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Nutrition Programs in State Health Departments

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NUTRITIONAL DEFICIENCIES*

Introduction

The tremendous influence of nutrition on the health and productivity of population groups is just beginning to be appreciated. Recent advances in the science of nutrition have indicated the fundamental role which essential nutrients play in bodily economy and have stimulated a growing appreciation of the significance of nutrition in all fields of medicine and public health. The social, economic, and political importance of adequate nutrition is well illustrated by the attention given to this subject in international deliberations.

Increasing awareness of the relationship of nutrition to many aspects of public welfare warrants the assignment of a more important place to nutrition programs in State and local health departments. Nutritional welfare of large segments of the population could be improved, particularly in certain areas and among special groups. It has been shown that the diets of a high percentage of persons in this country fail to measure up to the Recommended Dietary Allowances of the Food and Nutrition Board of the National Research Council. The extent and severity of malnutrition, however, remains largely unknown and is still the subject of considerable controversy. Carefully controlled investigation with the use of newer techniques is essential in delineating this problem. The health department has a unique opportunity for fact-finding in this field.

It is recognized that malnutrition is not only responsible for the well known deficiency diseases but is a contributory cause or a complication of numerous other pathological states. Accordingly, nutrition knowledge should permeate all branches of the health department. The possibilities for improvement of nutritional status have only begun to be explored.

The improvement of nutrition and the correction of existing nutritional deficiencies are the immediate objectives of any nutrition pro-

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gram. The ultimate aim should be the attainment of optimal nutritional status by the entire population. Although optimal nutrition cannot be clearly defined as yet, the wide application of current information should lead to marked improvement in general health. In order to fulfill these objectives it is essential to determine, first, the needs of the community, then the existing facilities which are available for meeting these needs, and finally the additional facilities which are desirable and feasible for implementing an effective program. The most urgent problems should be attacked first and plans made for gradual expansion.

In the early development of nutrition programs in State health departments, the nutritionist carried the major responsibility for the

The Food and Nutrition Board has desired to foster the interest of public health agencies in the problems of human nutrition. For this purpose, a subcommittee on Diagnosis and Pathology of Nutritional Deficiencies was appointed and has prepared this report after much consultation and extensive discussion. One of the objectives is to increase the interest of both State and local health agencies in the opportunities for service to the public along nutritional lines. Another is to facilitate the process of getting nutrition education to both the general practitioner of medicine and the lay population. Since it appears to all those who are studying this field of work that there is an urgent need for physicians with special training in human nutrition, it would seem that until a demand for such medical specialists is built up, no supply will be forthcoming. It is hoped, therefore, that this effort may increase the public demand for such specially trained medical personnel.

program. Emphasis was on food and on educational programs to promote the consumption of adequate diets. Recent developments have focused on the diagnosis of the various deficiency diseases which make up the over-all problem of malnutrition and on the causes and effects of the deficiency diseases and the interrelationship between them and other diseases. With these developments, the physician trained in public health nutrition has entered this field and the biochemist has become closely associated with it. The full application of the science of nutrition to public health requires the integration and coordination of activities relating to diets, general and special, to education, and to medical nutrition. Ideally all nutrition activities should be coordinated in a specific unit of the health department under the leadership of a physician with special training in nutrition and with the assistance of nutritionists and a biochemist. The nutrition unit should serve in a consultant and advisory capacity to all divisions of the health department, supervise the training of personnel in various aspects of nutrition, and cooperate with agencies throughout the State in formulating a broad nutrition program. A

State nutrition council should be of great assistance in program planning and coordination of effort. The nutrition unit of the State health department has a major responsibility in developing a program and services which are adequate for the protection and promotion of nutritional health of the people.

Details concerning the development, activities, personnel, and administrative organization of a nutrition program in State health departments are considered in the discussion which follows.

Evolution of Nutrition Service in State Health Departments

Food Control Activities

The earliest concern of State health agencies with food was with its purity. In the years between 1880 and 1889, four States passed legislation vesting in the health agency powers for controlling the contamination or adulteration of foods with substances deleterious to health. During succeeding decades other States followed suit. In some of these States, however, the enforcement of food control was placed in the Department of Agriculture. With the passage of the Federal Food and Drug Act of 1906, many State laws were rewritten to bring them into conformity with the Federal statute. At the present time, the authority rests with the health agency in 20 States. The closely related interests of food control and nutrition programs of State health agencies have been apparent from the outset and have received new recognition with the recent passage by 26 States and 2 Territories of legislation for the compulsory enrichment of white flour and bread.

Closely allied with enforcement of pure food laws and equally important to the nutrition of the citizenry has been the health agency's responsibility for the sanitary conditions under which foods are produced, dispensed, and consumed. Encouragement by public health workers of increased milk consumption, for example, has been possible only in areas where the milk supply was known to be safe. In recent years, the sanitation and nutrition staffs of State health agencies have worked hand-in-hand to make sure that school lunch programs meet the standards of both and that food handlers have an intelligent interest in what they are preparing or dispensing as well as in how they are doing it.

In one State, California, the Chief of the Bureau of Food and Drugs in 1899-1901 conducted some dietary studies among fruitarians and Chinese in cooperation with the State Agricultural Experiment Station. This seems to be the earliest record of nutrition research involving a State health agency.

Combating Pellagra

The realization that malnutrition was a pressing public health problem in certain areas came as a result of the pellagra studies that Dr. Joseph Goldberger of the Public Health Service carried on between 1914 and 1929 with the cooperation of the health departments in the States concerned. Dr. Goldberger and his associates demonstrated that pellagra was the result of a poor diet and could be both treated and prevented by introducing into the diet those common foods that contained the "pellagra preventive" factor. The discovery that this factor was abundantly present in dried yeast provided State health agencies with a cheap and effective weapon against pellagra even before the identification of niacin as the specific therapeutic agent some 20 years later. With the active support of the Medical Service of the American National Red Cross, yeast was made widely available to State and local health departments in the regions where pellagra was endemic. Distribution of dried yeast through special pellagra clinics or through general clinics of the health agency and an intensive educational campaign on the benefits of home gardens conducted in cooperation with agricultural extension workers were major activities by which public health workers waged a successful fight against pellagra in the South.

The Child Hygiene Movement

Not until public health began to be concerned with the well-being of individuals in the population did official State agencies the country over assume much responsibility for applying the growing body of evidence of the relation of diet to health. It is no accident that nutrition service came into State health agencies as part of the child hygiene movement. In 1912, the first division of child hygiene in a State department of health was established in Louisiana. In 1913, McCollum and Davis working in Wisconsin, and Osborne and Mendel in Connecticut, reported their classical experiments on the vitamins. Studies of infant and maternal mortality showed the need for stressing maternal and child hygiene as a public health measure. The newer knowledge of nutrition threw light on the relation of food to health at all ages, but especially during periods of rapid growth and development. Laboratory findings of nutrition investigators were paralleled by clinical observations by pediatricians. This new knowledge had to be put to work for the benefit of those in the population for whom good nutrition is of the most importance, women during the maternity cycle and growing children. Child health programs in State health agencies opened the way for the application of both preventive and curative measures in child nutrition.

Early emphasis on nutrition activities in behalf of children beyond the age of infancy was placed on the correction of malnutrition. The

criteria for the diagnosis of malnutrition were the height-weight tables based on measurements of fairly large numbers of children in certain sections of the country. Children whose weight for height and age fell outside an arbitrarily established normal range were considered underweight or overweight and treated accordingly. For the underweight, special nutrition classes were set up and a regimen of rest and supplementary feeding arranged in schools. Pediatricians soon became convinced that weighing and measuring alone did not select children in need of nutritional rehabilitation, although the information obtained from successive examinations at regular intervals has continued to aid in clinical assessment. Meanwhile, the search has gone on for objective indices of nutritional status.

Emphasis on the early supplementation of milk with potent sources of vitamin D and ascorbic acid resulted in the virtual disappearance of severe rickets and scurvy among infants receiving continuous health supervision. Nutrition knowledge was applied successfully to the feeding of infants and children by general practitioners and also by physicians entering the comparatively new specialty of pediatrics. Instruction in the fundamentals of nutrition has become part of the professional preparation or in-service education of such other workers in the field of maternal and child health as general practitioners of medicine, dentists, nurses, social workers, teachers, and health educators. The effect of emotional factors on the nutrition of the young child now receives widespread acceptance among pediatricians and other child-health workers. The influence of nutrition on both mother and child during pregnancy and lactation has been demonstrated in striking fashion within the past 10 years. That short time has seen the application of the new knowledge to the care of maternity patients, especially in the prenatal and postpartal periods. These findings have also supplied further evidence that the health of mother and child is inseparable, with the consequent evolution of "child hygiene" programs into "maternal and child health" programs.

The practical application of nutrition knowledge takes up a considerable proportion of the time of the team of workers engaged in a community maternal- and child-health program. In order that nutrition shall receive due attention, it has seemed desirable to assign to the team a worker with special training in that field. The nutritionist has been given responsibility for seeing that the other members of the team have essential nutrition knowledge and skill in applying it.

