

Food and Agriculture Organization
of the United Nations =====

PROPOSALS
FOR A
WORLD FOOD BOARD
and
WORLD FOOD SURVEY

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PART I

PROPOSALS
FOR A
WORLD FOOD BOARD

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WHEN FAO was established it was assumed that, with the aid of the temporary organizations dealing with food, the nations would be able to cope with the emergencies arising upon the termination of hostilities, and that reasonable conditions would soon be established in which FAO could start its work. Through circumstances beyond the control of the temporary organizations the food position deteriorated, and in February 1946 the General Assembly of the United Nations called upon governments and international organizations concerned with food and agriculture for special efforts.

FAO therefore convened the Special Meeting on Urgent Food Problems which met in Washington May 20-27. This meeting was concerned with the food emergency of 1946-47 and also of 1947-48; for it seemed likely that some aspects of the emergency would continue beyond the next year's harvests. It was felt that even after 1948 there would still be acute problems, one of which might be the accumulation of surpluses of important agricultural commodities.

The meeting expressed its conviction that:

... present emergency action in the field of food and agriculture should be carried on further by providing at an early date for longer term machinery to deal with certain practical international problems connected therewith.

It requested the Director-General of FAO

to submit to the Conference of FAO at its next session a survey of existing and proposed intergovernmental organizations designed to meet long-term problems concerned with the production, distribution, and consumption of food and agricultural products, including the risk of accumulating surpluses; [and]

to make proposals to the Conference on any extension of the functions of existing organizations or on any new organizations which the survey may indicate as necessary.

This report has been prepared for the Conference in compliance with that request.

NATURE OF THE LONG-TERM PROBLEMS

Before forming an opinion regarding the character and functions of any additional international machinery that may be needed, it is necessary to understand the nature of the long-term problems. These may be conveniently considered under Nutrition and Agriculture.

NUTRITION

There has never been enough food in the world. Before the war there were 1,000 million people consuming less than 2250 calories.¹ By contrast, in the United Kingdom, even with the present acute shortage, the average intake per head is 2750 calories. The calorie intake does not tell the full story. At the lower levels of intake the food consists mainly of cereals, which are the cheapest satisfiers of hunger. A diet sufficient for health must contain a large proportion of animal products and fruits and vegetables. These supply calories at a much higher cost, but they are rich in constituents necessary for health.

Food consumption depends on purchasing power. As family income rises the consumption of the more expensive foods increases. Thus, for example, it

¹Food and Agriculture Organization of the United Nations, *World Food Survey*, Washington, July 1946.

is estimated that before the war the diet of about one-third (the poorest third) of the population of the United States of America was not up to the health standard owing to insufficient consumption of animal products and fruits and vegetables. Full employment and high wages during the war have been accompanied by an increase in the consumption of these foods; for example, egg consumption was increased by 30 percent and that of liquid milk by 29 percent.¹ In the United Kingdom, in spite of the national food shortage, the consumption of certain foods of special value for health rose substantially—that of liquid milk by more than 40 percent—and in the poorest families by over 100 percent.²

Food consumption is directly correlated with health. As diet deteriorates in quality, health and physical abilities decline and length of life decreases. In communities where the diet is adequate, the average length of life is nearly seventy years compared with thirty to forty years in the worst fed communities. Unfortunately, poverty is associated with other conditions adverse to health, and it is difficult to assess the relative killing power of the different disease-producing factors. But the remarkable improvement in health and physical well-being following an improvement in diet shows that inadequate food is one of the main causes of the preventable diseases, misery, and premature death which afflict the majority of the human race.

Although these facts have been stated at length time and time again in authoritative official and unofficial reports, it is necessary to refer to them here because they are fundamental to the long-term problems of food and agriculture.

AGRICULTURE

The Problem of Increasing Production

It is difficult to estimate accurately how much the production of each of the main foodstuffs would need to be increased to provide adequate food for the whole population of the world, because for some countries statistics are absent or unreliable. It is known, however, that even in the wealthiest countries in prewar days between 20 percent and 30 percent of the population did not have enough of the more expensive foods essential for health. Estimates for the United States of America show that the production of these foods would need to be increased above the prewar level by 15 percent in the case of butter to 75 percent in the case of fruits and vegetables, to provide a fully adequate diet for every citizen. In the United Kingdom it is estimated that the additional amounts of food needed to bring the diet of the whole population up to the health standard represent an increase of 25 percent for meat to 65-70 percent for other animal products and fruits and vegetables.

It is obvious that if production goals be based on full physiological requirements, the world production of these more expensive foods of special value for health will need to be increased by more than 100 percent. The World Food Survey recently completed by FAO indicates that substantial increases

¹U. S. Department of Agriculture, Bureau of Agricultural Economics, *The National Food Situation*, Washington, April 1946.

²*Food Consumption Levels in the United States, Canada, and the United Kingdom*, Third Report of a Special Joint Committee set up by the Combined Food Board, Washington: U. S. Department of Agriculture, 1946.

will be needed even to meet goals that by no means represent optimum nutrition. There will also need to be an increase in the production of cereals, for direct human consumption in some areas, but even more in the long run to help produce the needed animal products. When cereals were being burned in the 1930's there were hundreds of millions of people in the world hungry. The first problem of production, therefore, is how to get sufficient food not only to feed the expanding population but also to feed people better.

The rapid growth of population in the United Kingdom in the nineteenth century raised fears that world population might outrun world capacity to produce food. Today, similar fears are held by some regarding the Asiatic countries.

The advance of agricultural science has enabled us to produce more and more food with less and less labor. The war showed how rapidly food production can be increased when technical and other resources are available. In the United Kingdom the increase in production estimated in calories amounted to as much as 70 percent over the prewar level. In the United States production increased in six years by 37 percent¹ as measured in dollar values at constant prices, and that with 8 percent² less labor. There are large areas in which agricultural methods have changed little for 2,000 years, where there is great potential capacity for increased production, and other areas which could be made productive by irrigation and flood control programs.

The rapid increase in population in certain countries is a serious political problem, and full weight must be given to its bearing on food production. The history of the western world shows that industrialization and rising standards of living are accompanied by a fall in the rate of population growth, and there is no good reason to believe that this will not occur in other regions.

The limiting factor is not the physical capacity to produce enough food but the ability of nations to bring about the complex economic adjustments necessary to make adequate production and distribution possible. The application of science is solving the problem of production but at the same time is creating its own problems. Mechanization reduces the number of the workers needed to produce a given amount of food. Unless profitable employment is found in other industries, agriculture is left with partially employed people. In underdeveloped countries the gradual adoption of such methods as mechanization must go hand in hand with the building up of industry. The net result would be to increase the numbers who are fully employed and to enlarge the world's total wealth.

Major Problems of Producers

The problems of food producers vary with the type of agriculture. In underdeveloped countries food is produced on very small holdings cultivated by obsolete methods. The net return is not sufficient to enable producers to obtain the barest necessities of life. A large proportion of the thousand million people with an intake of less than 2250 calories consists of this class of primary producer. As already noted, the problem here is one of providing profitable

¹U. S. Department of Agriculture, Bureau of Agricultural Economics, *The National Food Situation*, Washington, April 1946.

²U. S. Department of Agriculture, Bureau of Agricultural Economics, *Farm Labor Reports*.

employment in other industries and of education in modern methods of cultivation. Underlying this problem* is that of providing the needed capital equipment.

In countries where modern agricultural science is applied, the main problem is one of finding a continuous market at a remunerative price. A relatively small excess of supply over economic demand is followed by a big drop in prices, as occurred in the late 1920's. On the other hand, a relatively small excess in economic demand over supply is followed by a big increase in prices; this is dramatically demonstrated in war, when prices have to be controlled to prevent an excessive rise. Besides these cyclical movements, there are week-to-week and month-to-month oscillations in prices. In nine out of the ten years in the decade between 1928 and 1938 the price of wheat on the world market fluctuated by 70 percent. These fluctuations are the bane of agricultural producers.

In the interests of their own farmers, several governments have guaranteed prices for two or three years ahead. This will help to increase the production of the food which the world needs. The wide variation in the prices that will prevail in different countries will make it difficult to agree upon a common price for the world market; but this is essential to ensure that there is a world market for exportable surpluses at stable prices.

Farming is an activity which must be planned at least two or three years in advance. Efficient production is impossible if plans are continually being changed to suit anticipated drastic price changes. If farmers could be assured of steady markets at reasonable prices, they would be better off and nations would get their food cheaper.

While many farmers of exceptional ability, including foresight in predicting price changes, are prosperous over a series of years, the vast majority of food producers have a lower net income and a lower standard of living than men of equal skill in other industries. It has long been recognized that the primary producer does not get a share of the world's total wealth commensurate with the proportion he creates. This is not only a social injustice; it is an economic problem because the low purchasing power of food producers is a limiting factor in the market for industrial products. In turn, limitation of industrial prosperity and hence of the purchasing power of industrial producers limits the market for agricultural products.

INTER-RELATIONSHIP OF NUTRITION AND AGRICULTURE WITH INDUSTRY AND TRADE

The trade problem is an essential part of the food and agricultural problem because the market for foodstuffs depends largely on the purchasing power of those engaged in industries other than food production. Full employment with good wages will go far to solve both the nutrition problem and the agricultural problem, especially in highly industrialized countries.

But trade also has the problem of finding an expanding market for industrial products. The outstanding feature of the present age is the advance in technology which increases the output per man. War accelerates the rate of increase. In the United States of America in the first year after World War

I industrial production was 17 percent above the level of the last prewar year. When the shortage caused by the war was made good, markets could not absorb output, and within two years 31 percent of the factory workers were unemployed. The economic demand for foodstuffs fell and brought about a drastic fall in prices. The average annual income per farm fell in two years from \$1,360 to \$466. Other highly industrialized countries found themselves in the same position, and nations competed for a place on the world market, using subsidies to help exports, tariffs to protect home markets, manipulation of currency, and other measures of economic warfare. Such measures were accompanied by cartels and international agreements for restricting production of certain commodities. In 1933, it was predicted that an economic system which deliberately restricts the production and distribution of the things men need could not endure.¹ There is no doubt that economic distress with unemployment helped to create conditions which led to World War II.

The advance in technology and productive efforts has been much more rapid in this last war. In the first five months of 1946 production in the United States of America was 61 percent higher than in the first five months of 1939. In some other countries the increase in production was also great. When the ravages of war have been made good, the difficulty of finding markets to absorb production and make full employment possible will be as great as after World War I.

Failure to attain and maintain full industrial employment with good wages will reduce the consumption of the more expensive foods of special value to health, which will adversely affect nutrition and also lead to the accumulation of unmarketable surpluses of agricultural products.

It is obvious that the future state of the nutrition of the people, prosperity in agriculture, and volume of trade are interdependent. A long-term food and agriculture policy must reconcile the interests of consumers and producers. It must also reconcile the interests of agriculture and of trade.

The crux of the question is, at which end of the chain shall we begin? Trade can be promoted as if it were an end in itself, and food can be treated as an ordinary trade commodity. In this case the health of the people fluctuates with fluctuations in trade activity. But food is more than a trade commodity; it is an essential of life, and the provision of food for the people should not be dependent upon the success or failure of measures promoted solely in the interest of trade. On the contrary, trade should be considered as the means of bringing sufficient food and other necessities for a full life within the reach of the people.

The starting point for policy depends on what we are aiming for. If the welfare of the people be the objective, then the provision of food, the first essential of life, should be the first goal. Beginning with food has the advantage of affording a definite and limited objective. Taking into account dietary habits, the amount of food needed for health can be estimated. A preliminary survey has been made by FAO and targets have been set up as a first step for improvement of nutrition.² With such targets, goals can be set for agricultural pro-

¹In a speech delivered by the Rt. Hon. S. M. Bruce before the London Monetary and Economic Conference, 1933.

²World Food Survey, cited above.

duction and rough estimates made of the quantities of agricultural implements, fertilizers, and other industrial products needed for the necessary increase in production.

The two viewpoints, one concerned primarily with trade and one with adequate food supplies, are different aspects of the same objective—prosperity. Trade seeks an outlet for commodities in new and enlarged markets, which it is often hard to find. Setting improved nutrition as a goal will provide enormous new markets, not limited to food alone; it might be likened to opening up a new continent. It also furnishes a motivation which has a profound human appeal.

ECONOMIC ADVANTAGES OF A WORLD FOOD POLICY BASED ON HUMAN NEEDS

If each government undertakes to raise the level of nutrition of its people up to the health standard—as the Member nations of FAO agreed to do in accepting the Constitution—and adjusts its agricultural policy to this end, there will need to be an expansion of food supplies even in the best fed countries. The additional food production required is so great that it could hardly be attained unless production were progressively coordinated on a world scale. With such coordination, many countries would find it advantageous to diversify farming and concentrate on the more perishable foods of special value to health, leaving a larger proportion of such foods as wheat and sugar, which are easily stored and transported, to be grown in areas which by climate, soil, and other conditions are best adapted to their production.

This expansion of agriculture would accelerate the development of mechanization and expand the market for agricultural equipment of all kinds, for fertilizers, and for facilities for storing and transporting food. In the less developed countries there is need for machinery for irrigation, flood control, land reclamation, and drainage. The world has need for many large-scale developments similar to that of the TVA in the United States. Providing the capital equipment for the great expansion needed in the future development of agriculture would help to keep the wheels of industry turning and to provide full employment. Prosperity in agriculture would also increase the demand for consumer goods among agricultural producers, who outnumber those in all other industries put together.

The vast enterprise of providing food for health for all people is beset with difficulties requiring international collaboration, but the difficulties are not so great as those encountered and overcome in winning the war. In this case, however, the end result, instead of being death and the destruction of real wealth, would be life, enrichment of man's greatest asset—the soil, and economic prosperity, which is one of the essentials of a permanent peace.

If this reasoning is valid, a world food policy based on human needs would provide a program for agriculture and direct trade along the lines that must be followed not only to achieve prosperity but to attain the great humanitarian ends proclaimed by the leading statesmen of the United Nations during the war as the fruits of victory to which the people of the world might look forward.

DEVELOPING THE NECESSARY PURCHASING POWER

We have the natural resources and the knowledge to produce the food the people of the world need and so set going an upward spiral of economic expansion. But the food cannot be distributed and consumed by the people who need it unless purchasing power increases as rapidly as production.

There are two aspects to this problem, the national and the international. In the prewar years in some of the more developed countries (and even more during the war), the gap between the price of food adequate for health and the purchasing power of families was being partially bridged by various measures such as subsidizing foods of special value for health, family allowances, and provision of food at reduced cost to mothers and children who are most liable to suffer from malnutrition. An equally important factor was a general rise in wages. In many countries the adaptation and amplification of such measures and policies, which have been tried and found successful and are understood by the people, would probably be sufficient to ensure that food adequate for health will be within the reach of every family, thus providing a market for the increase in agricultural production needed in those countries.

There are, however, underdeveloped countries and those devastated by the war which at present are unable to make food sufficient for health available for the whole population. UNRRA is carrying out programs for agricultural rehabilitation in some countries, but no nation whose citizens depend for long on the charity of other nations for the necessities of life can retain its self-respect. The needed development of agriculture and industry should be put on a business footing at the earliest possible date, even though it is necessary to supply the capital equipment on terms involving deferred payments and long-term credits to give the countries concerned time to begin to repay.

