme of work and a draft budget for 1949 were prepared. The programme was subsequently submitted to member Governments and in Australia was also referred to the State F.A.O. Committees. In the opinion of the New South Wales State F.A.O. Committee, it was felt that in view of the limited financial resources available, it might be preferable for F.A.O. to limit the range of its activities and thus be able to devote more resources to the more important works.

(*d*) *Reports.*

During the year, F.A.O. Headquarters called upon member Governments to provide reports on a number of matters. In the first place, each member Government was asked to submit an annual report for 1948, and a very comprehensive report was sent from Australia. Other matters on which Australia was asked to provide information were: (i) estimates of food losses, (ii) information for a central catalogue of superior breeding stocks of cattle, (iii) assembly of material for an F.A.O. paper on the more efficient use of grass and (iv) providing a list of contacts on rural welfare.

What F.A.O. Has Done.

F.A.O.—the Food and Agriculture Organisation of the United Nations—is an association of nations pledged to improve the living standards and nutrition of their peoples. They believe that a supply of the products of farms, fisheries and forests in adequate quantities for the health of all individuals is basic to human well-being and world peace.

F.A.O. has three principal ways of getting its work done.

It offers technical assistance to member Governments to help them produce more food, fibres and timber.

It gathers the basic facts on the ever-changing food and agriculture situation to enable member Governments to formulate their food production plans.

It promotes concerted international action by recommending definite ways and means for putting the latest scientific methods to use.

The Information Service of F.A.O. has compiled the following list of forty types of practical assistance already given to member Governments. Such help, of course, is only one aspect of F.A.O.'s work. Much of the technical assistance has been made possible up until now by an U.N.R.R.A. grant to F.A.O. of over one million dollars for agricultural advisory services in countries that formerly received aid from U.N.R.R.A.

Seeds.

1. F.A.O. has made the first organised attempt to introduce hybrid corn into Europe and the Near East. In the summer of 1947, F.A.O. demonstrated the latest corn-breeding techniques to a gathering of European scientists in Italy. More recently, F.A.O. arranged for hybrid corn seed to be sent to experimental stations in thirteen European countries as well as Egypt, Lebanon and Syria. First reports from Europe indicate that the test hybrids have produced strikingly better yields than ordinary corn.

2. Since the early spring of 1948, F.A.O. has been sending seed samples of newly developed or improved varieties of crops to Austria, Czechoslovakia, Hungary, Italy, Poland, Yugoslavia and China. Seeds of trees, vegetables, forage crops, grasses, legumes, potatoes, sugar beets, cereals, sorghum, sunflower, soybeans, and flax have already been sent. This seed will enable plant breeders in the different countries to begin experimental work that should lead to the improvement of native crops, and the use of new crops.

3. In Czechoslovakia an F.A.O. specialist helped experiment stations there apply the results obtained from the introduction of new varieties of seed.

4. Aid was given in fighting a severe outbreak of chestnut blight in Italy. Chestnut trees which grow on nearly 2 million acres in Italy are important in both human and animal feeding and in Italy's export trade. F.A.O. obtained blight resistant varieties of chestnut seed from China for planting in Italian experiment stations. F.A.O. also sponsored the search for new varieties of seed by sending an Italian expert to Spain to find and bring back to Italy seed and growing stock of what may prove to be a successful new blight-resistant chestnut strain.

Demonstration Schools.

5. The F.A.O. demonstration school on artificial insemination held in Italy last summer for scientists from European countries enabled the Spallanzani Institute in Milan to lay plans for a programme to help restore depleted livestock herds in Italy. Subsequently, to enable Italy to get started on its artificial insemination of livestock programme, F.A.O. arranged for semen, obtained from American Holstein and Brown Swiss bulls, to be shipped to the Spallanzani Institute.

6. To provide European veterinarians with recent information that could be used to improve the production of vaccines and serums in their laboratories, F.A.O. held a demonstration school at the laboratories of the Ministry of Agriculture and Fisheries in England, during September, 1947. Advances in virus research and methods of laboratory diagnosis were also taught.