Beginnings of Nutrition Service

The health departments of Massachusetts and New York were the first to employ a nutritionist. They took this action about the same time (in the 1915-to-1920 period), and they have had continuous service ever since. Both States had as their objective a specialized

program in health education. The nutritionist who was appointed to the "hygiene staff" in Massachusetts in October 1917 had as her title "Health Instructor in Foods." This was the period of direct service by specialists in public health, so it was logical that the nutritionist should work with the school nurse, instructing children selected by the school physician as malnourished and visiting homes to carry the same message to the parents. As additional workers were employed, a nutritionist gave full time to the tuberculosis clinics for children of school age, conferring with those showing X-ray evidence of active infection. In New York the nutritionist soon shifted the emphasis in her service from individual teaching to staff education and promotion of educational activities in communities.

Growth of Nutrition Service

The extension of nutrition service in health departments has been influenced by many factors. The number of workers employed has been affected by the amount of money available to the State from its own tax funds and from Federal grants-in-aid. During the period between 1921 and 1929, when States were relatively prosperous and Federal funds for maternal and child health were appropriated under the Sheppard-Towner Act, a few additional States (among them Illinois, Michigan, Mississippi, and Connecticut) inaugurated nutrition services. Only one of these, Connecticut, continued the service in the face of the withdrawal of Federal aid in 1929 and the sharp reduction in State revenues during the depression of the early 1930's. In Connecticut one worker combined the duties of health educator and nutritionist. The Biennial Reports of the California State Department of Health for the years 1928-30 and 1930-32 make reference to the services of a consulting dietitian and a nutrition advisor, both confining their activities to the Bureau of Tuberculosis. With the passage of the Social Security Act in 1935 and its subsequent amendments, State health agencies could count once more on Federal aid for the employment of nutritionists. The committee of the Association of State and Territorial Health Officers which advised the Children's Bureau on appropriate types of professional personnel for State maternal and child health services specifically mentioned nutritionists. The Public Health Service informed the State health departments that Federal funds from that agency might be used for the salaries of nutritionists. When the Social Security Act became effective, three State health departments were employing a total of nine nutritionists. As of December 1947, 50 out of 53 State health departments (including the District of Columbia, Hawaii, Puerto Rico, Alaska, and the Virgin Islands, since they participate in Federal grants for maternal and child health on the same basis as the States) were budgeting funds for the employment of 170 nutritionists. The

distribution of positions in the States was as follows:

<i>Number of Positions</i>	<i>Number of States</i>
10	2
9	2
7	2
6	3
5	3
4	8
3	6
2	11
1	13
0	3

Source of Funds for Nutrition Service

Budget forms in current use in State health agencies do not yield detailed information as to the source of funds for specific positions. In the most recent year, 1945-46, that such data were available, the source of funds for the maintenance of nutrition services was as follows:

	<i>Percent</i>
Children's Bureau	63
Public Health Service	*9
State and other	28

*In the case of the Public Health Service, Federal assistance to the States also takes the form of the assignment of personnel to carry out nutrition investigations.

Because Federal and State funds have not been earmarked for nutrition service, the decision to use them for that purpose rather than for other public health purposes has rested with the administrative officials of the agency. On several occasions, the expansion of nutrition services in State health departments has been recommended by the Conference of State and Territorial Health Officers. The sharp increase in the number of State health departments employing nutritionists during the war may have been related to the activity of State nutrition committees in focusing attention on the need for additional personnel. The total number of nutrition positions now budgeted by State health agencies probably does not reflect the potential demand for nutritionists. Among the 170 positions budgeted in December 1947, there were 34 vacancies, some of long standing. Agencies have become discouraged in their search for qualified workers and have tended to discontinue positions that they have seen no hope of filling. Although salaries of nutritionists have increased and are frequently in line with other salaries in the health agency, they still do not compare with financial rewards in other positions open to workers trained in nutrition. It has proved especially difficult to recruit physicians with special preparation in nutrition for State public health positions.

Qualifications and Training of Nutritionists Employed

Prior to the amendment to the Social Security Act in 1939, which provided for the establishment and maintenance of personnel standards on a merit basis, the setting of qualifications for nutritionists was the responsibility solely of the State agency. Most of these, however, were guided by the recommendations of a joint committee of the American Home Economics Association and the American Dietetic Association, which were later modified and accepted also by the Committee on Professional Education of the American Public Health Association.¹ These recommended qualifications cover a series of positions of varying degrees of responsibility. Since all nutritionists in State health agencies whose salaries are paid wholly or in part from Federal funds or State funds used for matching Federal grants come under State civil service or merit systems, formal class specifications for the types of nutrition positions that exist in the agency or are contemplated by it have been established and have become effective when approved by the Federal agencies administering grants-in-aid.

To meet the need for personnel to expand health services, State agencies have been encouraged by the Children's Bureau and the Public Health Service to use some of their grant-in-aid funds for professional training of individuals already employed or to be employed. These two Federal agencies have jointly issued policies governing the use of Federal funds for training. Records indicate that during the last three academic years, 23 nutritionists have received a year of graduate training in nutrition as applied to public health on stipends from State health departments. So far all the States have used maternal and child health funds for training nutritionists.

According to the most recent information available to the Children's Bureau, the most advanced academic degrees held by 136 nutritionists actually employed as of December 1947 by State health departments may be grouped as follows:

<i>Academic degree</i>	<i>Number holding</i>
M. D.-----	2
Ph. D.-----	3
M. D. and Ph. D.-----	1
M. P. H.-----	1
M. S. or M. A.-----	78
B. S. or B. A.-----	51

The number of nutritionists in State health departments who have completed a dietetic internship in a hospital or food clinic course approved by the American Dietetic Association is estimated at 52.

¹ Educational qualifications of nutritionists in health agencies. American Journal of Public Health 36: 45-50, January 1946.

The number of qualified nutritionists is limited by the facilities for their advanced academic training and for supervised field experience. At the present time, six colleges and universities are offering a formal graduate curriculum in nutrition as applied to public health. Others have taken some steps toward offering such a program and are currently arranging schedules for occasional graduate students who wish to specialize in public health nutrition. Advice to these institutions on request is one of the activities of the Nutrition Unit of the Children's Bureau. A few schools of public health offer special training in nutrition for physicians. At least two medical schools provide intensive postgraduate preparation for physicians in techniques for assessing nutritional status.

The New York State Department of Health has instituted a program of nutritionist training in an attempt to meet the urgent need for supervised public health experience in nutrition. Closely supervised field service is offered to candidates with good academic backgrounds who lack field experience. A flexible program covering 12 months' experience includes orientation in general public health relationships, direct nutrition service to individuals and groups, consultant services to professional personnel, and participation in studies of nutritional status of population groups and other research activities.

That training facilities need to be expanded may be indicated by an analysis of the years of service with their present agency of the nutritionists at work in December 1947.

<i>Years of service in present position</i>	<i>Number of nutritionists</i>
Less than 1.....	51
1 to 2.....	15
2 to 3.....	20
3 to 4.....	12
4 to 5.....	6
5 to 6.....	7
6 to 7.....	3
7 to 8.....	3
8 to 9.....	3
9 to 10.....	3
More than 10.....	13
Total.....	136

Of the 51 who had been employed in their present position less than 1 year, 11 had a record of previous employment with a public health agency.

Placement of Nutrition Service in Administrative Organization of Health Agency

The placement of the nutrition service in the agency is the decision of the State administration. With an occasional exception, all nutrition staffs have been placed in a single unit, from which workers

may be assigned either for general service in a geographical area or specialized service, such as participation in a special training project or dietary consultation to hospitals and other health facilities. According to recent information the placement of nutrition services follows the pattern below:

<i>Placement of nutrition service</i>	<i>Number of States</i>
Unit (bureau or division) responsible to State health officer.....	6
Unit within major bureau or division.....	39
Maternal and child health.....	26
Local health administration.....	3
Preventive medical services.....	2
Health education.....	2
Unit within subdivision of major bureau or division.....	8
Maternal and child health.....	8

Evolution of Functions of Nutrition Workers

As nutrition services have expanded and additional workers have been employed there has been a differentiation of functions. The job of the supervisor has three main aspects: program planning and direction, staff development, liaison with other organizations and agencies in the nutrition field. With the call for skills in a given field, it has seemed preferable to employ one or more specialists for State-wide service to supplement the activities of general staff nutritionists assigned to a geographical area. Thus, State agencies engaging in nutritional assessment need physicians and biochemists as well as nutritionists. As of December 1947, two State health agencies were employing physicians on a full-time basis to head their nutrition units; a third had the part-time services of a physician. Some health departments which administer or license and inspect hospitals and other health facilities are employing experienced dietitians to serve as consultants. Except for a short period in California, the first specialist employed by a State health department to give full time to dietary consultation began service as recently as 1946. By the summer of 1948, at least 12 States had created such a position.

Evolution of Nutrition Activities

Although the nutrition units are still administered through the maternal and child health bureau or division in a majority of States, their work has been broadened to include service in nearly all aspects of the public health program. Nutritionists are giving service to many divisions of the health agency, notably those that have responsibility for adult hygiene, communicable disease control, tuberculosis control, cancer control, dental health, industrial hygiene, hospital construction and licensure, medical rehabilitation, and food sanitation. (In giving this service nutritionists work in close cooperation with divisions of health education and public health nursing.) It is

recognized that improvement in the diet and nutritional status of an individual is not likely to be achieved without improvement in the dietary of the family or institutional group of which that individual is a member. However, attention needs to be given to the individual as well as to the group because his intake may be below average and his requirements above average.