The credits for the countries in need of immediate assistance should be made on an approved program of development which, while providing for the development of agriculture, would also lead to the development of all the natural resources of the country to enable it in time to repay by export of raw materials or other commodities which can be absorbed into the world's markets.

The means whereby the credits are made available is a question for the consideration of financial experts, to whom this aspect of the policy must be referred. This would clearly be a matter suitable for the consideration of the International Bank for Reconstruction and Development. From whatever sources the funds are obtained, however, certain principles must be kept in view in the financing of a world food policy.

The immediate credit worthiness of the borrower should not always be the primary test in financing the different aspects of the policy. In some transactions it may be desirable to forego interest for a period of years while the effects of the program, in terms of increasing capacity to render the country self-supporting, are making themselves felt. Further, it may be necessary to defer the beginning of gradual amortization. It may be desirable on occasion to introduce an element of flexibility by making the credit terms, or the extent of debt service, subject to indices of growth within the country and equilibrium in the external balance of payments. Such a proposal has been put forward by the League of Nations Committee on Economic Depressions.

These credits, provided through the Bank or by other means, can be regarded as long-term investments which will ultimately be profitable in the ordinary business sense. They will cause a systematic expansion of world trade. Moreover, they will steadily build up the productivity and purchasing power of the peoples of the less developed countries until they can attain a health standard of food consumption.

In addition to credits for development purposes, a fund should be provided to finance arrangements for countries of great nutritional need to purchase agricultural surpluses of other nations on special terms.¹ Such surpluses might otherwise paralyze any price stabilizing operations and bring ruin to the farmers of many lands. Funds devoted to disposing of these surpluses under special terms to countries in urgent need of them would not be recoverable from the banking point of view. Nevertheless, the policy would yield returns of real value by helping to maintain stability of production and prices in surplus-producing countries, and by increasing the working efficiency of underdeveloped countries so that they would be better able to make their full contribution to the world's total wealth.

A third type of financing, connected with price stabilizing operations, is discussed later in this report.

It is recognized that the financing policies briefly mentioned in these paragraphs raise difficult and complicated issues requiring expert consideration. The benefits that would accrue are immeasurable. The knowledge and the physical resources are available to attain these results, which are desired by the majority of mankind. It should not be beyond the wisdom and skill of financiers to devise the means and shape the necessary measures.

INTER-GOVERNMENTAL ORGANIZATIONS

The Special Meeting on Urgent Food Problems which requested this report recognized that the carrying through of the long-term objectives might require either expansion of the functions of existing organizations or the setting up of a new organization. The organizations that have been set up or are proposed are here briefly discussed.

COMMODITY ORGANIZATIONS FOR PRODUCERS

For a long time there have been efforts to set up international commodity organizations. International agreements were concluded for sugar, rubber, tea, and certain minerals. Most of them were quota agreements based on the allocation among members of shares in the world markets. These agreements were children of the depression when the view was held that world markets are limited and incapable of much expansion. They were inevitably restrictive in character and made no contribution toward counteracting business cycle fluctuations. They lacked any overall agency to coordinate their activities.

During the war further developments took place along the same line. An Inter-American Coffee Agreement has been in operation since 1940. An International Wheat Council was finally established in 1942 after many years of preliminary study but does not yet operate an agreement. The Council, initially

¹This proposal was first outlined in Resolution 27 of the Hot Springs Conference and was further discussed and endorsed by the Marketing Committee at the Quebec Conference.

composed of Argentina, Australia, Canada, the United Kingdom, and the United States, has recently invited other governments with a major interest in wheat to join its deliberations and to revise the draft agreement for ultimate submission to an International Wheat Conference.

In the case of wool, the governments of the United Kingdom, Australia, New Zealand, and South Africa have in 1946 established a Joint Organization to undertake the marketing of accumulated wool surpluses. In the case of cotton, there has for some time past been international study and discussion concerning the feasibility of an international cotton agreement.

All existing and projected commodity councils suffer from two important defects, both due to the same cause—the need for a more comprehensive organization. First, when each commodity is considered in isolation it is impossible to contemplate certain remedies and opportunities which are feasible when commodities are considered jointly. Secondly, when commodity councils are not part of a larger organization, they lack the financial resources which would enable them to hold stocks, bring stability to existing markets, and develop new ones.

UNITED NATIONS ORGANIZATIONS

During the war the United Nations, being determined to realize in peace the ideals of freedom and human welfare for which they had fought, prepared to set up a number of international bodies to fulfill the promises of the Four Freedoms. They have established FAO to make studies and recommendations for developments in the whole field of food and agriculture, forestry and fisheries, and to stimulate and foster the international cooperation necessary to carry them out. Its technical advisory services are concerned with a wide range of scientific, economic, and statistical problems which underlie improved production and better distribution. An International Bank was established by the United Nations to assist in providing part of the large investment needed for agricultural and industrial development. Development can proceed rapidly only on a basis of improved education and health services. Here, in addition to the advisory work of FAO, the information and advice of the United Nations Educational, Scientific, and Cultural Organization and of the proposed World Health Organization will be available. Further, if development is to be sustained there must be satisfactory and full employment in the advanced countries, and in this field the Economic and Social Council has general international responsibility. Again, the International Labor Organization is specifically concerned with improving wages and working conditions.

The International Monetary Fund has as one of its functions to assist in alleviating the balance of payments difficulties of member countries, which in itself is a major contribution toward mitigating international trade difficulties.

Beyond this there are the valuable proposals for an International Trade Organization,¹ which contemplate international machinery for encouraging the progressive reduction of trade barriers, for the elimination of restrictive business practices, and for action in the field of commodity policy.

Apart from the Bank and the Fund, which are designed to facilitate the solution of financial problems on an international level, the functions of the

¹U. S. Department of State, *Proposals for Expansion of World Trade and Employment*, Washington, November 1945.

specialized organizations are limited almost entirely to the accumulation and interpretation of facts and to making recommendations. Neither singly nor in combination are they able to take measures to translate the recommendations fully into action. The research and advisory functions of FAO, for example, are necessary and can accomplish a great deal in achieving its aims—the elimination of famine and chronic hunger from the world and the attainment of prosperity and stability for primary producers. But there is a vitally important gap in that no agency has the requisite authority and funds for carrying out coordinated international action where it is needed. In discussions of present-day world issues, it has been emphasized again and again that nations must *act together* if major economic and social problems are to be solved; separate action is the road back to chaos. But they cannot act together without adequate international machinery, which so far provides fully for *consulting together* but not for putting the results of the consultation into effect when cooperative action is required.

It has been suggested above that a food policy based on human needs is the best starting point for solving the problems discussed in the present report. For this a World Food Board with the necessary authority and funds is needed to set the desired chain of events in motion.

THE SUGGESTED WORLD FOOD BOARD

STRUCTURE AND FUNCTIONS

The temporary organizations created to deal with the food scarcity caused by the war foreshadow the kind of permanent organization needed. The recently created International Emergency Food Council, working through commodity committees, encourages stabilization of prices by getting agreement on price schedules and also by promoting a certain amount of unified buying; and it recommends the allocation of export surpluses according to the needs of different countries. UNRRA has funds to provide food and agricultural implements, fertilizers, and other supplies for the rehabilitation of certain war-devastated countries. A continuation of this international cooperation is needed because even if these temporary organizations bring the world out of the present food emergency, there will still remain the great scarcity of food that existed before the war and at the same time the agricultural problems of fluctuation in prices and the accumulation of unmarketable "surpluses."

The proposed World Food Board, which would act through commodity committees, might be established as a new international agency, or the Constitution of FAO could be altered to enable it to set up the Board. There are drawbacks to having a multiplicity of international agencies acting in the same field. If the latter alternative were thought to be the better means, the Board could be appointed by the Conference of FAO, which it is hoped will ultimately include representatives of all countries. But as the actions of the Board would involve broad problems of world economics and finance, it would be necessary to include in it representatives of other interested international organizations—for example, the International Bank for Reconstruction and Development, the Economic and Social Council, and the proposed International Trade Organization. The working relationship between the Board and ITO would need to be close, since the latter agency, according to present indications, will be concerned with the broad field of commercial and commodity policy.

The functions of the World Food Board would be:

- 1. To stabilize prices of agricultural commodities on the world markets, including provision of the necessary funds for stabilizing operations.*
- 2. To establish a world food reserve adequate for any emergency that might arise through failure of crops in any part of the world.*
- 3. To provide funds for financing the disposal of surplus agricultural products on special terms to countries where the need for them is most urgent.*
- 4. To cooperate with organizations concerned with international credits for industrial and agricultural development, and with trade and commodity policy, in order that their common ends might be more quickly and effectively achieved.*

OPERATIONS

For stabilization of prices in agriculture the World Food Board, operating through its commodity committees, should be given power to hold stocks of each of the most important commodities. This proposal, it may be noted, is in line with principles previously put forward by the League of Nations and other bodies. The Board would undertake the investigations necessary to determine what world prices would call forth the quantities that could currently be marketed. It would announce a maximum and minimum price and would undertake to buy into its stock when the world price fell below the declared minimum and sell from its stock when the world price exceeded the maximum. Care would be needed to commence operations at the correct moment and to choose an appropriate world price.

The Board would need a revolving fund to operate such a plan. No precise estimate of the amount required can be made at present. Moreover, the need for funds would grow gradually as first one commodity and then another was brought under the aegis of the plan. For safety, the normal stocks held by the agency should represent six to twelve months' trade, the amounts varying with different commodities. In determining the contributions to be made to the fund, the relative benefits derived from the stabilizing operations by different countries—exporting and importing, developed and underdeveloped—would need to be carefully weighed.

Since the agency would normally be buying at its minimum and selling at its maximum price, it should earn enough to cover the quite considerable costs of storage. It would, of course, have on occasion to hold very much larger stocks than the normal, but these extra holdings should be financed by borrowing on the market against its commodity assets. The need for such operations would be greatest in time of depression when funds are available at advantageous rates.

Producers of livestock products and other perishables not suited to long-term stock holding will find their markets both greatly stabilized by the buffer stock operations on feed grains and other items and greatly enlarged through the nutritional policies concurrently developed. Certain livestock products capable of being stored for long periods might be included directly in the operations.

In the case of a few commodities there may be danger of competitive export subsidization which, if tolerated, would destroy the international stock holding program. In such cases it might be necessary to negotiate schedules of export

quotas between governments until new markets could be developed. This contingency has been recognized and provided for in a similar way in the United States Proposals for an International Trade Organization.

The objective of the operations of the World Food Board would be to ensure that sufficient food is produced and distributed to bring the consumption of all peoples up to a health standard. The need for additional food is so great that if human requirements could be translated into economic demand, there would be no question of surpluses of the basic foods—surpluses which before the war many people came to regard as inevitable and which if permitted to re-emerge might overwhelm the Board. The basic problem here is the financial one of increasing the purchasing power of the people who are unable to obtain sufficient food for their needs. The Board must be able to divert unmarketable surpluses to these consumers and arrange for financing the cost of selling at prices which the consumers are able to afford.

THE NEED FOR IMMEDIATE ACTION

The suggestion to set up a World Food Board with funds and authority to take measures necessary in solving long-standing problems of nutrition and agriculture is neither a revolutionary nor a new idea. The proposal merely synthesizes many national and international measures and brings them together in one organization which has the machinery and the funds to correlate them and take executive action to carry them out.

It may seem premature to put forward such an ambitious proposal, but we are living in a world which is being driven so fast by the advance of science that bold measures are required if we are to resolve the tremendous social and economic problems that face all countries. In the specific case of food production and international trade in food, an adequate world policy will be needed much sooner than many realize.

There are only two alternatives for the nations today: either cooperation for mutual benefit in a world policy, or a drift back to nationalistic policies leading to economic conflict which may well be the prelude to a third world war that will end our civilization.

SUGGESTED ACTION BY THE FAO CONFERENCE

It is hoped that after discussion the Conference may express general agreement on the need for international executive machinery through which governments striving to promote health and prosperity for their own peoples can cooperate on a world basis in putting the necessary measures into effect.

If the proposal is approved in principle, it is suggested that the next step is to appoint a committee to work out the details and prepare a specific plan for setting up such an agency. The committee might consist of representatives of, say, not more than 15 governments, together with representatives of the international organizations concerned, including the ITO Preparatory Commission when it is established. In view of the fact that the existing temporary international organizations concerned with food and agriculture may go out of existence in 1947, it would be a matter of urgency for the committee to begin its work without delay, and it is therefore suggested that its report should be completed by December 31st, 1946.

PART II

WORLD FOOD SURVEY

Washington, 5 July 1946

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1. BACKGROUND OF THE SURVEY

IT IS well known that there is much starvation and malnutrition in the world. Millions of people never get enough to eat, and much larger numbers, not actually hungry, do not obtain the kind of diet necessary for health. Vague knowledge that this situation exists is not enough; facts and figures are needed if the nations are to attempt to do away with famine and malnutrition—an attempt to which they are pledged through the Food and Agriculture Organization of the United Nations.

What is the actual food consumption of the different peoples of the world? How does it compare with their needs? Where are the most serious shortages? What practical goals can be set to remedy these shortages within a reasonable time? What additional quantities of food would be required to reach the goals? These are the points on which more definite information is needed if the ideal of freedom from famine and malnutrition, with all their attendant evils, is to be translated into workable plans.

Exact knowledge on these questions, country by country throughout the world, has been meager except in a few cases. Yet a good deal of material exists in scattered sources, and there are international and national agencies whose business it has been to collect such material. Experts in these agencies have been accustomed to dealing critically with the available information, and they are capable of filling in some of the gaps with estimates based on wide experience.

Early in 1946 several of these agencies loaned the services of some of their staff members to the Food and Agriculture Organization for the purpose of making a world food survey in which the best available figures and estimates would be brought together, critically examined, and reduced to a uniform basis. The objective was to obtain as clear a picture as possible of the world food situation as it was in the years just before the war. FAO needed these figures as a guide in working out proposals for future world food and agricultural policies.

This report gives the results of the survey. It covers 70 countries whose people make up about 90 percent of the earth's population.

It need scarcely be said that the figures for many countries are highly imperfect. Statistical services in most countries will have to be vastly improved before complete and accurate data are obtainable; it is one of FAO's functions to help bring about this improvement, which will take many years.

Some of the authorities who were consulted about the survey, however, have expressed the opinion that the figures brought together here could not have been greatly improved, on the basis of the available information, if the groups of experts had worked for three years instead of the three months or so actually spent on the task. Total calorie estimates, in particular, are probably accurate within 5 percent in most instances for countries with an average intake of 3000 calories a person a day, and within 10 percent for those with an average of around 2000. It should be added that the estimates were submitted for checking to each of the countries concerned, and various adjustments have been made as a result.

In other words, though the figures in the survey must be regarded as provisional and incomplete (their shortcomings are fully discussed in Appendix II on page 32), they give a more accurate and detailed picture of the prewar food situation than has hitherto been available. They are close enough to the truth to be used, with due caution, as a yardstick by which to measure changes that

will be required if we are not to return to the unsatisfactory food situation which existed in the years before the war but to have a food and agriculture policy that will meet human needs.

Another question besides those mentioned above must be considered. What would be involved in producing the additional quantities of food needed to meet practical goals? This also is discussed in the report.

The world food survey would not have been possible without the generous assistance of the persons and agencies listed by name in Appendix I, page 31. FAO's debt to them is inadequately expressed in this brief acknowledgment.