Water Conservancy.

7. Plans have been laid for irrigation, drainage and flood control projects in ten Chinese provinces to improve 106,050 acres of land. Work has already started on Pa Kwa Chou and Jan Seng Chou Islands near Nanking. Guided by F.A.O. specialists, the Chinese Ministry of Agriculture and Forestry and farmers of the islands are dredging drainage ditches, strengthening embankments and levees, installing pumps and culverts, and building an earthen dam. The necessary pumps are purchased by the farmers' organisations and the farmers themselves, together with some refugee labour, are doing the work.

8. In co-operation with the Chinese Agricultural Machinery Operation and Management Office, plans for irrigation by pumping have been mapped out. A test area of 400 acres near Canton has been engineered and two pumps have been installed. This model irrigation project will be used as a basis for developing other similar projects in Kwangtung Province.

Animal Health.

9. Rinderpest—the most serious disease of cattle in China—may be entirely eradicated from the area south of the Yangtze River as a result of the full-scale vaccination campaign started in June, 1948, by the Chinese Ministry of Agriculture, aided by F.A.O. Killing annually about one million head of cattle in China alone, rinderpest has been a major loss because Chinese farmers are entirely dependent on the water buffalo and the China cow for draft power to till their rice lands. The campaign has been made possible by development of a new, cheap and effective rinderpest vaccine which is now being produced in quantity at a laboratory in Nanking.

10. In June, 1948, an F.A.O. veterinarian visited a number of Far Eastern countries to organise an international attack on rinderpest disease of cattle through establishment of a central Far Eastern Veterinary Group. This work follows up the findings of another veterinarian who made a survey of the rinderpest situation for the F.A.O. Mission for Siam early this year. These findings disclosed that rinderpest could be wiped out in Siam only if the neighbouring countries co-operated by undertaking similar preventive measures.

11. Last January, F.A.O. helped the Polish Veterinary Department launch a concentrated drive to stamp out tuberculosis in cattle in the Province of Lodz. The model campaign carried out in Lodz was timed to coincide with an attack on human tuberculosis launched by the Polish Ministry of Health in co-operation with the World Health Organisation.

12. In December, 1947, a conference of veterinarians was held at the offices of the Polish Veterinary Department in Warsaw to organise demonstration courses for field veterinarians. Three-week courses on medicine, surgery and infectious diseases were arranged in five Polish cities.

13. To help eradicate Newcastle disease in the poultry flocks in Poland, an F.A.O. specialist assisted veterinarians there to produce quantities of Newcastle disease vaccine.

14. Under the supervision of an F.A.O. specialist, experiments were conducted at the National Veterinary Production Laboratory in Pulawy, Poland, to test the efficiency of the new crystal violet vaccine against hog cholera. Following the success of these experiments, F.A.O. also arranged for shipment of crystal violet dye to Czechoslovakia for experimental work there, and for the sending of further veterinary chemicals to Poland.

15. An F.A.O. veterinarian in Ethiopia is assisting laboratory workers there to produce vaccines against rinderpest and other animal diseases and establish a country-wide veterinary service. F.A.O. has also arranged for the shipment of veterinary supplies to Ethiopia.

16. In Poland, F.A.O. is encouraging the use of proved vaccines to control tuberculosis and Bang's disease of cattle. At a meeting in Poznan last December, control programmes were adopted by the managers of the big State farms. The programmes will soon be extended to include all large breeding and milking herds of cattle, amounting to about 30 per cent. of the total cattle population.

Livestock Programmes.

17. An F.A.O. specialist assisted the Czechoslovak Government to draw up a programme for the rehabilitation of the livestock industry. Recommendations were also made for the reform of the public health regulations regarding milk sanitation.

Insect Control.

18. In Poland, an F.A.O. entomologist spent two months last summer assisting in the control of insects that attack Polish crops. The Polish Government has followed up his work by establishing a central office for general research on methods of control against the Colorado Beetle—a leading pest of potatoes.