From reports submitted regularly by the States to the Public Health Service and the Children's Bureau and from reviews of programs made by these Federal agencies in the States, it is possible to gain some idea of the relative emphasis placed at a given time on the various activities that constitute the nutrition program of the agency. By comparing these reports from year to year, the following emphases and trends can be noted:

A. Activities Receiving Major Attention

1. *Education and consultation* continue to be a major activity. In-service education of the agency staff fell off sharply during the war but has since been resumed as vacancies in local health units have been filled. As noted elsewhere, consultation to hospitals and other health facilities administered or licensed and inspected by the agency is a new and rapidly expanding service. Consultation to industries received some emphasis in industrial States during the war but appears to have dwindled since then. Consultation to practicing physicians appears to be on the increase.

2. *Information Services.* Preparation, selection, and distribution of educational materials still receive considerable attention of staff. However, as agencies have developed departments of health education, the nutrition unit has tended to function as technical advisors on content of material produced in, or distributed by, the agency.

B. Activities Assuming Greater Prominence

1. *Investigations and Research.* Appraisals of nutritional status are carried on in a small but slowly growing number of States. These are the States that have one of the following types of resources: (1) A full-time or part-time medical director of the nutrition unit; (2) a cooperative arrangement with a medical school, a school of public health, an agricultural college, or a research agency financed from agricultural or other funds; (3) a team from the Nutrition Branch of the Public Health Service.

Other forms of fact-finding, including dietary studies, are being used increasingly as a basis for program planning.

2. *Coordination of Programs, Policy-making, and Interpretation.* These closely related activities cannot be considered major from the standpoint of time devoted to them, but they are expanding as the nutrition unit operates at the program-planning level in the agency.

C. Activities Receiving Less Emphasis

1. *Direct service*, except as a medium of consultation and staff education, now tends to be undertaken only in connection with special projects or demonstrations that are being carried on by State staff in a limited area.

Nutrition Activities of a State Health Department

The wide scope of activities open to a nutrition service in a State health department has been indicated. It is increasingly recognized that improvement in the nutritional health of the people cannot be accomplished solely by giving advice on what to eat and by making treatment available for cases of deficiency diseases. Consumption of the proper foods is influenced by availability and price, and some motivation to eat the right foods as well as knowledge of a good diet is needed to change diet habits. Also, the nutritive quality of food is affected by conditions under which it is grown and by methods of production and processing before the food reaches the consumer, as well as by methods of preparing it in the home or restaurant. Furthermore, the nutritional health of an individual may be affected adversely by special conditions other than food intake, and many persons have special diet problems because of age, activity, acute or chronic disease, etc. Clearly, there are many components to the nutrition problem which call for application of different skills. Food supply, prices, distribution, etc., are problems for agricultural and economic experts, but the essential relationship of food, with respect to both quantity and quality, to health gives the health department a responsibility to interpret the nutritional needs of the population as they affect programs of food production and distribution. Educational agencies share with the health department responsibility for nutrition education. Many other aspects of the nutrition problem are largely the direct responsibility of the health department and require a program of varied services.

The many activities through which a State health department can promote better nutrition for its population may be grouped into three general types. One type operates for the benefit of the population as a whole, a second type is directed to segments of the population, and a third type deals directly with families or individuals. Activities which contribute directly or indirectly to better nutrition for the population as a whole include measures to improve the quality of foods and to increase their availability at more reasonable prices, programs to extend and improve professional education in nutrition, and mass education on nutrition. The second type is similar to the first, but the activities are planned to meet the needs of members of particular

groups who are affected nutritionally by some specific situation. Improvement of food facilities for workers in industrial plants, improvement of diets in institutions, and school lunch programs are examples of group services. The third type of activity includes those in which the public health worker gives some direct service toward the solution of nutrition problems of an individual or family. All three classes of activity are needed, and within each class there are many and varied activities which can contribute to a higher nutritional status for the population.

In most States, in addition to the State health department, a number of other agencies, both official and voluntary, will have responsibility for or be engaged in activities that will form an essential part of the total nutrition program. Various nutrition services may be given by Federal or State extension services, by State departments of agriculture, labor, institutions, welfare, etc., by colleges of agriculture, of home economics and of medicine, and by other agencies. It may be assumed that the health department will not replace or duplicate nutrition activities of other agencies but will cooperate with them to develop a broad and carefully planned State program. However, the nutrition unit of the State health department has a special responsibility to see that the programs and services available are adequate to protect and promote the nutritional health of the people.

With full recognition that the nutrition activities conducted by the State health department will vary from State to State, the activities that comprise a well-rounded nutrition program may be discussed briefly. The activities are discussed according to the three broad types described, that is (1) those that are planned to benefit directly or indirectly the general population; (2) those designed to promote better nutrition for members of specific groups; and (3) direct services to individuals or families.

State-wide and General Activities

General activities for the promotion of better nutrition of the population of the State which may be included in a program of a State health department are listed below. Responsibility for a few of these activities may rest with the State health administrator rather than with the nutrition unit.

A. Administration, Policy, and Program

1. Collaboration with other agencies, civic organizations, and regional and State commissions on policy and program planning where these have a bearing on the health of the people. Some of the areas in which the health department may not have direct or full responsibility but in which due consideration should be given to the effects of both short- and long-term plans on nutritional health include:

(a) Food production programs which should take account of dietary needs of the present and expected future population determined on the basis of sex, age, type of work, food consumption patterns, etc.

(b) Improvement and control of the nutritional quality of foods at all stages from the farm to the consumer. All plans, including proposed legislation, with reference to processing, distributing, and storing of foods, to enrichment of foods with specific nutrients, and to setting standards for foods should be evaluated in terms of their potential effect on nutritional health.

(c) Legislation and regulations to prevent adulteration, false or misleading labeling, insanitary handling of foods, etc.

The role of the health department in these areas usually will be chiefly advisory, but it may be necessary for the health department to stimulate interest and to initiate and suggest programs in these fields to promote nutritional health in the State.

2. Coordination of the activities of all the official and voluntary agencies operating in the field of nutrition in the State. A permanent State nutrition council or committee comprised of representatives of agencies operating in the nutrition field is recommended to cooperate with the State health department in formulating and promoting a complete and well-integrated nutrition program. A further function of this committee, or of a working subcommittee, would be to cooperate with the administrative officer for nutrition of the State health department in clearly defining the specific activities and services to be provided and also the areas or population groups to be served by each agency so that there will be no overlapping or duplication of effort. If no State committee exists, interagency agreements on activities should be drawn up.

3. Enforcement of laws and regulations dealing with food products, food handling, and food service where these are under the jurisdiction of the health department. If this authority rests with another agency of government, the health department should cooperate with it.

4. Administration of or collaboration on measures for financial and technical assistance to cooperative nutrition activities, local agencies for nutrition service, research projects, etc.

B. Investigations and Research

5. Investigations to determine the nature and magnitude of the nutrition problem in the State. Fact-finding to provide definitive evidence on the prevalence of malnutrition and its causes is of the greatest value in shaping the program to provide the most needed services and should be a continuing activity to evaluate progress and keep the program dynamic and related to need. The most satisfactory data are obtained by surveys of carefully selected samples of

the population which represent different groups of specific socio-economic status, educational level, national origin, urban or rural environment, etc.²

Surveys should be of two types, one to collect data on dietary intake and food habits, and the other to collect data on the prevalence of specific deficiency diseases, underweight, and obesity. It will be helpful to collect both types of data for the same persons, but it is not necessary to limit the two types of surveys to the same population.

In order to interpret the survey findings in relation to the importance of various causes of unsatisfactory diets and of malnutrition, there should be investigations to identify, as far as possible, the conditions and factors associated with the consumption of poor diets and the occurrence of deficiency diseases. This would include study of the availability and prices of foods of special nutritional importance in different areas and at different seasons; relation of food consumption to income levels; study of the attitudes of people concerning the consumption of various foods and their knowledge of dietary requirements; and the investigation of other factors contributing to poor nutritional status, such as chronic infections and disease, physiological and emotional stress, and dental status.

Information may be collected from various sources to supplement the data from special surveys or, if surveys cannot be made, to substitute for them. All available data on food supplies and prices, socio-economic status of the population, diet habits, prevalence of various diseases, and nutritional status of the population should be utilized.

6. Research on methods for application of the newer knowledge of the science of nutrition to public health programs and to extend our knowledge of the relation of nutrition to health and disease. It is often desirable to test new procedures or techniques by means of a demonstration or pilot study conducted on a limited population under controlled conditions so that results may be evaluated. Obviously, the types of research that might be undertaken are numerous and are constantly changing.