2. THE PREWAR FOOD PICTURE

FOOD supplies available in 70 countries in the prewar period have been estimated. The results are summarized in figure 1, opposite page 24 in terms of calories per head of population daily. The calorie figures are presented in the form of a bar chart which shows the food consumption of the different countries at a glance. Each long bar on the left represents the total number of calories per caput daily furnished by the food supplies (production plus imports minus exports) available in each country. The long bars are divided to show the number of calories yielded by nine different groups of foods: cereals; roots and tubers; sugar; fats; pulses (peas and beans); fruits and vegetables; meat, fish, and eggs; milk; and wine and beer.

Estimates of supplies in terms of calories are convenient for purposes of comparison. It should be borne in mind that the more concentrated foods, such as cereals, fats, sugar, and meat have a higher calorie value per gram or ounce than less concentrated foods such as fruits and vegetables, which usually contain a good deal of water; many grams of a leafy vegetable are required to furnish the same number of calories as one gram of rice.

The short bars on the right in figure 1 show the amount of protein per caput daily (in grams, not calories) supplied by the national diets. These bars are divided to show the amount of protein obtained from foods of animal origin and the amount obtained from vegetable foods such as grains and pulses. A diet rich in animal protein, especially in protein derived from milk and milk products, is likely to contain enough of the foods rich in minerals and vitamins to supply these nutrients in adequate amounts.

The great variation in the dietary patterns of the different countries is obvious.

Table 1, Appendix III gives per caput figures for total calories and calories from the different food groups. Table 2 shows food supplies in terms of kilograms per head per week. Both chart and tables represent food supplies at the retail stage or its equivalent. This means that allowances have been made for losses and wastage at various stages between production on the farm and entry into the retail stage, but none from this point onwards.

The Extent of Malnutrition

Calculations based on the prewar populations of the individual countries show that in the years before the war—

In areas containing over half the world's population, food supplies at the retail level (not actual intake) were sufficient to furnish an average of less than 2250 calories per caput daily.

Food supplies furnishing an average of more than 2750 calories per caput daily were available in areas containing somewhat less than a third of the world's population.

The remaining areas, containing about one-sixth of the world's population, had food supplies that were between these high and low levels.

The proportion of the world's population in each of the three groups is shown in figure 2.

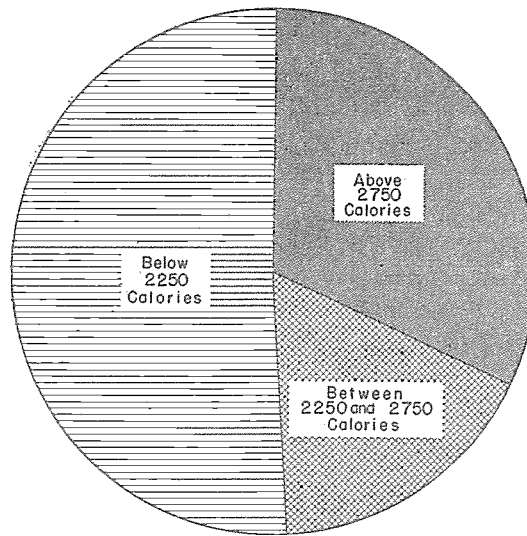


FIG. 2 RELATIVE SIZE OF WORLD POPULATIONS AT DIFFERENT CALORIE LEVELS

The high-calorie areas include most of the western world, all of North America, and much of Europe. Oceania and the Union of Soviet Socialist Republics also belong to this group, but it includes only three countries in South America.

The medium-calorie areas include most of southern Europe, three countries in Asia, a part of the Middle East, a part of Africa, and a part of South America.

The low-calorie areas include most of Asia, a part of the Middle East, all of Central America, and probably parts of South America and of Africa which were not covered by this survey.

But averages do not tell the whole story. They conceal many sharp differences. Whatever the average calorie level of a country, some people obtain considerably more than the average while a large number have less. Even in the countries with the most liberal food supplies and the highest calorie intake, it is well known that a considerable part of the population is not well nourished. There are wide local variations in food supply which are not brought out by average figures for the whole population.

The Areas of Greatest Deficiency

The areas of greatest deficiency, according to this survey, are Central America and most of Asia. They also probably include parts of South America and of Africa not covered by the survey.

Many of the low-calorie countries are in the tropics and subtropics. In these countries, food energy requirements may be less than in colder countries. The average size of the people is usually smaller. The proportion of children in the population also is usually greater because of high birth and death rates. These factors, however, cannot account for the great difference in per caput daily calorie intake between the low and the high countries. A population with a high percentage of children, for example, would require only some 100-150 calories a person a day less (but relatively more minerals and vitamins) than a

population with the age composition now typical of western civilization. As has been seen, the actual difference is around 1000 calories a person a day. Calorie intake in the low-calorie countries is only two-thirds of that in the high-calorie countries.

A vicious cycle probably influences the nutrition of peoples who subsist at a low level of calorie intake. Restricted diet leads to poor physique and a lowering of basal metabolism and energy output, and these in turn facilitate adaptation to a restricted diet. The cycle would be reversed if the food supplies of these people were increased and improved. Their physical development would be better and their energy output raised, and hence they would require more food.

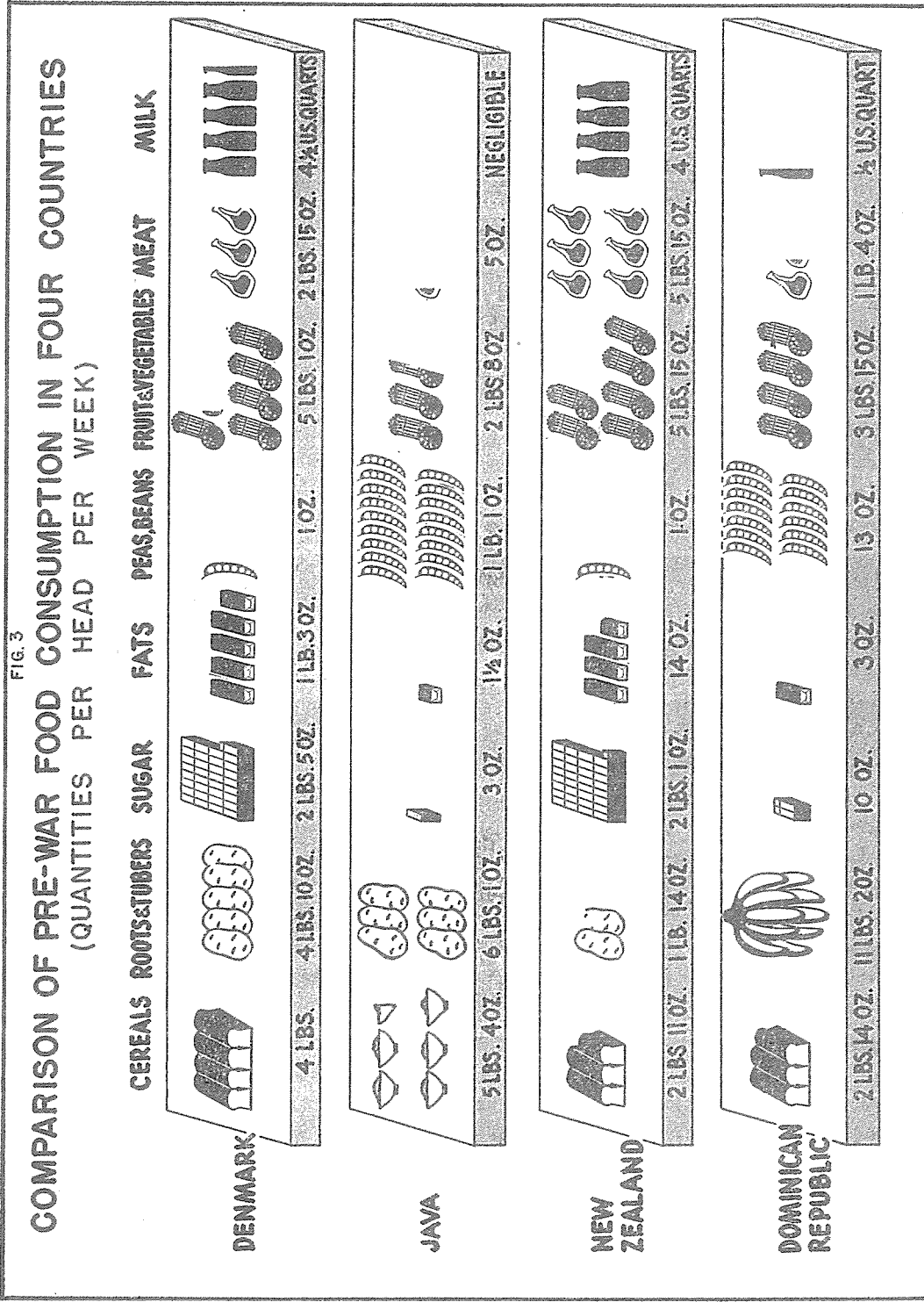
It is evident from this survey that about half of the world's population was subsisting before the war at a level of food consumption which was not high enough to maintain normal health, allow for normal growth of children, or furnish enough energy for normal work. Poor nutrition is associated with high death rates and a low expectation of life, high mortality in infancy and early childhood and among women during the child-bearing period, increased susceptibility to many diseases such as tuberculosis, and impaired working capacity. It is not necessary to enlarge further on this point, which has been discussed many times, for example in publications of the League of Nations and in the reports of the Hot Springs Conference and of the United Nations Interim Commission on Food and Agriculture.

The Composition of the Food Supply by Food Groups

Estimates of calories per caput obtained from the different food groups are subject to a wider range of error than estimates of total calories. Many gaps in the statistical data need to be filled, and intake figures do not show the great variations in local food supplies and food habits which only painstaking study in the future can reveal. Nevertheless, the tables and the chart clearly demonstrate the marked differences in the quality of the national diets of the countries included in this report.

Countries and areas with average calorie levels around the 3000 mark or more had well balanced national diets. These included North America, Oceania, Argentina, the British Isles, Scandinavia, the Netherlands, Switzerland, and Germany. In all these the consumption of cereals in relation to that of other foods was relatively low—about 1000 calories daily were obtained from cereals—and milk and meat consumption comparatively high, giving a supply of animal protein of about 50 grams. In Iceland, where environment conditions the food supply as in all arctic or subarctic areas, intake of animal protein (63 grams) was higher than in any other country surveyed except Argentina and Uruguay, mainly because of the high intake of fish—the catch is equivalent to two tons a head a year. Argentina, Uruguay, and Paraguay, the meat-producing countries of South America, together with Australia and New Zealand, were the only other countries with substantially more than 50 grams of animal protein per caput daily.

This general dietary pattern contrasts sharply with that in countries where the average total calorie supplies were around the 2000 mark or less. These countries were: in the Far East—India, Java, the Philippines, Korea; in the Middle East—Iran, Iraq, and Transjordan; in Central America—Mexico, El Salvador, and Costa Rica; and in South America, Colombia. Here the low average energy value of the diet reflects widespread poverty. A high proportion of total calories was obtained from cheap foods rich in carbohydrates, such as cereals. With very few exceptions the average calorie value from the cereal



supply was never substantially below 1000. Two exceptions are Costa Rica, which as a sugar-producing country obtained a large part of its total carbohydrates from this source, and Colombia, which, though it grew maize and had to import its wheat and rice, obtained much of its carbohydrates from potatoes, bananas, and plantains.

It is interesting that in the two extreme cases considered, with average total calories of 3000 and 2000 respectively, the calories obtained from cereals approximated 1000.

Of the countries in which the average total calorie intake was intermediate, those with a low cereal consumption, such as Paraguay with 545 cereal calories and Kenya-Uganda with 586, consumed large quantities of such roots and tubers as sweetpotatoes and plantains. In this intermediate group countries with exceptionally high cereal intake form a geographically continuous area stretching from eastern Europe through the Union of Soviet Socialist Republics to Manchuria. In these countries the quantity of food obtained from animal sources was small and cereals supplied as much as 50 to 60 percent of the total calories, to the detriment of variety and balance.

Examples of Different National Diets

Four countries, New Zealand, Denmark, Java, and the Dominican Republic, have been selected to illustrate differences in national food supplies (figure 3).

In New Zealand, with a high average food consumption, the diet was well balanced. Calories from cereals amounted to a little less than 1000 and consumption of meat, milk, and fat was high. The supply of protein averaged 96 grams, of which 65 percent was of animal origin. Denmark was the highest food consumer among the Scandinavian countries. It is of interest to note that Denmark and New Zealand, though situated on opposite sides of the earth and differing in many characteristics of national life, consumed approximately similar kinds of diets. Cereal consumption was equally low and milk consumption equally high in the two countries. The main differences were that while consumption of meat, fish, and eggs in Denmark was comparatively high, the consumption of these foods in New Zealand was twice as great; but on the other hand Denmark consumed half again as much fat as New Zealand. When there is abundance and variety of food and purchasing power is high, countries tend to choose a diet fully adequate for health.

Java and the Dominican Republic, by contrast, are examples of countries with low average levels of consumption. In Java, with a total calorie supply of about 2000, the calories furnished by cereals were more than 1000 per caput daily. Carbohydrate intake was further increased by the consumption of large quantities of cassava, so that not only was the average supply of animal protein almost negligible (4 grams), but the total protein (43 grams) was the lowest recorded in all the 70 countries surveyed. The Dominican Republic was little better off; the main difference lay in the larger intake of animal protein, accounted for by the considerably greater consumption of milk, meat, fish, and eggs. Bananas have been included in the "roots and tubers" group in the case of this and other tropical countries in which they were a staple article of diet. In nutritive value they are akin to this group.

Income and Nutrition

Poverty is the chief cause of malnutrition. In the course of preparing this survey prewar calorie consumption was compared with national incomes per person as far as these are known. It is interesting to observe that all the coun-

tries in which the supply of calories per caput was less than 2250 a day were countries in which the average per caput income was less than U.S. \$100 a year. At the other end of the scale there were 365 million people living in countries in which the average supply of calories exceeded 2900 a person a day. Of these, 342 million were in countries in which the average income exceeded U.S. \$200 a person a year.

Thus for the world as a whole it can be said, "Tell me what you earn and I will tell you how you eat." There are exceptions, but in general well-to-do countries fare well nutritionally, poor countries fare badly, and the poorest groups within these countries fare the worst.

3. NUTRITIONAL TARGETS

THE NEXT step after determining world food consumption country by country was to set up nutritional targets showing the changes in food supplies which are necessary to provide the world with a better diet.

The Hot Springs Conference recommended that governments should—

adopt as the ultimate goal of their food and nutrition policy, dietary standards or allowances based upon scientific assessment of the amount and quality of food, in terms of nutrients, which promote health, and distinguish clearly between these standards and the more immediate consumption goals which necessarily must be based upon the practical possibilities of improving the food supply of their populations.

The problem of dietary standards or allowances for international application is one with which both FAO and the World Health Organization will be concerned in the future. In the United States of America the recommended daily allowances of the National Research Council (NRC) have been widely accepted and are used by official agencies. All such standards are provisional in the sense that they are subject to modification as nutritional knowledge advances. They represent the consensus of experts at a given time.