19. In February, 1948, an F.A.O. entomologist was sent to Cairo to advise the Egyptian Government on the best methods of preventing infestation losses in stored grain. He also investigated grain storage conditions in Italy.

Manufacture of Pesticides.

20. F.A.O. is assisting the Chinese Ministry of Agriculture and Forestry to set up small plants for the manufacture of pesticides from native materials. The machinery used in these plants was sent to China by U.N.R.R.A. With expert assistance from F.A.O. specialists, the factories are now turning out pesticides, sprayers, and dusters, for use on Chinese farms.

Farm Machinery.

21. An F.A.O. farm machinery specialist spent three months during 1947 in Austria, helping to develop the proper use of farm machinery formerly shipped into the country by U.N.R.R.A.

22. An F.A.O. expert in Italy demonstrated the proper use of ditching ploughs for use in reclamation projects at a Rome farm machinery school. Arrangements were also made to exchange spare parts for tractors which are surplus to Italian needs against hay-balers declared surplus in Austria.

23. Three farm machinery specialists spent five months in Poland last year training students and conducting demonstration schools. Over 200 tractor stations, training schools, State estates and repair shops were visited. Another F.A.O. specialist gave technical guidance to local farm machinery experts in Hungary.

Food Preservation.

24. F.A.O. sent a refrigeration engineer to Czechoslovakia in 1947 to help officials of the Ministry of Food to review their final plans for the construction of large refrigeration plants for fruits, vegetables, meat and fish.

25. During October, 1947, demonstrations on food preservation were given in different parts of Czechoslovakia by an F.A.O. specialist. Many Agriculture and Home Economic Schools for girls took part in the demonstration.

26. An F.A.O. specialist in Greece finished a two-year job of setting up community canning centres—work which was started by U.N.R.R.A. Numerous demonstrations on the use of equipment and the latest methods of preservation were held throughout Greece. This specialist also helped to establish two tomato paste factories in Greece.

27. In Italy an F.A.O. specialist helped to start a home-canning programme. Food preservation demonstrations were conducted in Florence, Padua and Naples. A food processing specialist in China has assisted in distributing and shipping 103 food processing units to extension centres, colleges, co-operatives, and relief agencies. Plants were installed in Wenchow, Nanking, Chikow, Canton, Hangchow, Wuling and Shanghai.

Fisheries.

28. A fisheries specialist attached to the F.A.O. European Bureau at Rome has been paying special attention to the problem of marketing and distribution of fish in Europe.

29. In Singapore an F.A.O. specialist has been investigating the fisheries problems of the South East Asia area, preparatory to formation of the proposed Indo-Pacific Fisheries Council, which is designed to develop the proper use of the aquatic resources of this area.

30. In Greece research work was carried out in 1947 by an F.A.O. specialist. He also helped the Government to find new fishing grounds, and assisted research institutes to establish the habit and growth cycle of the species which now provide most of the catch.

Forestry and Forest Products.

31. An F.A.O. forestry specialist has been in Italy since May, 1947, assisting Italian forestry specialists of the Ministry of Agriculture to develop and execute forest programmes. Projects planned or under way include analysing and testing of forest seed, replacement of windbreaks destroyed by the war, and experimental work in the development of exotic forest species.

32. F.A.O. has established a Forestry and Forest Products Office at Geneva to provide technical assistance on European timber problems. This office also directs the secretariat of the Timber Committee of the Economic Commission for Europe. In January, 1948, the E.C.E./F.A.O. Timber Committee reached agreements on timber buying limits for the first half of 1948 and further substantial increases in export supplies during 1948-49 in exchange for coke, timber production equipment and credits.

33. At the F.A.O. International Timber Conference held in Czechoslovakia in 1947, many European nations agreed to increase their timber cuttings or impose economies in the use of timber. As a result, last year the importing countries of this region received 2.7 million standards of softwood, an increase of roughly one million standards over 1946. A similar international conference recently held in Latin America reached agreement on methods of increasing timber production there.