A few examples of nutrition research that have an important bearing on public health methods may be cited. Study of the relation of nutrition to the health of mothers and infants is an example of research on the public health application of new knowledge. Methods for appraisal of nutritional status are fundamental to a program of case-finding and corrective measures. Many diagnostic criteria, both clinical and biochemical, are now available for a number of deficiency diseases, but the reliability of some of these

² Data from homogeneous samples of the population selected by approved sampling methods can be used for estimates applicable to the entire State or to sections of a State. Similarly, populations of larger areas than a single State could be studied from surveys of properly selected samples of the total population. Therefore, several States might pool their resources in order to make more detailed investigations than each could make separately. There has been a trend toward regional studies of economic, educational, social, and nutritional problems. This approach could well be expanded in the nutrition field.

criteria and their significance as indices of malnutrition need further testing. In the case of biochemical criteria, more data on representative groups of persons are needed for the purpose of developing standard values for maintenance of good nutritional status. Therapeutic studies on persons with specific clinical lesions are needed to improve our knowledge of the relation of particular nutrients to these lesions, and of the dosages and time required for cure. There is need to evaluate methods of teaching nutrition to different sex-age groups and to study the effectiveness of various media for mass education. Finally, there is the type of investigation which seeks to measure the effects of improved nutritional status. A number of studies have shown that diets of high nutrient content improve the health of pregnant women and of their babies. The field for this type of research is broad and has scarcely been touched.

At present, few State nutrition units will have the personnel, facilities, and funds to conduct research projects. They should encourage investigations on a cooperative basis with other groups, such as universities, colleges, or State experiment stations, many of which have had wide experience in nutrition research, as well as with voluntary agencies. Domiciliary institutions offer especially favorable conditions for studies of deficiency diseases and of the relation of nutrition to other diseases.

C. Laboratory Services

7. The biochemical tests and hematological examinations which are used in the appraisal of nutritional status require laboratory facilities. Whether a nutrition laboratory is established within the nutrition unit or as a section in a State health laboratory will depend on local situations. In either case, the service should be coordinated closely with that of the nutrition unit. The laboratory personnel not only would participate in surveys of malnutrition among population groups conducted by the nutrition unit but also would furnish diagnostic service to this and other health department units, such as maternal and child health, chronic disease, etc., and give diagnostic service in special cases on request of private physicians and medical services of institutions, etc.

A mobile laboratory is most helpful in making extensive surveys of malnutrition and also may be desirable where the State supplements limited local health services by conducting health clinics in scattered areas.

D. Education in Nutrition

8. Professional education.

(a) In-service training for the staff of the State health department and of other health agencies, for school teachers, and for personnel of other departments and agencies which give, or should give, some nutrition service. This may be provided through special courses or institutes, through temporary demonstration services, and through consultation with staff personnel.

(b) Education of practicing physicians in clinical nutrition, in food values and planning special diets, and in the relation of nutrition to disease by arranging or conducting institutes, demonstrations, or special classes.

(c) Promotion of more courses in educational institutions for public health training in nutrition for physicians, nutritionists, nurses, social workers, and teachers and cooperation with such institutions by arranging for field experience.

9. Education of members of auxiliary groups or services.

(a) Interpretation of the nutrition program to members of civic organizations to foster public support and understanding.

(b) Instruction of managers and supervisors of restaurants and other food services, of cooks, and of food handlers, on menu planning, on methods of cooking and storing foods, and on food sanitation.

E. Information Service

10. Information service on nutrition facts and on methods and materials for a nutrition program. This service should cooperate closely with the health education unit in the preparation of materials such as leaflets, bulletins, posters, radio scripts, etc., to be used for public education on nutrition. Information also would be furnished to:

(a) Personnel in the State health department;

(b) Personnel in local health agencies;

(c) Personnel in institutions, other agencies, restaurants, industrial establishments, etc.;

(d) Members of the medical profession desiring information on clinical aspects of nutrition, on new developments in diagnosis and treatment of deficiency diseases, or on nutritional aspects of specific diseases;

(e) Individuals requesting advice on nutrition.

F. Dietary Recommendations and Standards

11. Formulation of special dietary allowances from approved nutrient standards for individuals in specific sex-age groups having different degrees of activity or special need, as in case of pregnancy or ill health, and preparation of low-cost food budgets for institutions and for public-assistance agencies.

Services for Specific Groups

The nutritional health of many persons may be improved by measures which create an environment that is favorable to the consumption of nutritionally adequate diets. Wherever groups of people obtain one or more of their meals from some regular food service, there is an opportunity to influence the diet of those using the service. The function of the health department in relation to institutions and

agencies providing food service is to give technical guidance in the planning of menus and in the preparation and serving of foods.

Some measures for promoting the nutritional health of special groups are discussed briefly.

1. *Food Service in Schools.* Cafeterias or lunchrooms in schools should furnish highly nutritious meals at minimum cost and can be utilized effectively as a focus for diet education. Nutritionists in the health department should cooperate with the educational authorities to develop in the schools food programs that will serve this dual purpose. An advisory or consultant service to the supervisors or managers of lunchrooms may be given, usually by local nutritionists, on such matters as economy in buying, menus, methods of cooking to preserve nutritive quality, and the use of eye appeal in food arrangements and service. Nutritionists also may cooperate with teachers and health education instructors in methods for relating classroom discussion of food values, optimum diets, and preparation of foods to the foods and menus served in the lunchroom.

The subsidized school lunch program has been widely adopted and is an effective means of improving the nutritive quality of the diet of large numbers of children. This may be a complete lunch, a breakfast, or the serving of one or two foods such as milk and fruit with or between regular meals. The nutrition unit of the health department can assist in these school lunch programs in several ways. From data collected on prevalence of different deficiency diseases, it can give guidance on specific foods or nutrients that are most needed; and, from studies of local dietary patterns, it can give advice on menus and foods that have maximum acceptability. However, it often will be necessary to serve foods that are not commonly included in the local dietary or are not liked by the children. The nutritionist can help in developing an education program that is adjusted to the specific food habits which need to be changed. Another important way that the nutrition service of the health department can help is by cooperation in educating the public to the need for and value of the school lunch program and by giving support to plans for raising funds through taxation or other means.

2. *Other Child-feeding Programs.* The health agency should provide technical guidance in the planning and operation of food service in centers for day care of young children, at playgrounds, and at summer camps.

3. *Industrial Nutrition Programs.* Food in adequate amounts and containing essential nutrients is needed to maintain the nutritional health of workers. Nutritional health, in turn, affects the capacity for physical work and resistance to infection and to special stress or exposure such as heat, toxic chemicals, etc. In addition to the nutrition problems common to the population as a whole, such as food

habits, knowledge of good diets, and availability and cost of foods, the problem of feeding facilities for workers is important and often complicated. The nutrition unit of the State health department should assume leadership in the promotion of programs for adequate food facilities for industrial groups and give consultant service to dietitians and food service managers in industrial plants.

Industrial physicians, nurses, and social workers should be included among the professional personnel for whom special training on nutrition is arranged, and plant physicians should be encouraged to look for nutritional deficiency diseases among employees.

4. *Institutional Feeding.* Large numbers of persons are residents of public institutions and other institutions licensed by the State or under some degree of State supervision. These include mental hospitals, hospitals for chronic invalids, convalescent homes, homes for the aged and for orphans, correctional institutions, and prisons. Diet is under complete control, and maintenance of good nutritional health is an essential part of adequate care and rehabilitation of all persons living in institutions. The nutrition staff of the health department should consult with the proper authorities concerning the nutritional health of institutional populations. Examination of residents to determine their nutritional status would furnish data on the adequacy of diets and select individuals in need of special nutritional treatment. Nutritionists should advise on planning diets of good quality at minimum cost and on methods of cooking, storing, and handling of foods. Special training may be arranged for personnel in such institutions who plan the meals and cook the food.

A similar type of consultation service should be available to hospitals caring for patients with acute disease or temporarily hospitalized because of a chronic condition. Nutritionally adequate diets are important in promoting recovery and convalescence, and for many patients special diets are needed.

Direct Service

Group Teaching. Dietary instruction to members of special groups should supplement measures such as the above for improving food services and facilities. Group teaching often may be used effectively to reach more persons than can be given individual advice. Nutritionists at the State level may prepare teaching manuals appropriate for specific groups to be used by local nutritionists and other health personnel and may conduct demonstration classes.

Group teaching should be utilized for persons selected as having homogeneous nutrition interests and problems. Groups for which classes might be arranged include:

(a) Pregnant women. May be drawn from prenatal clinic patients.

(b) Mothers attending well-baby clinics or receiving visits from public health nurses.

(c) Persons with chronic conditions requiring special diets, such as those with diabetes, high blood pressure, obesity, etc.

(d) Parents of school children.

(e) Clubs of high-school-age girls.

(f) Clubs of high-school-age boys.

(g) Wives of employees in industrial plants, and women employees.

(h) Members of neighborhood or social clubs, or mothers of children using neighborhood centers for boys and girls.

Individual Service. Direct service to individuals or families is in most cases provided by local public health agencies through the divisions (or bureaus) of maternal and child health, school health, adult health or chronic diseases, tuberculosis, communicable diseases, etc. Persons receiving health supervision from any of these divisions are the same persons who are most vulnerable to nutritional deficiencies and need nutritional guidance and help. With few exceptions, supervision related to the nutritional health of such individuals should be an integral part of the general health supervision and should be given by the public health nurse, physician, or other professional personnel in the operating health unit which has responsibility for the individual and his family. The function of the specialists in the nutrition unit will be largely that of training other health personnel to recognize and deal with nutrition problems and of giving consultation on request of the other health personnel. The State nutrition staff should cooperate with local nutrition specialists where such are available.