Where food consumption is already adequate in the quantitative sense, "optimum" standards can be applied to determine the changes in food supply necessary to improve the quality of national diets. But in many of the countries with a medium calorie intake, and in all of those with a low intake, consumption goals must be set considerably below the optimum if they are to be reached within any reasonable time. The achievement of such intermediate goals would bring a vast improvement in world nutrition. They may be regarded as milestones on the road to the ultimate Hot Springs objective.

Early in 1946 FAO convened a small group of nutrition experts (see Appendix I, page 31) to consider the question of targets, with the estimates of prewar food supplies as the starting point. It was agreed that in drawing up targets weight must be given to the present position as regards the production and supplies of the various foods, and that the targets should call for modification in existing dietary patterns rather than revolutionary changes. The group of experts suggested the following principles and methods which could be applied, with the exercise of careful judgment, in approaching the problem:

(a) A per caput calorie intake of 2550–2650 should be taken as the minimum level to which intake should be raised in the low-calorie countries, and the quantities of additional foods required should be estimated on this basis.

(b) *Cereals*. If calories from cereals fall between 1200 and 1800, no change should generally be recommended. If they fall below 1200, and if total calorie intake is below 2600, some increase in cereal intake may be recommended unless the total calories from cereals, starchy roots and tubers and starchy fruits, sugar, fats, and pulses exceed 2000–2100.

If cereal calories exceed 1800 and total calories are high, the question of decreasing the former should be considered. In deciding the quantities of other foods which in such circumstance can replace cereals, weight must be given to the dietary pattern as a whole and the objective of improving nutrition must be kept in view.

(c) *Starchy roots and tubers and starchy fruits* (for example, bananas, which in composition resemble roots and tubers). An intake of 100 to 200 calories from these foods may be taken as a desirable objective. A larger consumption may, however, be advocated if intake of cereals is low and adequate amounts of protein can be obtained from such foods as pulses, milk, meat, and fish. But where these cannot easily be made available, as for example in certain manioc-eating countries, too high a consumption of starchy roots may seriously lower protein intake.

(d) *Sugars*. In general, no increase in the intake of sugars should be recommended. If calories from sugar exceed 10 to 15 percent of total calories, some reduction may be considered, with due regard to the dietary pattern as a whole.

(e) *Fats*. Total daily calories from fats (as a separate food group) should be at least 100 and preferably 150–200. Intake of fat through the medium of other food groups must be taken into consideration.

(f) *Pulses*. In countries in which pulses are already an important feature of the dietary pattern, calories from this source may well reach 250–300 daily. In general, this means countries in which meat supplies are of necessity low (say below 150 calories from meat daily) and sources of animal protein limited. But even when meat calories are as high as 200–250, calories from pulses may be pushed to 200–250 if this is in general conformity with dietary habits. Pulse intake must be considered in relation to intake of cereals, starchy roots and tubers and starchy fruits, milk, and meat.

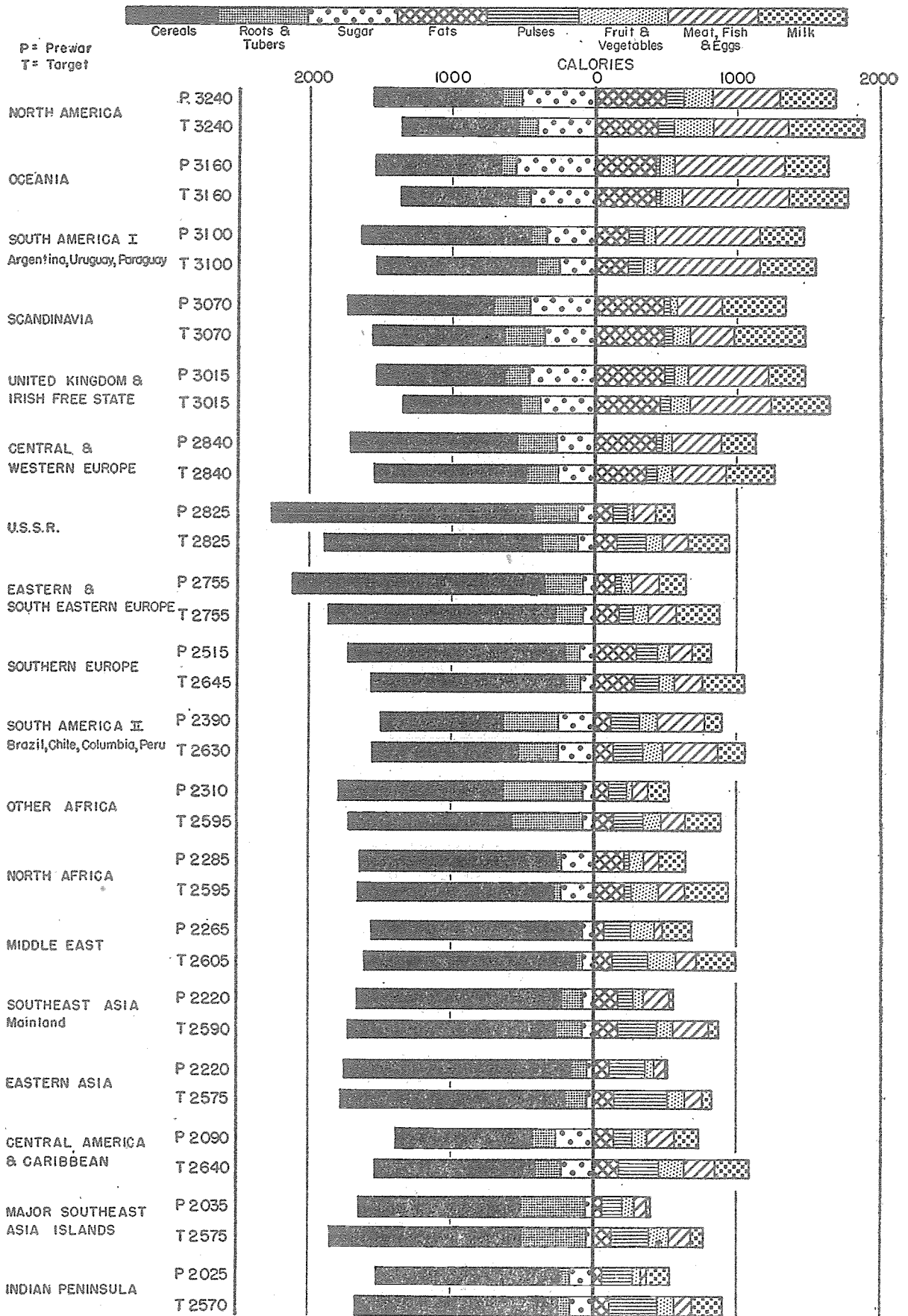
(g) *Fruits and vegetables*. Total calories from these foods (excluding starchy vegetables and fruits) should be at least 100 per caput daily. Preference must be given to leafy green and yellow vegetables and fruits and to fruits and vegetables which are good sources of vitamin C. The quantities of fruits and vegetables recommended should be considered in relation to their nutritive value. If the kinds grown are of low vitamin content, daily calories from this source should be raised. If the reverse, they can perhaps be slightly reduced.

(h) *Meat (including poultry), fish, and eggs*. Not less than 100 calories per caput daily, and preferably 150–200, should be derived from these sources. If intake of milk and pulses is high, that of this group can be correspondingly reduced. Fish can replace meat in countries in which the latter cannot easily be produced in quantity and where fish supplies can be readily increased.

(i) *Milk and milk products*. An intake of 300–400 calories per caput daily represents a desirable minimum level of consumption. In recommending milk supply targets, weight must, however, be given (1) to existing dietary habits in respect of milk consumption, (2) to the present level of milk intake, and (3) to the possibility of providing certain important nutrients of milk through a combination of pulses and leafy green and yellow vegetables. Small fish eaten whole can supply calcium to replace milk calcium, but this is not the case when only fish muscle is eaten. In countries in which milk

FIG. 4

PRE-WAR FOOD SUPPLIES AND NUTRITIONAL TARGETS IN EIGHTEEN AREAS
(CALORIES PER HEAD DAILY AT THE RETAIL LEVEL)



supplies are at present negligible or nonexistent, the milk calorie target may temporarily be set at 50–100 calories, which will represent a very large percentage increase over existing supplies.

How the Targets were Set Up

On the basis of the criteria suggested by the Nutrition Committee, which conform with the principles of modern nutritional science, targets were drawn up for 18 areas. These are given in figure 4, in terms of total calories and calories from various food groups, together with prewar consumption levels for purposes of comparison.

The targets show approximately the changes and increases in food supply which may be aimed at in improving nutrition in 18 areas covering 70 countries. Grouping of the countries into these areas followed the drawing up of targets for the 70 countries separately. Prewar food supplies per caput, country by country, were studied and changes were introduced which would significantly improve national diets without altering their general pattern too widely.

Because of the great variation in existing consumption and in the nutritive value of national diets, it was considered impracticable to put forward targets calling for a uniform degree of nutritional adequacy. In countries in which food supplies were insufficient in quantity as well as unsatisfactory in quality, the first step was to consider the increases in food supplies necessary to raise calorie intake to a reasonable level of sufficiency. Targets for countries in which prewar food supplies yielded less than 2600 calories per caput daily have been adjusted to bring the calorie level to 2600 (plus or minus 50). For countries with calorie supplies above this level, adjustments were made to improve the quality of the diet while the same energy value as in the prewar period was maintained.

The system of adjustment for quality recommended by the nutrition committee makes it possible to suggest desirable changes and improvements in the food supply without drastically altering dietary habits. The recommendations were not exactly followed, however, in the case of areas in which it appeared to be impracticable to set as high a goal for certain food groups as that put forward by the committee. For example, to supply the additional quantities of milk and milk products required in the Far East to attain the desirable minimum of 300 to 400 calories a person a day from this source will be outside the bounds of practicable possibility for a longer time than that likely to be required to achieve other consumption goals called for by the targets, since the prewar consumption of milk in that part of the world was almost negligible. Supplies of milk equivalent to 50 calories per caput daily from this source have been suggested.

It should be emphasized that to improve nutrition in any given area or country more is needed than an increase in total food supplies along the lines suggested. Satisfactory distribution of food within countries so that all obtain an adequate share of the additional food made available is of the utmost importance. As has previously been pointed out, average figures of per caput consumption may conceal wide variations in the consumption of population groups in any country—for example, regional groups or groups of different economic status. It follows that in addition to bringing about the necessary changes and increases in total supplies, measures must be taken to ensure that those whose diets are below the average benefit in accordance with their needs.

The Targets for Countries with Low and Medium Calorie Intake

For nearly all the groups of countries at the low calorie level, an increase in cereal consumption is advocated, principally to raise the total calorie intake.

Substantial increases in the consumption of fats, pulses, fruits and vegetables, milk, and foods in the meat, fish, and eggs group are called for except in a few countries in these groups where prewar consumption of certain of these foods was fairly large—for example, fats in North Africa and meat in Brazil, Chile, and Colombia. For sugar the target is the same as the prewar level of consumption except in the case of the Central American and Caribbean sugar-producing countries where prewar intake was exceptionally high.

The Targets for Medium- and High-Calorie Countries

The targets for eastern and southern Europe and for the Union of Soviet Socialist Republics also call for increases in the consumption of fruits and vegetables and of milk (and meat in the case of the Soviet Republics), but suggest some reduction in cereals. Where cereal consumption is high, it normally declines as the dietary improves.

The targets for North America, the British Isles, Scandinavia, central and western Europe, and Oceania represent adjustments within high-calorie diets rather than an increase in total consumption. The target figures correspond closely with those for a "moderate cost diet" drawn up by nutrition experts in the United States Department of Agriculture, which supplies nutrients in accordance with the recommended allowances of the National Research Council. The target figures also conform in general with the changes in food consumption which in western countries tend to follow a rise in the purchasing power of the lower income groups that permits these groups a freer choice of foods.

It will be seen that reductions in average sugar supply per caput have been suggested by the targets for certain areas in which calories from this source exceeded 10–15 percent of total calories, which represents the quantity of sugar estimated to be sufficient for cooking and adding to food for sweetening. The reason is that when sugar is consumed in large quantities, it often supplants other foods of greater nutritive value. Once a luxury, sugar is now consumed in many countries in four or five times the amounts that were consumed 100 years ago. It should be pointed out that, with increase in population, a reduction in the per caput supplies of any food does not necessarily imply a reduction in the absolute quantities required. The targets, however, indicate that the scope for further increase in sugar consumption is limited, in marked contrast with the fact that desirable increases in milk consumption are so large that the quantities needed will with difficulty be produced after many years of agricultural development.

The targets for the three South American countries with a high calorie intake—Argentina, Paraguay, and Uruguay—provide for increases in the consumption of fruits and vegetables and of milk, and a decrease in that of sugar. No increase in meat consumption is suggested, since this is already high.

The Targets Require Greatly Increased Production

What would the attainment of these targets require in terms of actual quantities of the different foods? The targets indicate the direction to be followed in the improvement of diets, but they do not represent objectives to be reached within any specific period of time. The time requirement, which will depend on the whole economy of the countries concerned and the degree of international cooperation in increasing agricultural production and trade and in raising standards of living, will have to be determined at a later stage when governments consider the measures they are going to take to achieve satisfactory food consumption goals.

TABLE 3

PREWAR FOOD SUPPLIES (P) AND PERCENTAGE CHANGES REQUIRED
TO MEET NUTRITION TARGETS BY 1950 (T)—UNITED STATES
OF AMERICA AND UNITED KINGDOM

(Amounts in 1,000 metric tons—Changes as percent of prewar supply)

Category		United States (12% increase in population by 1950)		United Kingdom (6% increase in population by 1950)	
		Amount	Change	Amount	Change
Grain products ¹	P	11,700		4,510	
	T	12,170	+4.0	4,400	-2.5
Roots and tubers ²	P	8,515		3,700	
	T	9,260	+8.7	4,000	+6.0
Sugar ³	P	6,280		2,350	
	T	5,490	-12.6	2,045	-13.0
Fats and oils ⁴	P	2,635		970	
	T	2,645	+0.4	970	0.0
Pulses, nuts, and cocoa	P	1,140		310	
	T	1,215	+6.6	295	-5.0
Fruits and vegetables ²	P	26,340		5,330	
	T	39,140	+48.6	9,090	+70.5
Meat, fish, and eggs ⁵	P	11,440		4,000	
	T	13,450	+17.6	4,260	+6.5
Milk ⁶	P	3,245		820	
	T	5,050	+55.6	1,290	+57.5

SOURCE: Prewar food supplies computed from data given in *Food Consumption Levels in the United States, Canada, and the United Kingdom*, Third Report of a Special Joint Committee set up by the Combined Food Board Washington: Production and Marketing Administration, U. S. Department of Agriculture, 1946, table 7, p. 27.

¹Flour or product basis.

²Fresh equivalent.

³Sugar content of sugars and sirups.

⁴Fat content. Includes butter.

⁵Including fresh, cured and canned meats (carcass weight), and edible offal; poultry, game, and fish (edible weight); eggs and egg products (fresh equivalent).

⁶Milk and milk products, excluding butter (total milk solids, fat and nonfat).

In considering the quantities of food required by the targets it was necessary, however, to introduce the time element by setting hypothetical dates for their attainment, since increases or decreases in population had to be taken into account as well as changes in consumption per person.