Nutrition.

34. An F.A.O. nutrition officer is working with the Greek Government on a plan for the establishment of a national nutrition service, and assisting in the training of nutrition workers to continue the programme. Another F.A.O. nutrition officer at Cairo is working on nutrition problems in the Near East.

35. A joint F.A.O./W.H.O. Committee on Child Nutrition convened in July, 1947, outlined the principles of child feeding which have been followed closely by the United Nations International Children's Emergency Fund. A nutrition officer at F.A.O. Headquarters has continued to advise the Fund about the purchase and use of foods for large-scale feeding programmes for children and mothers. In addition, an F.A.O. nutrition officer in Europe, who acts as Chief Nutrition Consultant to U.N.I.C.E.F. in Europe, is visiting the countries where the programme is operating to help with the development of the feeding programmes.

Missions.

36. In 1946 F.A.O. sent ten world experts in agriculture and related sciences to Greece to advise the Government on the best ways of restoring and improving Greek agriculture. They drew up a comprehensive 25-year reconstruction programme based on the full-scale development of water resources.

37. In January, 1948, F.A.O. sent eight agricultural experts to Siam to advise that country on the best methods of growing more rice and increasing exports, developing and controlling water supplies, improving marketing and distribution of farm products, improving statistical services, and getting full benefit from Siam's great forest stands.

38. F.A.O. sent three agricultural scientists to Venezuela in January, 1948, to study the possibility of exploiting industrially the wild oil-bearing palm nuts, and introducing cultivated oil-seed plants that will thrive under Venezuelan conditions.

39. F.A.O. sent a ten-man mission to Poland last year which drew up a blueprint for action by the Government to increase the output of Polish agriculture and provide the people with an adequate diet.

Regional Assistance.

40. Six F.A.O. technicians were sent to the Near East for three months early this year to assist Governments there to develop irrigation and drainage projects, improve animal husbandry and crop output, start nutrition education programmes, and set up sound statistical services.

Australia and F.A.O.

In addition to the items mentioned above, such as Australia's representation on the World Food Council and at the Annual Conference, useful work is being done within Australia by the National F.A.O. Committee and by State F.A.O. Committees. In the State of New South Wales, regular meetings have been held and attention given to proposals put forward to make F.A.O.'s activities appreciated and understood in this State. At the present time, a certain amount of useful publicity has been arranged through official channels. In addition, work is proceeding on a factual survey of food losses attributed to rodents, mould, fungi, insects and other causes.

Publications.

A very great deal of useful material has been forthcoming from F.A.O. Headquarters in the last twelve months. The following list is not intended to be complete, but merely gives an indication of the standard of the work which F.A.O. has done:—

"Report of the F.A.O. Mission for Greece."
"Report of the F.A.O. Mission for Poland".
"The F.A.O. European Bulletin".
"The Constitution of F.A.O."
"Rice and Rice Diets—a Nutritional Survey".
"Thieves of Stored Grain".
"World Fibre Survey".
"Using Salty Land".
"Breeding Livestock Under Unfavourable Conditions".
"Nutritional Diseases in Livestock".
"F.A.O. Commodity Series—Wheat".
"F.A.O. Commodity Series—Livestock and Meat".
"F.A.O. Commodity Series—Dairy Products".
"F.A.O. Commodity Series—Poultry and Eggs".
"F.A.O. Commodity Series—Vegetables and Fruit".
"F.A.O. Commodity Series—Rice".
"F.A.O. Commodity Series—Sugar".
"F.A.O. Fisheries Bulletin."
"Year Book of Food and Agricultural Statistics, 1947".
"Monthly Bulletin—Food and Agricultural Statistics".

Conclusion.