One important individual service that may be an activity of the nutrition unit is the clinical diagnosis of nutritional deficiency diseases. This service would operate chiefly on a referral basis, that is, persons suspected of having a nutritional disease needing treatment would be referred for examination from other health department units such as the school health service, tuberculosis clinic, etc. The results of the examination and recommendations would be sent to the referring health unit, which would be responsible for continuing health supervision. Physicians of the State nutrition service might arrange regular periodic diagnostic clinics in different communities, or visit clinics held by other health units, but regular health supervision would remain the function of the local health department or of other members of the State health department. As progress is made in training physicians in clinical nutrition and they gain experience in diagnosing deficiency diseases, the need for specialists to assist at health clinics and to conduct special nutrition clinics will diminish. The goal should be to have nutritional evaluation a routine part of any health examination.

In connection with nutrition surveys of samples of the population, cases of malnutrition will be discovered. The field unit making the survey will not have the staff to follow up such cases with dietary instructions and referral for any needed therapeutic service. Therefore, arrangements should be made with local health units to provide the needed follow-up of these cases. There is no better opportunity for obtaining the interest of families in nutritional health than that afforded by treatment of a recognized deficiency, and a follow-up service coordinated with a diagnostic survey can be an effective means of promoting the health of a large number of families.

Priorities in the Nutrition Program of a State Health Department

In the planning and administration of the nutrition program of a State health agency, it will be found necessary to assign priorities to the various activities which might be undertaken by its nutrition unit. This is so because available personnel and funds will not often permit a wide advance on the broad front of nutritional improvement; a new program should be a growing one, expanding into new areas as it succeeds in old; and a growing public and professional acceptance of the importance of the work done by the nutrition unit will broaden its opportunities for service. Following is a discussion of the basis upon which priorities may be assigned to the different possible activities of the nutrition unit.

Selection of Priorities

Assignment of priorities to the component parts of the nutrition program involves a decision as to their relative importance, a selection of the activities which should receive most attention and draw most heavily on funds and personnel time, and a consideration of the order in which various activities might best be initiated. Final decision in regard to these matters can only be made after careful study and due consideration of the needs and resources actually existing in the State for which the program is planned. A general discussion of some of the factors which influence the assignment of program priorities may be helpful; a model program applicable to any State can hardly be outlined at the present time. Effective planning calls for the skillful matching of nutritional needs, and resources for meeting these needs, in a given area and at a specified time.

Determination of Needs. The first step in planning a nutrition program for a State health agency is to assemble all available information which may have some bearing on the nutrition problems existing within the State. The information to be collected includes all available data concerning the State and its people in regard to

social and economic factors, health and illness, cultural patterns, educational attainment, and diet habits; all available information regarding the nutritional status of the population groups found within the State as well as studies of the nutritional status of similar population groups in other States; and information regarding available food supplies, production and distribution, retail outlets, home food production and conservation, and the relation between food costs and income levels. A careful study of this body of information will enable the director of the nutrition unit to make a number of general statements regarding the nutrition problems of his State and will call to his attention the existence of numerous localized problems in various areas and among various population groups which should receive special attention.

The provision of a survey unit to study the nutritional status of the people and to determine the prevalence and kinds of malnutrition within the State and the epidemiological factors which are responsible will be of great assistance in directly establishing the need for nutritional betterment. Such a survey program not only is an effective way of discovering needs but has the added advantage that it focuses the attention of professional and lay groups on the nutritional problems of the State.

Determination of Resources. The principal nutritional needs in the State having been listed, the resources available within the State for meeting these needs should be catalogued. These resources, of course, include not only those available within the nutrition unit of the State health department, but also those found in other official and voluntary agencies, professional groups, and lay organizations.

On the basis of a careful consideration of needs, and resources at hand for meeting these needs, the director of the nutrition unit of the State health department assigns priorities to the various activities his division is staffed to undertake, formulates long-term and short-term goals, and plans for an expanded program when additional funds and personnel shall become available. Other factors which help determine the emphasis an activity receives in his program are listed below.

Cooperation With Other Agencies. A study of the nutritional components of programs of other agencies and professional groups, together with a consideration of the proper role of the State health agency, will lead to a selection of areas in the total nutrition program in which the State health department should assume primary responsibilities and other areas in which it should assist and strengthen the work undertaken by others. Through its knowledge of the health problems resulting from malnutrition within the State, the nutrition unit of the State health department may from time to time stimulate other agencies to broaden or strengthen those services which contribute to

nutritional betterment. Unnecessary duplication is, of course, to be avoided and funds and personnel wisely utilized to produce the greatest benefit to all in cooperation with other agencies and professions.

Integration of the Health Department Program. Many of the services of the nutrition unit bear a close relationship to, and indeed are integral parts of, the programs of the various other divisions of the State health department. Cooperative planning and action in these areas of mutual interest will do much to strengthen the programs of all divisions concerned. Divisions of the health department whose programs have a nutritional component include, among others, the maternal and child health division, tuberculosis control, industrial hygiene, school health, dental health, and medical rehabilitation. Important health services with a nutritional component are provided by the divisions of public health nursing and of health education.

Indirect or Consultatory Service versus Direct Service. In planning the program of the nutrition unit of the health department, it will be necessary to decide the extent to which indirect or consultatory service will receive precedence and the extent to which direct service may be offered. Some of the factors entering into this decision may be briefly outlined.

Indirect or consultatory services conserve the time of the personnel of the nutrition unit and enable assistance to be offered on a much wider scale than would be possible if direct services were offered with limited personnel. Since they insure maximal use of the professional abilities of those in the nutrition unit, indirect services ordinarily receive precedence over direct. Numerous examples of indirect services have been included under program content. Such examples might be cited as professional education, in-service training of the personnel of the health department and other State agencies, educators, physicians, and other professional personnel; and the offering of consultatory services to governmental and voluntary agencies, health educators, legislators, educational institutions, hospitals, and industries.

Although direct service is more expensive in terms of personnel time, a limited amount of direct service can often be justified in planning the activities of the nutrition unit. Programs for professional education and in-service training, for instance, usually necessitate some direct service on an instructional basis. Early in the development of the program of the nutrition unit more direct service may be offered than would later be the case, in order to demonstrate to other agencies and professional groups the work of the nutrition unit and the importance of including nutritional services in their programs. Also, direct service may be involved in the development and evaluation of new methods for nutritional improvement.

Production of Lasting Results. In assigning priorities, emphasis

should be placed on those efforts of the nutrition unit which are most likely to produce lasting results in terms of broader programs with increased nutritional content. When assistance is offered to other agencies and professional groups, attention should be paid to the likelihood that a lasting nutritional service will be stimulated by the consultation, demonstration, and staff education supplied by the nutrition unit. Such services should increase the number of professional workers trained in nutrition and may lead to the establishment of new staff positions for nutritionists.

Periodic evaluation of the nutrition program of the State health department is essential to success and often results in changes in program emphasis. Such an evaluation should include a restudy of the nutritional needs of the State and its resources for meeting these needs. The role the health department should play in the over-all nutrition program of the State should be reviewed, as well as the place of the nutrition unit in the programs of the health agency and the previously established long-term and short-term goals of attainment for the nutrition unit. Also to be considered are newer knowledge gained from research, and the content and success of nutrition programs offered by other State health agencies.

Studies and Research. Finally, some provision should be made for carrying out studies and research in the field of nutrition. Such investigations may be stimulated by the nutrition unit on the basis of its knowledge of the health and nutritional problems of the State, and can often be undertaken on a cooperative basis with universities, medical schools, schools of public health, and other agencies. Research activities not only advance knowledge of the application of nutrition to public health, but also improve the quality of the services offered by the nutrition unit, enhance its professional standing, and provide a valuable stimulus to staff education and development.

Enough has been said to demonstrate that there are no simple rules to assist in the planning of the program of the nutrition unit of the State health department and in the assigning of priorities of importance and order to its various activities. The director of the nutrition unit must bring to his task not only a broad knowledge of the sciences of nutrition and public health, but also administrative ability and a mature judgment. To be successful, his program must be geared to needs and resources and must change in emphasis with changing demands.

Basic Program

It has been emphasized that the program of the nutrition unit of the State health department should be planned in the light of the needs and resources existing within the State. Model programs can at best serve only as guides in individual States, and the priorities

to be attached to various program components will be found to vary from State to State and from time to time. However, if these limitations are borne in mind, it is possible to formulate a basic program for the nutrition unit of a State health department, incorporating those services which would undoubtedly receive a high priority in most State programs. Such a basic program might, with modifications, serve as a starting point in initiating nutrition services in a State health department or might be adopted by a State with limited budget or personnel pending the development of more adequate resources.

Such a basic and limited program for the nutrition unit of a State health department might include:

1. The study of the State's nutritional needs and the resources for meeting these needs, the formulation of a nutrition program for the State health agency, and the demonstration and interpretation of this program to other agencies and professional groups within the State.

2. Assistance in the coordination of nutrition programs within the State through service on State nutrition committees or councils. Collaboration with other agencies in the planning and execution of special projects and programs with a nutritional content.

3. In-service training (staff education) of health and related professional personnel.

4. The preparation, selection, and distribution of educational materials (often in cooperation with the division of health education).

5. The provision of consultatory services in nutrition to the professional personnel of:

- (a) The other divisions of the health agency to augment their regular programs.