Table 3 shows the additional amounts of food, in relation to prewar supplies, for two high-calorie countries, the United Kingdom and the United States of America, which were already fairly near the targets, with 1950 as the assumed date for reaching them.

Table 4 shows the food supply requirements for a number of countries that were at low or medium calorie levels before the war, with 1960 as the assumed date for reaching the targets. The areas included are China, India, eastern Europe with the exception of Poland (which was omitted because boundary changes make estimates of future population difficult), and three South American countries—Brazil, Chile, and Colombia. It will be noted that, for almost every food group, considerable increases in supplies would be needed over and above those required to meet increases in population. For China and India, with vast populations and low consumption levels, the increases called for in the case of some food groups are enormous.

TABLE 4

PREWAR FOOD SUPPLIES (P) AND PERCENTAGE CHANGES REQUIRED
TO MEET NUTRITION TARGETS BY 1960 (T)—FOR FOUR AREAS

(Amounts in 1,000 metric tons—Changes as percent of prewar supply)

Category		China—22 Provinces (15% increase in population by 1960)		India (25% increase in population by 1960)	
		Amount	Change	Amount	Change
Cereals (whole grain)	P	89,760		64,800	
	T	103,220	+15	90,000	+39
Roots and tubers, fresh	P	17,700		6,780	
	T	29,380	+66	13,760	+103
Sugar	P	610		5,540	
	T	700	+15	6,925	+25
Fats and oils	P	2,290		1,070	
	T	3,620	+58	2,280	+113
Pulses and nuts	P	11,300		8,550	
	T	17,970	+59	15,730	+84
Fruits and vegetables	P	18,300		13,540	
	T	78,140	+327	53,220	+330
Meat, fish, and eggs ¹	P	6,015		3,000	
	T	8,720	+45	12,150	+305
Milk, fluid equivalent	P	20		23,500	
	T	1,150	+5,650	37,600	+60

Category		Southeastern Europe ² (10.1% increase in population by 1960)		South America ³ (48.6% increase in population by 1960)	
		Amount	Change	Amount	Change
Cereals (whole grain)	P	11,430		7,110	
	T	11,100	-3	12,090	+70
Roots and tubers, fresh	P	2,215		10,720 ⁴	
	T	2,790	+26	13,080 ⁴	+22
Sugar	P	230		1,220	
	T	310	+10	1,815	+49
Fats and oils ⁵	P	270		330	
	T	350	+31	545	+65
Pulses, nuts, and cocoa	P	315		1,115	
	T	610	+93	1,900	+70
Fruits and vegetables	P	5,000		9,770	
	T	8,900	+78	16,940	+73
Meat, fish, and eggs ¹	P	1,370		3,130	
	T	1,520	+11	4,975	+59
Milk, fluid equivalent	P	6,020		3,980	
	T	10,650	+77	11,300	+184

¹Meat (carcass weight), fish (edible portion), eggs (fresh equivalent).²Includes Bulgaria, Hungary, Rumania, Yugoslavia. Adjusted for changes in boundaries and population.³Includes Brazil, Chile, Colombia, and Peru.⁴Includes bananas as purchased.⁵Includes butter. Fat content.

TABLE 5

WORLD FOOD NEEDS IN 1960

(Approximate percent increase over prewar supplies required to meet targets, assuming a 25 percent increase in world population)

<i>Commodity</i>	<i>Percent</i>
Cereals	21
Roots and tubers	27
Sugar	12
Fats	34
Pulses	80
Fruits and vegetables	163
Meat	46
Milk	100

Finally, table 5 shows, in percentages, the order of increases in supplies required for all the 70 countries in this survey, assuming that the targets were reached by 1960 and that world population has risen 25 percent by that date. This estimate of food needs in 1960 gives some idea of the magnitude of the task to be undertaken and the opportunities ahead for food producers if the nations set out to improve nutrition on a world scale.

The highest increases shown in table 5 are 163 percent for fruits and vegetables and 100 percent for milk and milk products. This indicates the nutritional importance attached to these two food groups. Certain fruits and vegetables are rich in some of the essential vitamins. Milk is a foodstuff which contains all the constituents essential for human life. Further, most of them are present in milk in physiologically balanced proportions, which favors more complete assimilation. Had it been practicable to raise the milk consumption targets of all countries to the desirable level, the aggregate percentage increase would have been considerably higher still. Milk and vegetables are highly perishable unless subjected to fairly complex processing. To a large extent, therefore, they will have to be produced in the areas in which they are consumed.

The nutritive value of pulses, which can be grown comparatively easily, is particularly significant when meat and milk consumption is low. Table 5 indicates an increase of 80 percent in supplies. There are many places where the consumption of meat needs to be increased but where production cannot easily be raised. It would be necessary to make surveys and investigations exploring all the possibilities in order to provide the increase of 46 percent indicated in table 5. In many countries it will be easier to raise intake of animal protein by increasing supplies of fish than by increasing those of meat. With increased meat production there will be a need for more cereals, particularly the coarse grains, for feedstuffs. The 21 percent increase in cereals shown in the table takes account of direct human consumption only.

Targets drawn up after careful investigation of local conditions and resources would unquestionably differ in many respects from those put forward here. Nevertheless, neither the inaccuracies of the food supply data nor the provisional and illustrative nature of the targets affects the broad issues considered in this report. Moreover, the measures needed for raising levels of nutrition throughout the world will be essentially the same whether the period needed for the realization of these or any other series of nutritional targets is as short as 10 or as long as 50 or even more years.

4. THE DIRECTION OF FUTURE ADVANCES

COUNTRIES with inadequate food supplies must obtain the additional food needed to raise nutrition levels by importing from other countries, by producing more themselves, or by a combination of both. Great Britain is an example of the first method. The supplies of food produced by its own agriculture have long been entirely inadequate to meet the requirements of its people, but they have been able to get what they need by exchanging goods and services for food from other countries. During the war, the United Kingdom also increased its own food production by some 70 percent in terms of calories.

Although international trade in food will be increasingly important, the greater part of the additional supplies required by the low-calorie countries to reach the consumption goals suggested in this report will in most cases have to be obtained by expanding their own food production. To understand the extent of the effort needed to achieve this expansion, it is necessary to consider the targets from another angle.

The food supplies of most of the less developed countries consist largely of cereals and other foods of plant origin. The people live mainly on a vegetarian diet (which, however, often lacks sufficient quantities of the nutritionally important vegetables and fruits). In general, the targets require diets containing more foods of animal origin.

When crops are fed to animals instead of being eaten directly by human beings, they lose 80 to 90 percent of their calorie value before they reemerge in the form of meat and milk. For convenience, suppose we adopt the term *original calories*, which is sometimes used for the calories yielded by crops. About seven¹ of these original calories are required to produce one calorie from animal products.

The prewar North American diet contained about 2200 calories per caput daily from foods of plant origin and about 870 calories from livestock products. If the latter figure is multiplied by seven, the total value of the diet in original calories becomes $6090 + 2200$, or 8290. At the other end of the scale, the diet of certain islands in Southeast Asia contained about 1940 calories from plant products and only 100 from livestock products, which gives $1940 + 700$, or 2640, as the total value in original calories. Thus the value of the North American diet in terms of original calories was about three times that of the diet in Southeast Asia.

The world needs more food both to feed more people and to feed people better. Figure 5 illustrates the relation between the two. It shows in percentages the increases in original calories required by the targets in 1960 and 1970 in a number of the less developed countries, including India, Southeast Asia, and certain other areas, and also the relative demands made by changes in the quality of diets and by the growth of population if the latter continues to expand at about the present rate, which for most of the less developed countries is 10 to 20 percent a decade.

By 1960 original calories would have to be increased by 90 percent in comparison with the prewar value. Fifty-five percent of this increase is accounted for by improvements in the diet and 35 percent by population growth. By 1970, the increase in original calories required would be about 110 percent.

There is a rough relation (see figure 6) between the value of a diet in original

¹This figure applies to central and western Europe. The multiplier varies, of course, from one class of livestock to another and also among countries, according to differences in the quality of livestock and in feeding practices. Further research is needed on this subject, but the argument is essentially the same whether the multiplier is 4, 7, 10, or some other number.

calories and the agricultural resources needed to produce it, using the term *resources* in a broad sense to include everything concerned in the production of food from land.

Clearly, to double the food supplies, in terms of original calories, in the less developed countries will require a great expansion in agricultural resources, and indeed in all other resources as well. Large increases in imports may be needed also. That would call for expanded production in exporting countries as well as production of commodities in the importing countries to trade for food. Nothing less is involved than a transformation of life in all its aspects which challenges the best efforts of science and industry, governments and peoples.

Although these broad issues have been discussed in reports of the Hot Springs Conference, the Interim Commission, and FAO, it is worth going over some of the main points briefly in the present context.

Improvements in Farming Efficiency

Probably the first need, if there can be said to be any priority in the needed changes, is to improve farming efficiency so as to increase the yields per unit of land. This means in particular making greater use of fertilizers, growing better varieties of crop plants, controlling pests and parasites, and having efficient tools and machinery. The high yields obtained on experimental farms in the less developed countries show how much can be done by these means.

In the case of India it has been estimated that per acre yields of grain could be increased by 30 percent in ten years—5 percent by the use of improved varieties, 20 percent by manuring, and 5 percent by protection against pests.¹ Subsequent improvements, it is estimated, would probably bring the total increase to 50 percent.

A committee of soil and fertilizer experts convened by FAO in connection with the world food survey estimated that India could advantageously use 1.5 million tons of nitrogen, 750,000 tons of phosphate, and 150,000 tons of potash annually. The requirements of China are probably of a similar order. These amounts are more than twenty times the quantities being used today.

Similar improvements can be made in the case of livestock production by the use of better breeds, better feeding practices, disease control, and better management in general. The yield of calories per head of livestock is three times as high in northwestern Europe as in Africa and certain parts of Asia.

Development and Use of Land

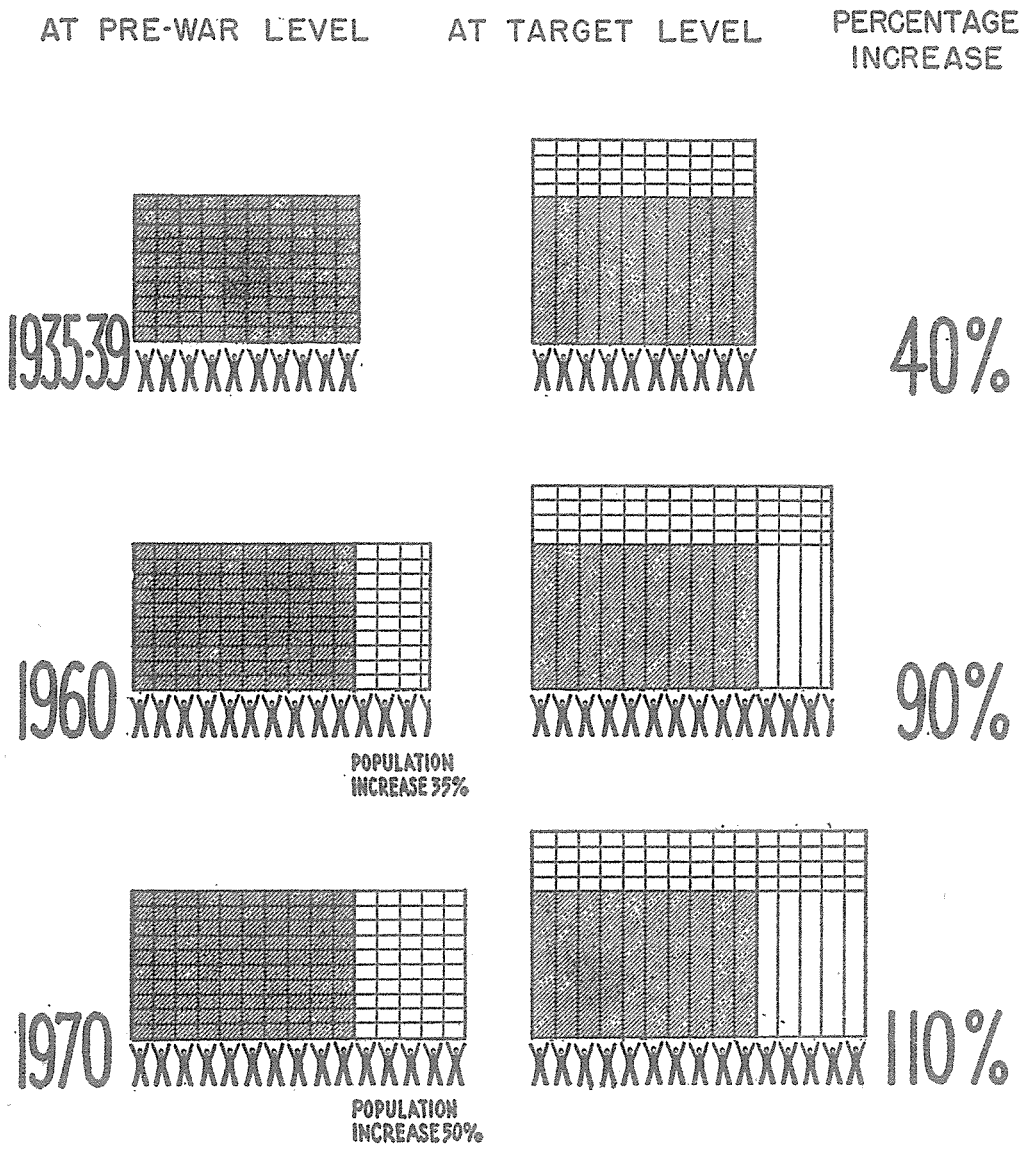
Land is the basic resource in food production. In some parts of the world the area of cultivated land is less than one half acre per head of population, and this is decreasing as population rises. At present only about 7 percent of the land surface of the globe is cultivated. Much of the rest is unfit for cultivation by present methods, but there are large areas that could be opened up if capital were available for their development by modern technical methods, including, in many cases, irrigation and drainage. The malaria-carrying mosquito and the tsetse fly now successfully occupy extensive territories that might be devoted to farming if these deadly pests were exterminated by well-organized, large-scale campaigns.

But the opening up of new land is only a part of the problem of increasing land resources. Equally important is the reclamation of land which, once fertile, has been rendered barren by human misuse, and the conservation of land

¹Burns, W. C., *Technological Possibilities of Agricultural Development in India*, Lahore: Government Printing Office, Punjab, 1944.

FIG. 5

INCREASE IN FOOD SUPPLIES REQUIRED BY SOME LESS DEVELOPED COUNTRIES (IN TERMS OF ORIGINAL CALORIES)



now deteriorating. Every country has its own specific problems in increasing and safeguarding land resources, and they must be attacked in different ways. The main point is that the attack must be scientifically planned and coordinated, and adequately financed by governments.

The Need for Improvement Applies to All Countries

The need for better use of the land applies not only to countries that are at low nutritional levels but to those at medium and high levels as well. In many of the latter a reorientation of production will be required to furnish more of the foods needed for health—livestock products, fruits, vegetables; and this will result in types of farming that favor good soil management, including long-term rotations and increased use of pasture. Indeed, although the discussion in this chapter concerns the less developed countries in particular, much of it applies universally. Studies in the United States of America, for example, show that in many areas fertilizers could be profitably used in greater quantities. Great, well-organized area developments, such as that in the Tennessee Valley, can be useful in many countries and regions. There is no country that has yet achieved all it can achieve by the application of technical advances to agriculture. Moreover, the need, discussed later, for greater industrial development to take more people off the land exists in Europe and parts of the Americas as well as in the Orient.