Like most of the other United Nations Organisations, F.A.O. has been accused of doing very little practical work. The facts presented here deny the accusations. In any case, it is important to remember that no international planning of agriculture has taken place on such a large scale as became necessary at the end of World War II. There were certain immediate problems and all that was possible was done to face up to these problems when the war ended, but the basic planning of production and re-distribution took a very great deal of time and it is only now that the general picture is becoming sufficiently clear for international action to have any great significance. F.A.O.'s problem is a cumulative one, in so far as it has to account for a very large number of dynamic factors in the world food crisis. In the first place, the immediate objective is to raise the standards of food consumption up to pre-war levels, but population is increasing at an alarming rate and it has been estimated that there are 100 million more people in the world in 1948 than there were in 1939, so that even to attain pre-war consumption levels is a constantly enlarging problem. But F.A.O. aims to go even further than that. The ultimate objective is to raise the entire population of the world up to the minimum standards of food consumption universally agreed upon as necessary for the maintenance of health.

Another important point is that this present food crisis is different from previous world crises in food. In the middle of the last century, the problem created by the rapidly increasing populations of Europe outgrowing their resources, was solved by bringing into the world markets the vast food supplies of the American west. Somewhat similarly in the early years of the present century, the expansion of large-scale farming in Australia, Argentina and Western Canada again brought a new supply of food to the industrial countries of Europe. Of course, it must be realised that these points apply only to the supply of foodstuffs in response to what may be called the "cash demand". It is almost impossible to estimate the actual *need* for food in areas like Asia, for instance, which did not and still do not have the purchasing power to acquire imports. The present crisis is different indeed. Soil erosion is impoverishing many lands. Forest resources are being depleted. The introduction of modern farming methods is encountering serious difficulties. International trade seems to be seriously out of balance. Technically advanced countries are anticipating difficulties in the disposal of surpluses. The only avenue of new resources awaiting development is the sea, which may become increasingly important as the expanding populations press on food production.

The problem of securing new markets is a serious one. Only seven of the member nations of F.A.O. raise enough food to meet their own needs. These countries are Canada, Denmark, Australia, New Zealand, Norway, Switzerland and the United States, but the providing of the net deficits of other nations by way of food must take place at a price suitable to both purchasers and consumers. Australia, for instance, is capable of producing more food but needs an assurance that the output would be absorbed in reasonably profitable markets. Australia is prepared to take part in negotiations for International Commodity arrangements.

F.A.O. will continue to examine the immediate problems of food and agriculture and to plan what may be done to solve them with the resources at the disposal of member nations. Its technical workers, its nutritional experts, its economists and scientists are already actively engaged in many countries. With their assistance, F.A.O. will labour to help Europe, Asia and other areas short of food, in their present difficulties, and also to find a solution for the greater problems which may well mean life or death to coming generations.

J. B. MAYNE,
Economics Research Officer.

THE FIRST FIFTY YEARS OF AGRICULTURE IN NEW SOUTH WALES.

By

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(This is the seventh essay in this series. Previous essays were published in the August, September and October issues of this Review.)

7. FACTORS INTERFERING WITH A DEPENDABLE AGRICULTURE—THE HAZARDS AND PESTS OF EARLY FARMING.

THE PROBLEM: FLOODS AND STORMS: DROUGHTS: WINTER NUTRITIONAL SHORTAGES: FIRES: PESTS: PLANT DISEASES: STOCK DISEASES: CONCLUSIONS.

Problem.

Overhanging like a pall every enterprise of an agricultural or stock-raising character in the early colony was a dread of the elements—the periodic droughts, storms and floods, which, overnight or after days or weeks of fore-shadowing, destroyed stock, homes and crops. The droughts were "blights," the floods "inundations." The very words, nowadays, have a foreboding significance, more ominous than the expressions which we customarily use. They conjure up a picture and presentiment of overwhelming disaster, of death, disease and misery. Not since the days of first settlement, have they had proportionately such an important influence for the Australian community. If agriculture was at the best of times hazardous in the early Colony, the dangers were immeasurably increased because of the location of the farming. The valleys of the Hawkesbury and Nepean, the South Creek and the other tributaries of these rivers were the principal agricultural districts. They were closely settled, for nowhere else was the soil so good, and the farmers preferred to risk the floods, rather than