- (b) Other official and voluntary agencies in the fields of education, welfare, agriculture, health, etc., whose programs have nutritional components.

6. The provision of direct services. (Usually limited to those instances in which direct services contribute to demonstration or staff education.)

A Concept of the Physician's Role in Public Health Nutrition

The previous discussions of the evolution of nutrition services and the nutrition activities of State health departments show very clearly the need for personnel with special skills. Chemists and sanitarians were essential for the control of food and its environment. Then nutritionists under medical direction brought about the first public health application of the importance of diet and the early discoveries of certain essential nutrients. Biochemists have developed and refined

techniques for the determination of amounts and kinds of various essential nutrients in food and in body fluid. The physician recognizes many nutritional deficiencies through their clinical manifestations. The implications of these deficiencies in both health and disease have brought further realization of the universal importance of nutrition as a medical and a public health problem. There are, then, certain areas of activity for persons with different skills.

A physician with thorough training in both public health administration and clinical nutrition is preeminently qualified to be the director of the nutrition unit in a State health department. He is in a position to best administer, direct, coordinate, and interpret the many and varied activities of a nutrition unit. The physician as director also adds prestige to the unit. Until recently the director has usually been a nonmedical nutritionist for a number of reasons, among which has been the scarcity of physicians trained in nutrition. It must be remembered that in the division of responsibility for carrying out a nutrition program there are some responsibilities that are inevitably those of the administrator and others exclusively those of the physician.

The director administers the unit and plans, develops, and executes policies relating to the nutrition programs. He would collaborate with other official and nonofficial agencies where their policy and planning have a bearing on the nutrition of the people. He would cooperate with all agencies working in nutrition to promote a complete nutrition program of maximum efficiency. He may recommend legislation to carry out programs to improve the nutritional status of the population. He would direct both horizontal and longitudinal epidemiological studies of the nutritional status of population groups to provide information on the prevalence of malnutrition and its causes. He would also direct studies of dietary intake and food habits. These broad approaches provide him with opportunities for the perfection of diagnostic techniques and the development of methods for the application of the science of nutrition to various population segments and clinical conditions, and for the evaluation of preventive and therapeutic measures and professional education.

Any progressive program of nutrition in a State health department should include research studies based on local problems. Such studies may be initiated under health department auspices or in cooperation with either official or voluntary State agencies. Ordinarily, public health departments are fully occupied with preventive services and many urgent problems requiring intensive application of educational measures, leaving little opportunity for basic studies. But opportunities for applied nutrition research are unlimited. During the routine course of clinical and dietary studies, the prevalence of certain deficiencies may be found confined to certain areas, communities, or sec-

tions of the population. Such findings offer valuable opportunities for experimental therapy in a natural background. There are many diseases of both known and unknown etiology which, under closer study, may be found to be influenced by nutritional factors. Studies of selected diseases under different dietary conditions should form another promising avenue for research in nutrition by State health departments.

The director may promote and supervise special nutrition clinics which may serve the dual function of clinical research and consultation services.

The medical director is responsible for supervising the work of other physicians on survey teams or those working in nutrition clinics. In smaller States and in the beginnings of programs in larger States, the medical director of the nutrition program may double as the physician in the survey team and as the physician in the clinic research program. He also gives medical nutrition consultation to practicing physicians and institutions. He shows the physicians how to incorporate into their customary physical examinations the search for signs of nutrition deficiency. He promotes and guides nutrition training of personnel in public health activities, as well as of graduate and undergraduate personnel in medical and other professional schools, if so requested.

The director represents the unit, explains its purpose and activities to nonofficial agencies, academic institutions, and lay groups, and helps them set up effective nutrition programs. He promotes and guides public education in nutrition and checks for nutritional and medical accuracy all educational material released by his and other health department divisions and units. He keeps abreast of and interprets the latest advances in the field of human nutrition and determines their applicability to public health activities. Through his direction of the in-service training of his division staff, public health doctors, nurses, and others, the health department personnel in their turn are kept advised of latest developments in nutrition. This is of the greatest importance, as they can be most useful in carrying the knowledge and practice of nutrition further into the community.

It should be emphasized that formal training of personnel in a nutrition unit begins with the education of the physician who heads it if he is not already well trained in nutrition and public health. It is consistent with public health policy to employ a suitable physician with experience and aptitude and provide him with what further training he may require. The increased interest in nutrition shown by schools of public health is encouraging; State health departments should take advantage of it.

Nutrition is essentially a process of the body in which many internal and external environmental factors play varying roles at different

times. Diet supports nutrition, and food intake is recorded to provide information on one of the causes of deficiency states and to furnish data for dietary education.

Chemical estimations of nutrients in blood or urine generally reflect recent food intake. By themselves, however, such chemical estimations appear to be insufficient to interpret either the findings of clinicians or the symptoms of patients. Clinical examination for signs of deficiency diseases provides evidence of past and present nutrition and is essential if we are to evaluate the nutritional status of a population or an individual.

The work of the clinician in public health nutrition programs involves the collection of data pertaining to the prevalence and severity of the various manifestations of deficiency disease and their relation to internal and external environmental factors. Population samples chosen for appraisal should be selected and the data analyzed by statistical methods.

Clinical appraisal must be done by a physician trained in the science of nutrition. Clinical examinations should be comprehensive, with special emphasis on the tissues and systems which ordinarily are most likely to show pathological lesions in malnutrition.³

Careful and accurate recording of all relevant signs and symptoms will aid in assessing the present nutritional status and also in following its progress from time to time, with or without therapy.

In general, criteria for nutritional evaluation should be sufficiently gross to be easily adopted by any examining physician. They should be clearly defined and the procedures lucidly described. Diagnostic signs which are most useful in general nutrition studies are those which most promptly and uniformly regress under therapy or progress in the absence of therapy. More sensitive methods and criteria should also be provided for use in intensive studies of early or mild deficiency states where diagnosis is difficult.

Among chemical tests that may be used, the determination of hemoglobin is an important one which should be made routine in field studies. The preferred technique permits direct reading of the hemoglobin. Red cell counts and hematocrits should be done when indicated.⁴

The results of clinical assessment must be studied in the light of many contributing environmental factors. These must be analyzed thoroughly to incriminate those responsible and to organize effective ameliorative and preventive measures. The most vulnerable factors may not necessarily be the most important, but they may well be the straw breaking the camel's back. The external factors concerned

³ Nutrition surveys: Their techniques and value. National Research Council Bulletin No. 117, May 1949.

⁴ Refer to Bulletin on Nutrition Surveys for details of other tests.

in human nutrition include the prevailing dietary practices of population groups and the social and economic conditions which induce or control these practices. The internal factors concern the fate of nutrients in the body and the body functions and reactions in general.

Internal factors having an important bearing on nutritional status include body functions such as growth, pregnancy, lactation, and special situations arising from infections and toxic or chronic and debilitating diseases. Body reactions such as interference with ingestion, absorption, and utilization, increased excretion or destruction of particular nutrients in the body, and some of the causes of increased requirements, must also be considered.

Information in respect to some of the external factors may be obtained from other departments and agencies. However, dietary data collected by a carefully organized survey of a population group remain most important. Such surveys may be carried out as a basis for diet education programs independent of clinical assessment. Methods designed to detect significant differences in individual diets are not generally practical or necessary, although they may be required in special studies.

There has been considerable emphasis placed on the physician's role as director of the nutrition program in State health departments. It must be remembered that the work of the nutritionist is an essential part of a nutrition program complementing that of the physician and that the cooperation of the biochemist broadens the scope and versatility of the program.

Role of the Nutritionist in a State Health Department

The nutritionist has had a most important role in the development of nutrition programs in State health departments and, until recently, has often been the only person on the health department staff with special training in nutrition. She has often had to initiate the program and then carry it out singlehandedly. Her activities have been many and varied, dependent in large part on the administrative unit to which she was attached and the problems which were paramount in this unit, as well as on changing trends in the public health field.

The nutritionist in public health is concerned with the phase of preventive medicine that deals with the kind and amounts of food necessary for an adequate diet and the maintenance of nutritional health. In the phase of public health nutrition which deals with the detection of nutritional inadequacy and the planning of preventive and curative measures for such, the nutritionist is concerned with evaluation of the dietary intake of populations or groups and the changes in the dietary pattern necessary to prevent the recurrence of nutritional disease.

In recent years the responsibilities and duties of the public health nutritionist have been clarified, and qualifications have been defined for positions of several grades of responsibility by the Committee on Professional Education of the American Public Health Association.⁵ Activities continue to be greatly influenced by the personnel, money, and facilities which are available in the health department, as well as by the administrative assignment.

The director of the nutrition unit in a State health department should, ideally, be a physician trained in public health nutrition, but, because of budgetary limitations and shortage of trained personnel, it will be many years before this goal can be generally attained. In many areas, a nonmedical nutritionist will be in charge of the program and may, in the smallest States, be the sole person in the nutrition unit. The qualifications for such a nutritionist should be approximately as follows: 5 years, within the past 10 years, of experience in public health nutrition, including research projects, 2 years of which shall have included broad administrative responsibilities, and graduation from a recognized college or university with major work in foods and nutrition supplemented by 1 year of graduate work in nutrition.