Economic and Social Changes

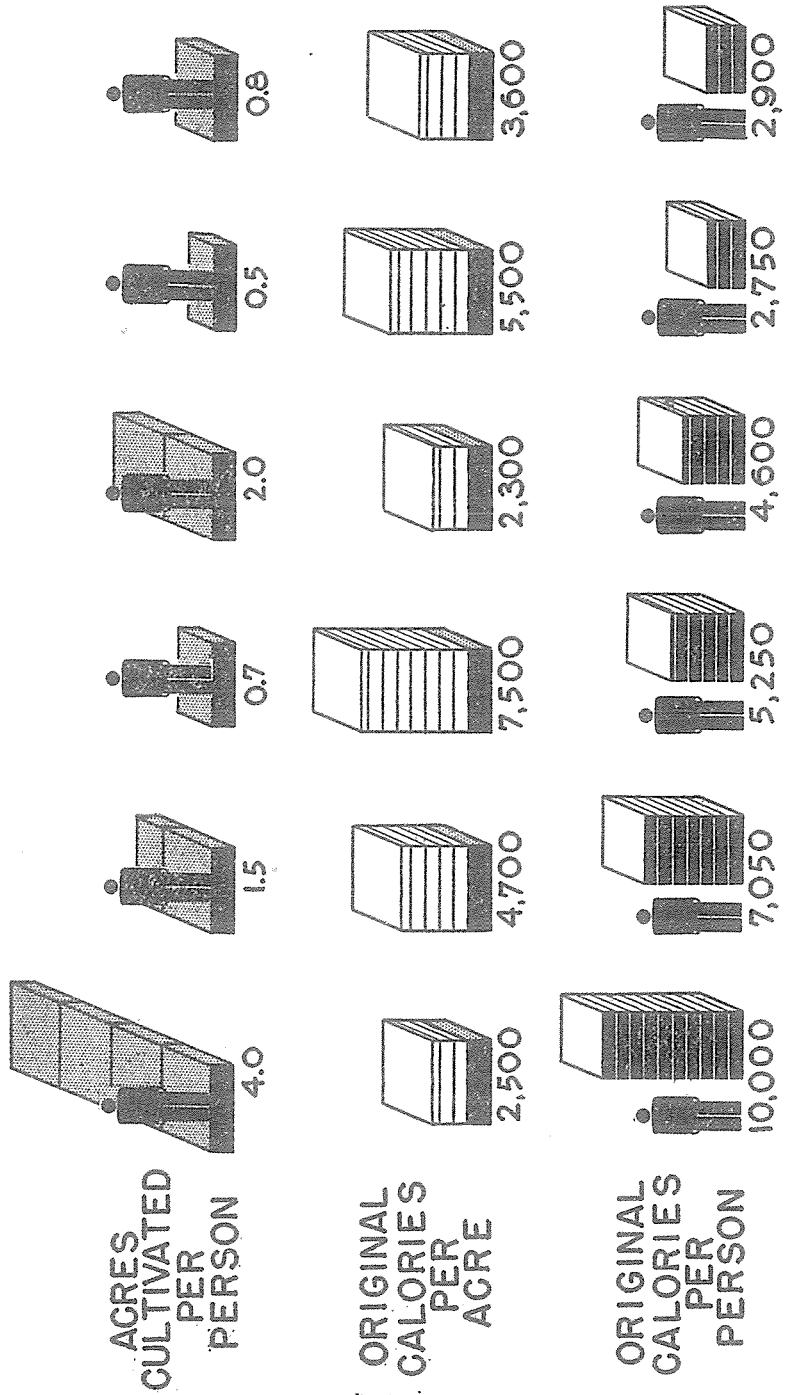
Since food production is the most important aspect of the whole economy and way of living of most peoples, a wide range of economic and social changes will be involved in making extensive improvements. For example, unjust and oppressive systems of land tenure which give the cultivator neither opportunity nor incentive to improve his lot will need to be swept away. Since most methods of increasing food production necessitate an outlay of capital, satisfactory systems for supplying credit to farmers are essential; in most countries they do not exist. The capacity of the farmer to develop his land depends to a large extent on the price of primary agricultural products; he must therefore obtain a fair return for the food he produces, and consumers must have the purchasing power to give him a fair return.

Figure 6. This figure illustrates the relation between resources and production. North America, with large land and technical resources—four acres of cultivated land per caput—follows an extensive type of cultivation which produces only 2500 original calories daily per acre but 10,000 original calories per caput daily for the population as a whole. This reflects a high consumption of livestock products and a small surplus for export. South America, with only 1.5 acres of cultivated land per caput, follows a somewhat more intensive type of cultivation producing 4700 original calories per acre; but this includes livestock fed chiefly on the range, which is not included in cultivated land. The high output of original calories per head reflects a large export of food from some South American countries. Western Europe, with only 0.7 acre of cultivated land per caput, undertakes more intensive farming operations and has a higher output per acre than any other region. Even so, the 5250 calories produced per caput is insufficient and has to be supplemented by large imports of food and feedstuffs. In eastern Asia, with small land and technical resources (0.5 acre of cultivated land per caput), cultivation is also fairly intensive, as shown by the figure of 5500 original calories per acre, but the food output furnishes only 2750 original calories per head and there are virtually no imports.

FIG. 6

FOOD PRODUCTION PER HEAD OF POPULATION

NORTH AMERICA SOUTH AMERICA WESTERN EUROPE U.S.S.R. EASTERN ASIA SOUTHERN ASIA



One of the principal needs in many areas is to wipe out diseases—malaria, for instance—that take a heavy toll of human life, health, and efficiency. Above all, there is the need for education—more and better schools and the development of agricultural extension and advisory services—if farmers are to be able to make full use of modern production methods.

The Heart of the Problem

The heart of the problem is to increase individual productivity. The degree to which a country suffers from overpopulation depends on the extent to which its people are fully and productively employed. England and parts of northern Europe have a heavy population in relation to land area, yet they enjoy relatively high standards of living because their production of wealth in the form of goods and services is relatively high.

A fifth of the population in some countries produces a national diet that supplies some 8000 original calories a person a day; that is, one farm family feeds itself and four other families at a comparatively high nutritional level. These farmers could produce still more if modern methods were fully applied; or even fewer farmers could produce as much as is now being produced.

By contrast, in many of the less developed countries, two-thirds or more of the population produces an inferior diet of 2800–3000 original calories for the country as a whole, and one farm family manages to produce only enough to feed itself and half of another family.

Thus the output of food per man is ten times greater in the advanced than in the poorer countries. The conclusion is inescapable that food for the world can be produced in much greater abundance by fewer hands.

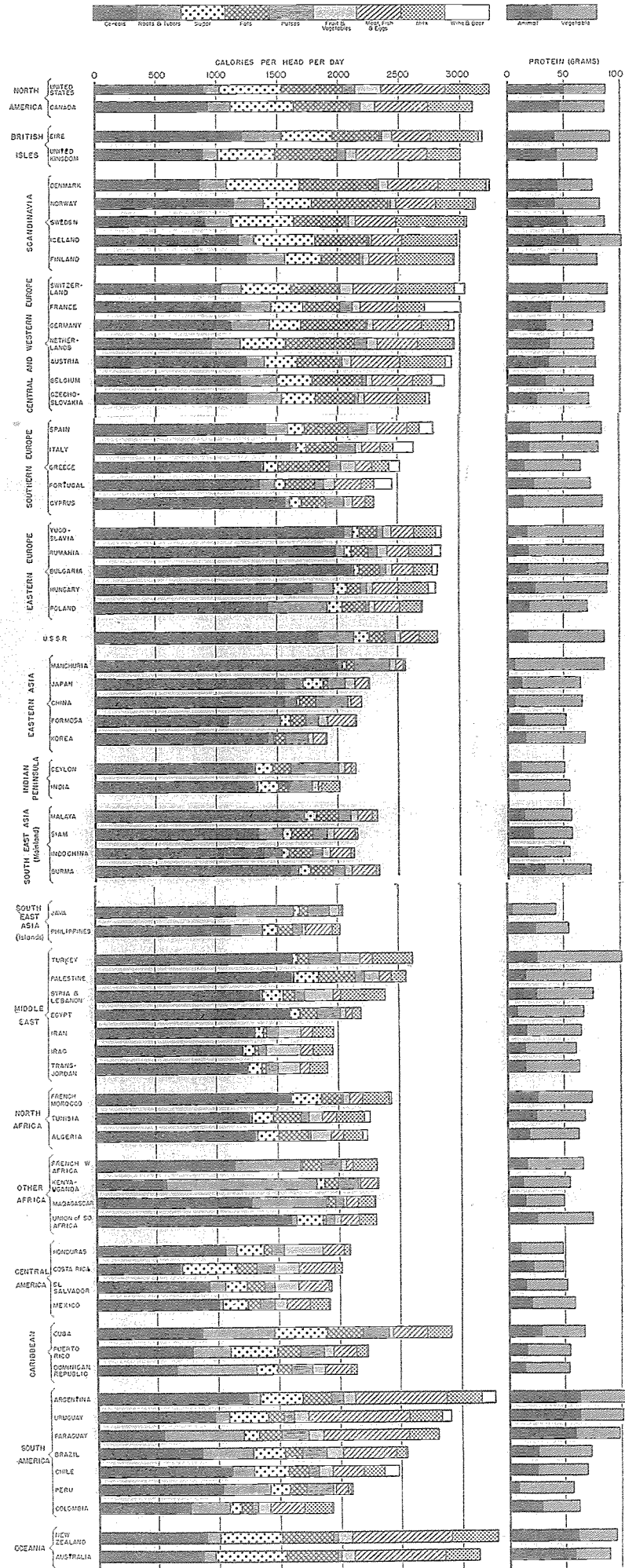
Land resources everywhere are limited. When population presses too heavily on these resources, rural underemployment and inefficiency are inevitable. Human abilities stagnate during a good part of the year. Able-bodied men and women produce only a pittance by their labor. The whole year's work on many a farm in the underdeveloped countries could be done in a few days by one man with modern equipment and practices.

The way out of this situation is to open up resources other than those of farming for the bulk of the population. The opportunities for the use of human skill, through the application of modern science and technology, in the production of goods and services other than food are enormous. By developing them, opportunities will at the same time be opened for those remaining on the land to increase their efficiency manifold.

This calls for rapid, large-scale development of industry and trade, and of educational and other services. For that purpose, large investment both of capital and of technical skill will be needed. The only alternative to this investment for the western world is to restrict its own high production. The investment will be profitable because it will vastly increase the productivity and the purchasing power of millions of human beings. The improvement of agriculture in the less developed countries will in itself result in large demands for tools, machinery, fertilizers, transportation equipment, processing equipment, and other material, as well as for consumer goods to meet the needs of more prosperous farm populations.

Such advances for great populations and areas of the globe can occur only if the problem is considered a world problem and the challenge a world challenge. The poorer countries cannot master the problem or meet the challenge alone, especially in the present state of development of their material and human resources. All nations will gain by world advances in human health and well-

FIG. 1
 CALORIES AND PROTEIN FROM PRE-WAR FOOD SUPPLIES IN 70 COUNTRIES
 (PER HEAD PER DAY AT THE RETAIL LEVEL)



being⁵ and in production and trade, and all must participate in bringing them to pass.

Many people who have given serious study to the population problem prophesy doom for much of mankind unless the rate of population growth can be drastically checked. It is worth reiterating that the fundamental solution of the problem lies in increasing the productivity of the individual by putting at his disposal modern scientific knowledge and the tools of modern technology. To the extent that this is done, every individual can become a source of new wealth to his country and to the world. To the extent that it is not done, he is a potential liability, unable to supply his own needs let alone helping to supply those of his fellow human beings.

To put this knowledge and these tools at the disposal of millions of human beings who have never had them requires vision and boldness in the best sense and the highest degree. It must be emphasized that half-way measures will not do. If they are the best that can be devised, the situation will become more and more hopeless, and the prophecies of doom will come to pass. A little amelioration here, a half-hearted attempt at improvement there will serve in the future, as it has in the past, only to increase the numbers of the poverty-stricken and ignorant. The difficulties in the way of formulating and putting into effect vigorous, concerted measures for industrial and agricultural development that will open up new opportunities for these people are very great, but they must be solved or the world faces a future of universally lower living standards or of wars and revolutions that will force the issue.

Making possible sufficiently rapid and extensive progress in the application of science to human needs is thus the biggest and most essential step in solving the population problem. In western countries population growth has invariably slackened, after a preliminary period of increase, as standards of living have risen. There is no reason to believe that the same process will not take place in those countries in which population is now pressing to the limit of subsistence. With economic and social development, history has shown that a change occurs in the whole attitude toward life, hope in the future replacing hopeless acceptance of hunger and poverty as man's natural lot. A social environment is created in which parents consider it of paramount importance that their children should be well educated, vigorous, and healthy, and should have good prospects in life; and emphasis is placed on the development of services and education that foster the ideal of "a healthy mother and a healthy child."

The enormous achievements of the western nations during the war prove that technical means and intelligence and skill equal to the task of bringing about a great economic expansion are available. What is needed now is adequate international action to do the work, and the will to initiate it.

5. MISTAKES AND OPPORTUNITIES

IT IS clear that the world needs greatly expanded food production but that it will not come automatically. The direction of future advances and the need for positive international action have been discussed so far largely from the standpoint of the less developed countries. Action is equally necessary from the standpoint of the more advanced countries, some of which produce surpluses of certain foods over and above their own needs for the international market. Without adequate international action, not only will the world's requirements for food not be met; there is danger of a regression to the trends of the 1930's, when the most technically advanced agriculture in the world had to repudiate

its own progress and restrict production to avoid economic disaster. The choice in the highly developed agricultural regions is not one of standing still and holding on to the great gains made during the war, when production was pushed to unprecedented levels. The choice is between going forward and going backward.

It will be worthwhile here to review briefly some of the main trends of the past and the position today.

The Restrictionist 'Thirties

Under the stimulus of the First World War the agriculture of the new world greatly expanded, and in the ten years following the war production in Europe returned to its former level. Together these two sources of supply could have provided sufficient food to feed at least the entire population of the western world at adequate levels of nutrition. Instead the increased supply of food became an embarrassment and the embarrassment a catastrophe. It proved impossible to get the food consumed. Nations had not the purchasing power, the lower income groups within countries had not the purchasing power, and it seemed easier to restrict the supply than to create purchasing power.

During the same period there was a notable increase in the number of countries supplying foodstuffs for the world market, and simultaneously improvements in storage and transportation. All this should have led to greater stability in world market prices. But the reverse happened. Prices fluctuated more violently than ever before. No international machinery existed by which the shocks of economic warfare could be mitigated and conflicting interests reconciled.

There was substantial technological progress in agriculture and a permanent reduction in the real cost of producing many basic foodstuffs. This should have benefited consumers everywhere. Actually it spelled ruin for farmers in many lands, especially for those who had no opportunity to find other occupations when their products became unsalable. It also drove many countries to protect their producers by shutting the door against imported foodstuffs. At the same time technical progress in industry was proceeding at a pace which could have raised the purchasing power of industrial workers in all countries. Instead the world was plunged into economic depression with unemployment so widespread that consumers had to cut down their purchases of food.

Large amounts of savings were accumulated in many of the more highly developed countries and were available for foreign investment. The less developed countries stood in urgent need of capital, but the prevailing atmosphere of depression made governments reluctant to embark on large-scale projects for agricultural and industrial betterment, and surprisingly little development took place where the need for it was greatest. No expert guidance was available internationally to direct the flow of capital, and the money was often devoted to financing doubtfully productive projects in countries in which needs were less acute.

The policies devised to meet the situation in the 1930's took a variety of forms. Some countries which normally imported moderate quantities of food succeeded in reducing their imports until they became virtually self-sufficient. Some continental European countries halved their imports of wheat and reduced those of beef and veal by two-thirds. They kept farm prices high to benefit their own producers, but at the cost of discouraging agricultural progress and worsening the diets of urban workers. The large-scale food importers, in particular the United Kingdom, helped their own farmers by means of tariffs,

quotas, and subsidies, but on the whole did not reduce food imports below pre-war levels.

Countries which were large exporters of agricultural products were faced in the early 1930's with a drastic shrinkage in markets. They were driven to extraordinary expedients in order to save their economies from collapse. The Netherlands, for instance, introduced an elaborate system of controls over the production of all staple foodstuffs and imposed taxes on food consumption in order to give farmers some compensation for the loss of export markets. Similarly, in Australia the home consumer of food was charged high prices to make up in part for the low prices realizable on world markets. In Brazil, during the twelve years from 1929 to 1941, 75 million bags of coffee, one-third of the total output, had to be burned. In these and many other exporting countries the economic crisis brought a heavy decline in national income. Governments tried to give farmers at least as large a share of that income as formerly. But to do this production had to be curtailed and domestic commerce penalized.

In countries such as the United States of America which depended less on the world market, the spread of unemployment caused as great a fall in demand at home as the shrinkage in world trade did abroad. The United States was driven into policies of restriction and large-scale subsidizing of the farming community.

On the international level the record was little better. The League of Nations convened an economic conference in Geneva in 1927 to promote general economic development and freer international trade. The conference was immediately followed by an increase in tariffs in many countries and the imposition of quota restrictions. A World Economic Conference was held in London in 1933. It met at the depths of the depression when the purchasing power of consumers was greatly reduced everywhere, and the only subject on which it could agree was the desirability of further restriction of production. With regard to agricultural commodities, there were protracted negotiations for an international wheat agreement, but these were without success. There were two sugar agreements—the first the so-called Chadbourne Agreement which led to substantial curtailment of production in participating countries, and a second, broader in membership, which achieved the stabilization of a restricted market on the basis of export quotas. There was also a rubber agreement, which brought the world price of rubber to a "remunerative" level by cutting down production and exports.

Altogether, between 1929 and 1939 the world failed to deal with the situation created by the application of science to agriculture and was unable to absorb the increased food supplies thereby made available. This was due partly to disorganization within the sphere of food production itself and partly to instability and fluctuations in the whole economic system. Solutions were sought by each nation acting on its own account and by attempts to deal with commodities separately. Much of this unilateral action had the effect of worsening the general situation.

Beginnings in a New Direction

Though the general tendency in the 'thirties was towards restriction of output, existing policies were being questioned in some quarters and attempts were being made to solve the problem of poverty and underconsumption in the midst of potential plenty.

After the failure of the World Economic Conference in 1933, a new approach was developed in the international sphere. The science of nutrition had ad-

vanced far enough to make it possible to define with some accuracy the kinds of diets needed for health, and it had become clear that the greater part of the world's population was getting far less than good nutrition required. In 1935 the Assembly of the League of Nations authorized the League to report on the effect of improved nutrition upon health and the relation of nutrition to agricultural and economic problems. During the next two years the Mixed Committee on Nutrition of the League of Nations reviewed these problems and urged governments to develop food policies which would improve nutrition, especially in the lower income groups, and simultaneously reduce agricultural surpluses. The initiative of the League met with considerable response. A number of nations established national nutrition organizations to advise their governments on policies of nutritional betterment. But the war intervened before much progress could be achieved.

In a number of countries programs were developed which had the effect of bringing surplus food supplies within the reach of those in need, and of raising nutritional levels. These included the provision of nutritious food, free or at low cost, to "vulnerable" groups in the population. School lunch programs and the distribution of milk in schools were organized in some countries. In the United States of America the food stamp plan, followed by the cotton stamp plan, brought surplus supplies within the reach of the unemployed. Numerous other examples could be given.

Some efforts were also made to reduce barriers to international trade. For example, the United States Government, proceeding under the Trade Agreements Act, negotiated agreements with the most important trading countries which resulted in substantial reductions in tariff schedules.

The War and Its Aftermath

The approach and outbreak of war brought about a reversal of the economic policies of the 1930's. Surpluses disappeared almost overnight. All efforts were devoted to expanding the output not only of munitions but also of food-stuffs. Farmers were wooed by favorable prices, guaranteed markets, and a wide range of other inducements and special facilities. They responded vigorously. In the United Kingdom, as already noted, output of food increased by 70 percent in terms of calories, and in the United States by 30 percent as measured in money value at constant prices. Even in Germany and certain other Nazi-controlled countries production remained until near the end of the war almost at the peacetime level, in spite of the great scarcity of manpower, draught power, fertilizers, etc. There was a leap forward in the technical efficiency of farming in a number of countries. Scientific discoveries and methods were applied more rapidly and effectively than ever before.

Under the stress of war remarkable developments took place in food distribution. In some countries marketing arrangements were rationalized, with the result that a number of steps were eliminated. Distribution was facilitated by large-scale use of such methods as the dehydration of milk, eggs, vegetables, and meat. Available food supplies were used to the best advantage for the consumer, partly by rationing programs which ensured that no member of the community should receive more than his share and partly by price policies which held down retail prices so that everyone could afford to purchase the necessary basic foods. In some countries mothers and children were given prior claims on milk supplies. The most familiar example of an effective wartime food policy is that followed in the United Kingdom where, in spite of scantier supplies, the nutritional level of the lower income groups was raised and the health of the nation, as reflected in

its vital statistics, improved. The infant mortality rate reached the lowest point yet attained.

Equally important was the international planning of food production and distribution. The Combined Food Board was set up to allocate supplies at the disposal of the United States, Canada, and the United Kingdom. The United Nations Relief and Rehabilitation Administration was created to undertake the task of relieving war-devastated countries and has been concerned with the large-scale and regulated distribution of food supplies in response to urgent needs. Long-term international food problems were thrust into prominence. In 1943 President Roosevelt summoned the United Nations to a Food and Agriculture Conference at Hot Springs, Virginia, leading to the formation of the Food and Agriculture Organization. More recently the United States Government has put forward proposals for an International Trade Organization which will be concerned with the reduction of trade barriers and the stabilization of commodity markets.

These hopeful developments are at present overshadowed by the worldwide food crisis. With the cessation of hostilities the world food situation rapidly deteriorated. Before the end of the war it had been foreseen that the shortages of fats, meat, dairy products, and sugar would remain acute for a considerable time. Towards the end of 1945 it became apparent that supplies of grain would also be seriously inadequate. Among the causes which led to this shortage were the actual devastation of war, which was particularly damaging during the autumn and spring of 1944-45, the serious dislocation of the world's agricultural economy and trade as a result of six years of war, and the dislocation of the world's transport system to serve war purposes. The culminating factor has been a series of droughts during 1945-46 which seriously reduced harvests in various parts of the world.

It is unlikely that the immediate food crisis will be fully resolved until some time in 1947-48. To deal with it, the International Emergency Food Council was set up to replace the Combined Food Board as a result of the Special Meeting on Urgent Food Problems called by FAO in May 1946.

A New Kind of Planning Needed

For the time being, the problem is still one of stretching every resource in the food-exporting countries to prevent famine and alleviate hunger abroad and to meet the demand that, as in the United States of America, results from relatively high purchasing power at home. But a different set of problems looms ahead.

When the present emergency is over, a few major commodities will no longer be in short supply in relation to purchasing power, or effective market demand. Among these are wheat and sugar. There may well be more than sufficient wheat to meet the effective demand after the 1948 crop is harvested. Moreover, there is considerable scope for increasing production in many of the countries in which wheat is grown. Europe's needs will not greatly increase, and the only possible large outlet for increasing exportable supplies appears to be the Far East. It is not easy to substitute wheat for rice, however, in those parts of the East where the latter is the staple food; and in addition, there may be difficulty in making the necessary financial arrangements for large-scale purchases. Sugar should cease to be scarce by 1948 or 1949. The potential world demand is large, and production could be greatly expanded in many tropical areas; but this will happen only if economic conditions are favorable.

It is likely, therefore, that producers of these and other crops will be faced again with a situation in which, if adjustments are left to take care of them-

selves, the same violent price fluctuations will occur as have characterized the international market in the past.

The situation is likely to be the opposite in the case of fats, meats, and dairy products. The shortage of fats will probably continue for some time, partly because of the reduction in livestock numbers in Europe, partly because some tropical countries that have been important exporters of vegetable fats are finding it necessary to reduce production and export to meet the food requirements of their own people. In comparison with the prewar per caput supply, the shortage of dairy products and meats is likely to continue for several years. It may be seven to ten years before cattle numbers in Europe return to prewar levels, and the scarcity of concentrated feeds may also continue for some time. Meanwhile, if nutrition levels are to be raised, the question of increasing exports of processed milk from the major dairy-producing countries assumes great importance. Part of the need for milk in the less developed countries, for example, might be met by imports of skim milk powder.

This brings up another problem—that of the means for financing international trade. Lack of foreign exchange may make it difficult for many European countries to import the food they need, and there may be a deliberate tendency to forego a better table in order to use the available exchange for capital goods needed for reconstruction. A somewhat similar situation will face the less developed countries. Large amounts of capital will be needed to build up new industries and increase food production, and this may lead to a policy of self-sufficiency and reduction of food imports over a long period so that all resources may be devoted to the task. Yet these countries will in fact need food in large quantities from other parts of the world and would import it if the terms were favorable.

Thus on the one hand there is danger of a return of unmarketable surpluses of certain agricultural commodities, resulting in a disastrous break in prices which would have widespread repercussions throughout the economy and lead again to heavy pressure for restriction of farm output; and on the other, a need to expand production, as indicated by the target figures in this report, in order to raise levels of health and standards of living throughout the world. Unless positive action is taken, the world will move not in the direction of the goals but away from them, and there may again be shortages like those we face in the present emergency, which could have been largely avoided if adequate international machinery had been available.

To avert the danger and supply the world's needs requires a kind of planning and organizing in the field of production, marketing, and finance which neither producers nor nations acting by themselves can carry out. This was recognized in the setting up of the Food and Agriculture Organization. The next step needed in international action is discussed in another report, *Proposals for a World Food Board*, which is the outcome of this world food survey.

APPENDIX I
WORKING GROUPS WHICH ASSISTED IN THE PREPARATION
OF THE WORLD FOOD SURVEY

1. NUTRITION TARGETS

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L. A. Maynard, School of Nutrition, Cornell University, Ithaca, N. Y., U. S. A.	Hazel K. Stiebeling, Chief, Bureau of Human Nutrition and Home Economics, Department of Agriculture, Washington, U. S. A.
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2. PREWAR FOOD CONSUMPTION

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Much valuable assistance was also received from other experts attached to the above and other agencies.

APPENDIX II

COMMENTS ON THE STATISTICAL MATERIAL

Calories and protein from estimated prewar food supplies in 70 countries are shown in diagrammatic form in figure 1, opposite page 24. The data on which the chart is based are given in table 2 in Appendix III. Table 1, Appendix III, shows supplies of the various food groups in kilograms a person a year. In most instances the figures represent the average annual supply of the various food groups for the period 1935-38 or 1935-39, but in some instances it was more convenient to take a single year or some other period of years within the decade. The 70 countries include about 90 percent of the world's population; compilation of data for the remaining areas was found to be impossible.

The food groups shown in the charts and tables are as follows:

Cereals

Wheat, rice, barley, maize, millets, oats, and rye. Whole grains and cereal products. Excludes cereal grains used for brewing or distilling.

Roots and tubers

All starchy roots and tubers and their products. Includes white potatoes, sweetpotatoes, yams, taro, and cassava. Starchy fruits (bananas and plantains) are included under this head in countries in which they are a staple article of diet.

Sugar

Refined cane and beet sugar, maple sugar, palm sugar, molasses, panocha, gur, and honey.

Fats

Visible fats and oils, both animal and vegetable. Includes lard and tallow, marine fats and oils, peanut oil, olive oil, coconut oil, margarine, etc. Butter is classed under this head in the case of countries in which it was consumed in substantial amounts and data were available.

Pulses

Mature dry peas, beans, lentils, chick peas, gram, and various other leguminous seeds. Includes also nuts and coconuts consumed as such, and cocoa and chocolate.

Fruits and vegetables

All fruits and vegetables whether fresh, dried, canned, or preserved in other ways, except potatoes and sweetpotatoes. Bananas and plantains are excluded under the circumstances referred to above.

Meat, fish, and eggs

Includes poultry and edible offal. Excludes lard and other animal tissue fats.

Milk

Includes all milk products except butter in the circumstances noted above.

Wine and beer

Other alcoholic drinks have not been included. Their contribution to total calories is unimportant.

In the case of western European and North American countries, the British Dominions and a few other countries, statistical data in more or less suitable shape was obtainable. In preparing the data for countries for which no recent comprehensive surveys of food supplies were available, use was made of relevant information about food production and consumption contained in official and nonofficial reports. This was fairly adequate for cereal supplies, but other foods presented more difficulties. For these foods, arbitrary consumption estimates were sometimes made, based on dietary surveys or other information about food habits in the country concerned. Thus, estimates of supplies of milk and meat had often to be made by inference from livestock figures, themselves of doubtful accuracy. Fish was another dietary item which proved troublesome to estimate. Even in countries in which the fishing industry is well organized, accurate figures of production are difficult to obtain, and when fishing is carried out by more primitive methods, no statistics of any serious value may be available. This is the case in certain tropical and Far Eastern countries, in which fish is nevertheless an important article of diet. Statistics of fruit and vegetable production are defective in almost all countries.

In a number of instances supplies of certain foods were obviously under-reported; for example, reported figures might be quite out of line with those of adjacent countries in which food habits are closely similar, or a large export of some food might be reported with no record of supplies of the same food for internal consumption. Commonsense adjustments were made in such cases.

The figures quoted in the tables are generally "at the retail level" which is equivalent to "food as purchased." To adjust production figures to this level, somewhat arbitrary allowances were made for losses between source and entry into the retail stage. Losses through "spoilage" may be high in underdeveloped countries in which storage conditions are poor, the climate facilitates rapid deterioration, and insect and rodent pests abound. In such countries, on the other hand, the poverty of the people tends to make household waste almost negligible. The reverse is the case in richer and more highly developed countries: spoilage is less and household waste greater. Again, in some countries there are foods which are widely consumed and may be of considerable nutritional importance but are not recorded in food supply statistics; these include such foods as wild fruits and leaves, and game. Reference must also be made to alcoholic beverages, which are included in the food statistics of certain countries and may make a substantial contribution to total calories, while no record of consumption in other countries is available. Another source of error is the inaccuracy of population statistics in some parts of the world.