The position is a highly responsible one and involves "development, direction, integration, evaluation and administration of food and nutrition programs throughout the State" under the general direction of the State health officer or someone deputized by him. The duties include formulation of plans and policies, coordination within the State health department, cooperation with related agencies, guidance of in-service training programs, consultant and information services, and supervision of public health nutritionists of lower administrative levels. The nutritionist must have "Extensive technical knowledge of the principles and practices of dietetics and nutrition and ability to interpret and apply them as related to public health, community, individual and family food problems and ability to develop and coordinate educational activities at the State level."

Especially when a nonmedical nutritionist is responsible for the nutrition program in a State health department, resourcefulness is needed in order to obtain the information and assistance necessary for delineation of existing problems and for carrying out a program to meet these problems. Interest must be stimulated in professional and lay groups and cooperative work undertaken. Assistance may often be obtained from colleges, medical schools, and other training centers in the State, and from various State and voluntary agencies. The nutritionist may undertake dietary surveys in cooperation with some of the groups noted. Such surveys, carefully planned and executed, stimulate interest in nutrition and are a good starting point for interagency cooperation. Often long-range plans can emerge

⁵ American Journal of Public Health, 36: 45-50, January 1946.

from this beginning. If physicians trained in nutrition are practicing in the community or in a nearby medical school, their cooperation may be solicited on a voluntary or part-time basis and clinical appraisal of nutritional status carried out in selected population segments.

The nutritionist can stimulate interest in the formation of a State nutrition committee or council and may serve on this council. She can represent the health department at conferences and meetings in which there is a nutritional component. One of her chief duties is developing among the personnel of the State health department itself an awareness of nutrition problems and of interrelationships with other aspects of the public health program. The head of the nutrition staff has a definite responsibility for recruiting as well as training personnel. Administrative duties increase as new workers are added to the unit and as the program expands.

The nutritionist should keep in close touch with national programs and obtain literature and other visual aids as they become available. National plans may be adapted to State needs and all material evaluated in the light of the State program. It is incumbent upon the nutrition staff to keep up with the advances in the field of nutrition. Participation in professional groups at the national level will be of great assistance in this respect.

The work of the nutritionist is complementary to that of the physician, whether he be director of the nutrition unit or a physician in charge of other public health programs. Certain aspects of the program are particularly the responsibility of the nutritionist. These include fact-finding in regard to dietary habits, methods of cookery, production and availability of foods, budgeting and meal planning, and administration of quantity food service. She will also be concerned with preparation and evaluation of educational materials, demonstrations, and dietary consultation. She assists in program planning and in supervising research. She contributes to the in-service training program in many ways, through personal contacts, written material, staff meetings, conferences, regional meetings, and formal courses. Some health departments have a training center with teaching facilities for formal classes and supervised field experience. Training may also be carried out in selected areas of the State in regularly scheduled clinics or conferences, or in specially planned workshops and institutes. One of the nutritionist's important responsibilities is the training of the public health workers in nutrition. The assistance and cooperation of the public health nurse and health educator is of vital importance in any effective nutrition program.

The nutritionist has an important role in the coordination of nutrition activities within the health department and in cooperating with other official and nonofficial agencies. An example of intra-agency

coordination would be in the preparation of a visual aid or a pamphlet for distribution. If the material concerned a diet in pregnancy, the groups involved would include the maternal and child health unit, the obstetrical consultant, the public health nursing unit, the health educator, and perhaps the artist and editorial assistant. When planning nutrition programs with other groups, one should have long-range goals, but there should also be some immediate purposes that are easy to accomplish in order to get group experience in cooperation.

Where money and organization permit, there will often be regional nutritionists assigned to work in designated areas, in addition to the physician and/or chief nutritionist in the State nutrition unit. The regional nutritionist will be on an organization level with regional public health nurses, sanitarians, and other consultants. The regional nutritionist receives guidance from the head of the State unit in adapting the State program to her region and is available for consultation to the local health units in her area. She gives professional guidance to nutritionists who function in the local health units. In areas where no local nutritionists are available, she assists the local units in program planning, prepares informational material, talks, etc., and sponsors local nutrition committees and cooperative work among local agencies. She may participate in planning basic training and in-service education for nurses, teachers, social workers, and other professional groups.

She will provide few direct services except where these services are in the nature of a demonstration to public health nurses or others. A nutritionist who takes a public nurse, a welfare worker, and a county agent in home economics into a grocery store to demonstrate better buying practices gives each agency worker much to pass on to the people with whom she is concerned. A demonstration of the use of dried skim milk to a group of lunchroom managers may indirectly benefit hundreds of children.

Where the nutrition unit consists of only one person, a combination of the duties of head of the unit, regional nutritionist, and, at times, even local nutritionist becomes a necessity, and one must do everything from serving on State committees to helping in a local health unit.

In some organizations, special consultants are included in the nutrition unit in addition to the physician, chief nutritionist, and regional nutritionists. Such consultants serve on a state-wide basis and are responsible to the head of the nutrition unit and to the group served. A consultant in institutional management or hospital dietetics, or an industrial consultant, are examples of the type of specialist that may be desirable in certain States.

The administrative location of the nutrition unit influences the work of the nutritionist, especially in the beginning of the program.

For example, if the nutrition unit begins as a part of the maternal and child health program, work in this field will be predominant at first; if the unit is placed in the division of preventive medicine, which includes industrial hygiene as well as nutrition, work with industry will develop early in the program. In all events, the nutrition group should envisage a broad program that will cross many lines in the administrative set-up.

Whatever the State nutrition program, there will always be a need to interpret to individuals the conditions which have been uncovered and ways to better these conditions; to motivate individuals to desire to eat the proper foods and to learn how to achieve good nutrition within existing financial and environmental limitations. This makes the nutritionist's job a very personal one, but one which, in most instances, will be accomplished indirectly by motivating and training other workers, such as the public health nurse, the elementary and high-school teacher, the welfare worker who visits the home, and the volunteer worker, to help individual people to better their own nutrition.

It is of particular importance that the nutrition program of the State health department be closely geared to nutrition activities of the extension service and of the departments of agriculture and education, on both State and local levels, so that there will be no overlapping, fewer gaps, and better use of available resources. This involves continuous interagency planning and evaluation.

Organization of Nutrition Programs in State Health Departments

There has been a growing appreciation of the need for an organization in State health departments to deal adequately with nutrition problems in the State. At the present time, most State health departments have personnel devoting part time or full time in this field. The organization of this activity varies greatly from State to State. In some instances, it is confined to one nutritionist assigned to a special phase of a division's program, while in others it has assumed divisional or bureau status comparable to that for other major activities.

The several States vary widely in population, area, wealth, and nutritional problems. Furthermore, the basic structure of administration and operation varies between States. Therefore, it is not practical, nor it is desirable, to suggest a rigid pattern of organization which would be generally applicable in all instances. It is possible, however, to envisage a framework of organization within which most States can develop and operate a satisfactory program.

In each State, there should be established in the framework of the health department a separate unit corresponding to a major organizational subdivision. Such a unit would assume responsibility for initiating and directing programs appropriate to deal with nutrition problems in the State. The unit approach would enable the health department to define the needs and evaluate the efforts to meet them. Such a unit approach would more likely assure a coordinated program throughout the department.

A public health program for nutrition evaluation and improvement should include a combination medical, dietary, and biochemical approach. Within the staff, therefore, there should be included a physician, trained in nutrition and public health; a chief nutritionist; regional nutrition consultants as needed; one or more consultant dietitians for institutions, and either a biochemist or assurance of availability of adequate services from a laboratory equipped to perform the necessary biochemical tests. There should also be arrangements for consultation and services as required from health education specialists and statisticians.

Where practicable, a nutrition epidemiological field team consisting of a physician, nutritionist, nurse, and technicians should be organized for carrying on investigations, surveys, and demonstrations.

In States where there is decentralization of administration through district or regional offices, nutrition consultants should be assigned to work under the district or regional director, with technical direction from the central staff.

In States which do not have the resources to permit the employment of qualified nutrition personnel for complete staffing of the nutrition unit on a full-time basis, other arrangements for services and consultation should be made. The nutrition program may be greatly assisted by working closely with nutrition committees, councils, professional schools, other State department groups, interested civic organizations, and business and professional associations. It is essential, however, that responsibility for direction and operation of nutritional activities be vested in a person high in the organizational structure of the State health department. He should be able to discuss nutritional problems, their application to different fields, and their relationships to over-all policy on an equal professional footing with other policy-making staff members. The operations should be carried on as a unit activity with close coordination with other units, since nutrition problems are inherent in most health department activities. In certain programs, it may be desirable to assign such personnel to other major divisions or even other State departments, such as those responsible for institutional care. However, in these instances, such personnel should receive their technical direction from the director of the nutrition unit.