In calculating the energy value of the food supplies in different countries, a common set of factors for determining the calorie value of foods consumed must be used. Strictly speaking, only a few foods are common to any large number of countries; examples are refined sugar, pure fat, and a few cereal products. Many foodstuffs, even though called by the same names, differ to some extent in nutritive value from country to country, as well as from area to area within any given country, and sometimes even from season to season during the year. The following procedure was adopted in making the statistical survey:

- (a) Published figures of the prewar disappearance of food in terms of calories per caput were used in the case of Australia, Canada, New Zealand, the United Kingdom, and the United States of America.
- (b) For other countries the calorie conversion factors which seemed most

appropriate were used although their validity for the country in question is not established. For Europe, the Middle East, Africa, and Latin America, the factors used were those advocated by the Combined Working Party (1945). For Asia, the publication *Nutrient Values Suggested for Far-Eastern Foods*, issued in August 1945 by the Foreign Economic Administration of the United States of America, was followed.

(c) The calorie figures are also affected by the method of computing the carbohydrate content—and, consequently, the energy value—of different foods. For Australia, New Zealand, and the United Kingdom, the calorie factors are based on “available” carbohydrates, while for Canada and the United States they are based on “total” carbohydrates. According to the report *Food Consumption Levels in the United States, Canada, and the United Kingdom* (1944), prepared for the Combined Food Board, calorie estimates for Canada and the United States would be 100 and 150 calories higher respectively if calculations were based on “total” rather than “available” calories. The calorie conversion factors put forward in *Nutrient Values Suggested for Far-Eastern Foods* for the unmilled or lightly milled cereals give lower calorie values than the customary factors on the ground that these products are not as completely digested as refined cereals. The carbohydrate conversion factors adopted by the Combined Working Party represent a compromise; for many foods they give lower calorie figures than the factors used in Canada and United States, but higher figures than those used in Australia, New Zealand, and United Kingdom.

It must be strongly emphasized that much of the statistical material is provisional and incomplete and that continued revision will be necessary as further inquiries are made and more information becomes available.

APPENDIX III

TABLE 1

PREWAR FOOD SUPPLIES IN 70 COUNTRIES

(kilograms per head per year at the retail level)

Country	Kilograms per year									
	Total kilograms	Cereals	Roots and tubers	Sugar 1/	Fats 2/	Pulses	Fruits and veg. 3/	Meat	Milk 4/	Wine Beer
<u>North America</u>										
United States	718	90	66	48	20	9	203	88	194	-
Canada	637	94	88	47	19	8	98	79	204	-
<u>British Isles</u>										
Ire	783	126	187	38	16	2	90	57	229	38
United Kingdom	608	96	80	50	21	6	113	86	156	-
<u>Scandinavia</u>										
Denmark	806	93	113	55	26	2	131	77	249	60
Norway	672	126	128	36	25	3	55	69	212	18
Sweden	811	97	120	46	18	3	91	69	341	26
Iceland	631	129	62	46	17	2	21	84	270	-
Finland	740	127	180	27	13	3	65	40	280	5
<u>Central & Western Europe</u>										
Switzerland	869	110	90	38	16	2	150	53	320	90
France	846	129	143	22	13	11	137	67	154	170
Germany	723	118	176	24	22	2	86	65	160	70
Netherlands	699	102	130	34	23	10	120	61	203	16
Austria	722	131	85	24	15	2	115	58	240	52
Belgium	757	124	169	26	17	4	70	58	110	179
Czechoslovakia	654	131	160	25	14	4	75	41	150	54
<u>Southern Europe</u>										
Spain	624	148	100	13	15	19	150	44	70	65
Italy	534	170	36	7	10	23	77	34	88	89
Greece	444	146	14	10	17	12	88	32	75	50
Portugal	590	143	70	8	10	10	140	48	70	91
Cyprus	317	164	19	9	8	19	32	25	41	-
<u>Eastern and SE Europe</u>										
Yugoslavia	570	224	40	5	6	6	110	29	120	30
Rumania	605	216	40	5	6	8	130	27	125	48
Bulgaria	524	226	10	4	7	6	100	26	120	25
Hungary	599	187	99	11	4	6	70	36	152	34
Poland	673	150	275	12	8	3	70	31	120	4
<u>USSR</u>										
	578	198	174	11	5	11	60	28	91	-
<u>Eastern Asia</u>										
Manchuria	328	203	20	3	3	30	53	10	6	-
Japan	391	162	62	15	2	15	93	33	9	-
China	298	166	42	1	5	27	43	14	-	-
Formosa	432	117	158	7	5	14	93	38	1/2	-
Korea	278	148	24	1	3	20	53	26	3	-
<u>Indian Peninsula</u>										
Ceylon	301	134	13	13	6	63	40	15	17	-
India	296	138	8	15	3	23	37	8	64	-
<u>Southeast Asia Mainland</u>										
Burma	359	164	28	9	7	12	72	49	18	-
Malaya	364	163	25	9	7	19	101	27	13	-
Siam	382	136	46	6	7	17	101	56	13	-
Indochina	363	144	36	6	7	15	101	41	13	-
<u>Major SE Asia Islands</u>										
Java and Madura	369	124	143	4	2	25	59	8	4	-
Philippines	336	118	93	11	5	12	15	46	36	-

PREWAR FOOD SUPPLIES IN 70 COUNTRIES--Continued
(kilograms per head per year at the retail level)

Country	Kilograms per year									
	Total kilograms	Cereals	Roots and tubers	Sugar 1/	Fats 2/	Pulses	Fruits and veg. 3/	Meat	Milk 4/	Wine Beer
<u>Middle East</u>										
Turkey	506	170	9	5	3	30	114	20	155	-
Palestine	527	177	16	18	12	9	181	25	89	-
Syria & Lebanon	553	145	9	15	4	10	199	11	160	-
Egypt	315	171	3	8	6	24	58	12	33	-
Iran	346	139	-	6	1	10	93	17	80	-
Iraq	334	129	$\frac{1}{2}$	9	1	7	96	18	73	-
Trans-Jordan	388	134	-	10	1	9	151	19	64	-
<u>North Africa</u>										
French Morocco	386	170	8	23	6	2	27	39	103	8
Tunisia	381	136	8	17	9	7	35	36	110	25
Algeria	342	140	13	15	10	2	40	30	71	21
<u>West Africa</u>										
French West Africa	549	124	240	1	6	17	51	15	95	-
<u>East Africa</u>										
Kenya-Uganda	619	60	464	6	4	20	25	29	11	-
Madagascar	521	134	246	1	3	6	30	20	79	2
<u>South Africa</u>										
Union of South Africa	400	160	22	20	1	9	60	48	80	-
<u>Central America</u>										
Honduras	406	116	36	22	2	10	154	22	43	1
Costa Rica	402	74	6	41	7	15	182	46	31	-
El Salvador	439	101	58	16	6	9	201	35	13	-
Mexico	389	109	22	18	4	12	100	31	86	7
<u>Caribbean</u>										
Cuba	588	92	234	40	11	20	28	47	116	-
Puerto Rico	440	82	137	34	8	25	75	28	48	3
Dominican Republic	602	69	286	15	5	24	138	29	35	1
<u>South America</u>										
Argentina	717	129	54	32	10	9	88	129	200	66
Uruguay	648	101	49	29	5	9	130	132	159	34
Paraguay	718	58	252	12	8	24	116	120	128	-
Brazil	664	93	197	24	6	22	202	60	58	2
Chile	556	115	87	26	6	9	106	45	95	67
Peru	408	112	180	14	6	26	20	20	28	28
Colombia	598	83	174	9	4	5	146	45	123	9
<u>Oceania</u>										
New Zealand	739	94	61	48	17	3	150	128	238	-
Australia	639	94	48	53	17	2	132	134	159	-

- 1/ Refined sugar equivalent
2/ Pure fat equivalent
3/ Fresh equivalent
4/ Fluid milk equivalent

TABLE 2

CALORIES AND PROTEIN FROM FRESH FOOD SUPPLIES IN 70 COUNTRIES

(per head per day at the retail level)

Country	Calories per day										Grams protein per day		
	Total calories	Cereals	Roots and tubers	Sugar	Fats	Pulses	Fruits and veg.	Meat	Milk	Wine Beer	Total protein	Animal	Veg.
<u>North America</u>													
United States	3249	887	139	515	502	105	210	524	367	-	88	50	38
Canada	3109	943	177	518	464	81	118	442	366	-	87	47	40
<u>British Isles</u>													
Ireland	3184	1205	333	416	393	14	76	329	369	29	92	41	51
United Kingdom	3005	898	125	465	509	67	87	585	269	-	80	43	37
<u>Scandinavia</u>													
Denmark	3249	859	220	603	642	16	81	404	390	34	76	44	32
Norway	3129	1147	242	391	631	27	40	326	313	12	83	41	42
Sweden	3052	911	214	506	437	24	58	327	559	16	88	54	34
Iceland	2980	1184	119	504	434	10	15	261	453	-	101	63	38
Finland	2950	1240	320	300	324	25	44	223	471	3	80	37	43
<u>Central & Western Europe</u>													
Switzerland	3049	1043	162	448	384	17	105	357	472	91	89	48	41
France	3012	1208	247	247	320	100	67	303	222	298	87	38	49
Germany	2967	1117	317	264	528	17	52	399	227	46	77	34	43
Netherlands	2958	967	232	373	573	104	77	340	283	9	78	37	41
Austria	2933	1245	153	264	360	17	76	398	372	48	79	36	43
Belgium	2885	1192	300	285	429	32	44	340	160	103	77	32	45
Czechoslovakia	2761	1242	288	275	336	33	47	277	228	35	72	25	47
<u>Southern Europe</u>													
Spain	2788	1416	180	143	360	158	86	234	101	110	85	20	65
Italy	2627	1606	63	80	256	158	52	148	108	156	81	19	62
Greece	2523	1375	24	113	434	92	129	128	142	86	65	14	51
Portugal	2461	1357	126	88	240	83	87	221	101	158	74	23	51
Cyprus	2304	1570	34	97	200	158	75	100	70	-	55	14	71
<u>Eastern and SE Europe</u>													
Yugoslavia	2866	2065	72	55	144	50	65	191	177	47	87	13	69
Rumania	2865	1995	72	55	144	66	88	179	185	81	87	19	68
Bulgaria	2831	2125	18	44	168	50	56	168	159	43	90	18	72
Hungary	2815	1796	176	117	107	51	43	220	246	59	89	24	65
Poland	2702	1420	495	132	192	25	43	207	186	2	72	19	53
USSR	2827	1837	309	121	131	90	37	153	149	-	88	17	71

Continued

CALORIES AND PROTEIN FROM FRESH FOOD SUPPLIES IN 70 COUNTRIES-Continued

(per head per day at the retail level)

Country	Calories per day										Grams protein per day		
	Total : calories :	Cereals :	Roots : and : tubers :	Sugar :	Fats :	Pulses :	Fruits : and : veg. :	Meat :	Milk :	Wine : Beer :	Total : protein :	Animal :	Veg. :
<u>Eastern Asia</u>													
Manchuria	2557	2002	40	32	72	289	44	66	12	-	88	5	83
Japan	2268	1559	157	163	41	147	83	107	11	-	67	12	55
China	2201	1552	112	14	133	260	35	95	-	-	68	5	63
Formosa	2153	1091	434	77	133	102	74	240	2	-	52	14	38
Korea	1904	1419	52	15	72	191	44	106	5	-	70	15	55
<u>Indian Peninsula</u>													
Ceylon	2167	1289	34	140	142	403	51	63	45	-	51	11	40
India	2021	1306	37	163	71	210	41	37	156	-	56	9	47
<u>Southeast Asia Mainland</u>													
Burma	2349	1589	82	103	184	97	62	203	29	-	73	32	41
Malaya	2337	1577	146	100	178	101	66	119	50	-	57	14	43
Siam	2173	1341	200	69	180	114	66	179	24	-	58	21	37
Indochina	2127	1386	143	63	184	96	66	165	24	-	55	17	38
<u>Major SE Asia Islands</u>													
Java and Madura	2040	1154	490	46	61	178	72	35	4	-	43	4	39
Philippines	2021	1115	264	124	130	79	23	218	68	-	55	25	30
<u>Middle East</u>													
Turkey	2619	1605	16	52	84	266	162	103	331	-	101	26	75
Palestine	2570	1610	30	200	297	75	130	94	134	-	74	16	58
Syria & Lebanon	2394	1368	16	164	98	77	242	56	373	-	77	26	51
Egypt	2199	1590	5	88	142	197	43	57	77	-	69	8	61
Iran	1966	1317	-	66	34	88	190	85	186	-	66	17	49
Iraq	1962	1219	1	99	29	58	286	100	170	-	61	16	45
Trans-Jordan	1909	1257	-	110	35	100	174	84	149	-	64	15	49
<u>North Africa</u>													
French Morocco	2431	1595	13	253	153	14	50	121	217	15	75	26	49
Tunisia	2254	1270	15	186	216	63	118	113	225	48	69	25	44
Algeria	2236	1316	23	168	241	18	174	99	156	41	63	19	44
<u>West Africa</u>													
French West Africa	2311	1150	533	13	163	159	35	57	201	-	68	16	52
<u>East Africa</u>													
Kenya-Uganda	2321	586	1231	63	107	167	20	128	19	-	55	12	43
Madagascar	2293	1275	614	11	64	62	25	105	134	3	50	13	37

Continued

CALORIES AND PROTEIN FROM PREWAR FOOD SUPPLIES IN 70 COUNTRIES-Continued
(Per head per day at the retail level)

Country	Calories per day										Grams protein per day		
	Total : calories	Cereals :	Roots : and tubers :	Sugar :	Fats :	Pulses :	Fruits : and veg. :	Meat :	Milk :	Wine : Beer :	Total : protein :	Animal :	Veg. :
<u>South Africa</u>	2700	1601	46	220	24	63	55	162	129	-	75	23	52
<u>Union of South Africa</u>													
<u>Central America</u>													
Honduras	2079	1072	81	240	56	91	327	163	48	1	49	10	39
Costa Rica	2014	696	12	447	168	142	200	292	57	-	49	21	28
El Salvador	1944	931	128	180	146	84	200	250	25	-	52	14	38
Mexico	1909	1004	42	197	106	108	96	197	155	4	59	20	39
<u>Caribbean</u>													
Cuba	2918	872	587	438	286	217	30	279	209	-	68	29	39
Puerto Rico	2219	793	306	377	199	194	81	189	77	3	55	17	38
Dominican Republic	2130	660	648	168	118	176	103	204	53	-	54	14	40
<u>South America</u>													
Argentina	3275	1240	104	347	241	84	103	755	290	111	111	63	48
Uruguay	2902	971	113	319	132	84	113	830	283	57	102	63	39
Paraguay	2813	545	659	127	187	224	111	719	241	-	99	60	39
Brazil	2552	857	424	263	138	198	141	435	92	4	73	26	47
Chile	2481	1107	178	283	159	84	112	259	170	129	70	24	46
Peru	2090	1033	392	152	142	222	15	94	36	4	58	8	50
Colombia	1934	768	313	98	93	45	100	279	233	5	62	29	33
<u>Oceania</u>													
New Zealand	3281	894	112	507	424	32	119	819	374	-	96	61	35
Australia	3128	872	93	582	420	28	106	745	282	-	90	59	31