SUBCOMMITTEE MEMBERS

The members of the subcommittee of the Committee on Diagnosis and Pathology of Nutritional Deficiencies are Grace Goldsmith, M. D., Associate Professor of Medicine, School of Medicine, Tulane University of Louisiana, New Orleans, La.; Gaylord Anderson, M. D., School of Public Health, The Medical School, University of Minnesota, Minneapolis, Minn.; John Browe, M. D., New York State Department of Health, Albany, N. Y.; A. Hughes Bryan, M. D., Professor of Public Health Nutrition, School of Public Health, University of North Carolina, Chapel Hill, N. C.; Miss Marjorie Heseltine, Nutrition Unit Director, Children's Bureau, Federal Security Agency, Washington, D. C.; Herman E. Hilleboe, M. D., Commissioner of Health, State Department of Health, Albany, N. Y.; Harold R. Sandstead, M. D., Chief, Nutrition Branch, Division of Chronic Disease, Public Health Service, Washington, D. C.; Miss Jane Sedgwick, State Department of Corrections, 417-429 State Office Building No. 1, Sacramento 14, Calif.; Miss Dorothy G. Wiehl, Milbank Memorial Fund, 40 Wall Street, New York, N. Y. In addition, recognition of the assistance given the chairman by Miss Margaret Moore, Consultant on Nutrition, State Department of Health, New Orleans, La., is recorded gratefully.

Notifiable Diseases, Fourth Quarter, 1949¹

instances, cases are reported in some States of diseases that are not required by law or regulation to be reported, and the figures are included although manifestly incomplete. There are also variations among the States in the degree of, and checks on, the completeness of reporting of cases of the notifiable diseases; therefore, comparisons between States may not be justified for certain diseases. As compared with the deaths, incomplete case reports are obvious for such diseases as malaria, pellagra, pneumonia, and tuberculosis, while in many States other diseases, such as cancer, puerperal septicemia, rheumatic fever, and Vincent's infection, are not reportable. However, the figures are recorded as reported.

The table gives a general picture of the geographic distribution of certain diseases, as the States are arranged by geographic areas. Leaders are used in the table to indicate that no case of the disease was reported.

The figures in the following table are the totals of the monthly morbidity reports received from State health authorities for October, November, and December 1949. They are provisional and are subject to correction by final reports. They may be assumed to represent the civilian population only, although in some instances a few cases in the military population may be included. The comparisons made are with similar provisional reports; but owing to population shifts in many States since the 1940 census, the figures for some States may not be comparable with those for prior years, especially for certain diseases. Each State health officer has been requested to include in the monthly report for his State all diseases that are required by law or regulation to be reported in the State, although some do not do so. The list of diseases required to be reported is not the same for each State. Only a few of the common communicable diseases are notifiable in all the States. In some

Consolidated Monthly State Morbidity Reports for October, November, and December 1949

Division and State	An-thrax	Chick- enpox	Con- juncti- vitis ²	Diph- theria*	Dys- en- teric, ame- bic	Dys- en- tery, bacil- lary	Dys- en- tery, unde- fined	En- ceph- alitis, infec- tious	Ger- man meas- les	Hook worm disease	Infl- uenza	Ma- larial ³	Meas- les*	Menin- gitis, menin- gococ- cal*	Mumps	Oph- thal- mia neona- torum	Pella- gra	Pneu- monia, all forms
NEW ENGLAND																		
Maine.....		536		1					104		2		443	6	816			209
New Hampshire.....		191							9		5		15	1	94			46
Vermont.....		1,056	1						49				361	14	890			1
Massachusetts.....		2,688		52		36	8	1	50			3	361	14	1,162	31		61
Rhode Island.....		334				8			28		2		28	1	374			61
Connecticut.....		743	1	5	1	16	2		44		2		191	17	537	1		502
MIDDLE ATLANTIC																		
New York.....	2	3,273	4	80	260	187	11		168	29	15	11	1,059	53	1,332	7		2,657
New Jersey.....	1	2,925		17	17	4	4		161		50	6	1,134	21	654	2		861
Pennsylvania.....	4	4,091		46	4	5	3		112		18		658	75	2,769	7		815
EAST NORTH CENTRAL																		
Ohio.....		2,405	1	91	20	7	1		97	1	24		277	46	1,259	159		717
Indiana.....		448		105	4	2	14		101		64		290	15	261			92
Illinois.....		2,092	46	9	132	48	8		103		21	10	372	50	1,377	47		1,001
Michigan.....		3,330	64	29	128	184	15		235	12	11		3,362	39	1,043	5		448
Wisconsin.....		4,305		7			1		176		120	1	713	10	1,470			97

WEST NORTH CENTRAL

Minnesota.....	703	35	4	55	1	1	4	1	549	14	119
Iowa.....	501	13	2	6	2	2	13	1	659	12	11
Missouri.....	362	40	8	13	8	1	2,441	16	378	20	181
North Dakota.....	326	12	1	2	25	99	379	99	158	2	193
South Dakota.....	203	5	3	3	11	1	204	73	26	3	7
Nebraska.....	667	6	1	18	1	2	545	121	290	2	31
Kansas.....	1,167	12	1	12	6	11	72	44	2,068	8	249

SOUTH ATLANTIC

Delaware.....	24	2	2	6	2	14	13	1	45	8	6
Maryland.....	593	27	14	13	889	1	2,441	5	180	4	432
District of Columbia.....	71	14	2	3	1	23	379	2	225	2	156
Virginia.....	503	114	2	3	1	1	204	7	117	11	701
West Virginia.....	278	82	48	18	2	2	545	442	20	117	86
North Carolina.....	152	275	3	8	2	2	907	30	127	21	161
South Carolina.....	184	225	19	29	2	4	545	11	68	12	440
Georgia.....	156	56	28	12	1	2,256	72	6	183	7	179
Florida.....	228	142	10	13	3	10	12	2	131	36	293
Kentucky.....	238	163	28	33	7	13	271	7	203	2	605
Tennessee.....	236	146	6	6	2	2	369	29	36	10	521
Alabama.....	146	143	20	11	2	864	864	11	23	13	238
Mississippi.....	143	143	20	11	2	864	864	11	157	9	238

EAST SOUTH CENTRAL

Arkansas.....	327	75	55	13	57	1	777	24	57	15	431
Louisiana.....	62	82	120	2	21	1	290	1	45	9	292
Oklahoma.....	395	39	24	5	5,772	8	736	15	32	10	283
Texas.....	2,373	304	174	5,772	5,472	23	8	429	450	73	3,038

WEST NORTH CENTRAL

Montana.....	1,229	9	1	1	2	1	30	30	548	3	7
Idaho.....	557	27	7	10	10	1	203	203	65	4	103
Wyoming.....	142	2	2	24	24	8	263	2	55	3	29
Colorado.....	802	18	2	67	26	35	263	2	274	13	177
New Mexico.....	172	5	9	21	26	10	1,215	5	246	2	93
New Mexico.....	424	5	42	253	26	29	1,215	5	473	6	147
Arizona.....	1,203	9	25	1	1	1	82	1	802	3	21
Utah.....	29	1	1	7	7	1	82	1	15	4	13
Nevada.....	29	1	1	7	7	1	82	1	15	4	13

MOUNTAIN

Washington.....	2,335	89	10	12	48	2	72	13	1,067	13	167
Oregon.....	1,140	12	34	10	5	6	103	6	249	6	229
California.....	4,058	112	82	181	20	494	103	6	772	59	387

PACIFIC

Total.....	50,105	357	1,304	7,032	6,677	191	4,302	627	18,179	837	326
Fourth quarter 1948.....	67,358	322	1,254	7,353	5,489	117	4,202	1,626	49,928	787	44
Median 1944-48.....	61,310	322	888	5,898	2,143	135	3,812	6,694	25,449	849	133
Alaska.....	90	1	2	24	2	26	7	2,907	531	1	150
Hawaii Territory.....	299	15	18	10	6	12	2,907	192	17	1	163
Panama Canal Zone.....	48	1	2	10	6	20	2,907	192	72	1	59

See footnotes on page 450.

Consolidated Monthly State Morbidity Reports for October, November, and December, 1949—Continued

Division and State	Polio- myelitis*	Rabies in man	Rhet- matic fever	Rooky Mt. spotted fever	Scarlet fever*	Septic sore throat	Small- pox*	Teta- nus	Trach- oma	Trich- inosis	Tuber- culosis, all forms*	Tuber- culosis, respir- atory	Tula- remia	Ty- phoid fever*	Pare- ty- phoid fever*	Ty- phus fever, en- demic	Undu- lant fever*	Vin- cent's infect- ion	Whoop- ing cough*
NEW ENGLAND																			
Maine.....	82		2		88	7					100	92		7			5		105
New Hampshire.....	26				45	11				2	43								125
Vermont.....	49				39	3													110
Massachusetts.....	339				617	16		2	1	9	605	579		4	30		4	1	1,301
Rhode Island.....	60		16		77	4					114	101		1				1	1,140
Connecticut.....	214				128	34		1		3	326	309		2	2		5		1,032
MIDDLE ATLANTIC																			
New York.....	1,156			1	7,736	(1)		10	26	26	3,136	2,923	3	26	20		29		2,629
New Jersey.....	415				258	15		1	4	4	698		2	7	1	1	5		1,990
Pennsylvania.....	294		172		593					1	1,062			46	10		19		2,309
EAST NORTH CENTRAL																			
Ohio.....	357		23		1,628	25		1		1			14	18	3		8	5	1,192
Indiana.....	286				1,395	6		3	2		538	498		7	9		7	11	263
Illinois.....	474		37		439	8		9	4		2,114	1,987	29	24			114	34	1,197
Michigan.....	630		136		921	95		3		7	1,703		5	12	35		47		1,912
Wisconsin.....	295				475	22					462			6			51		1,387
WEST NORTH CENTRAL																			
Minnesota.....	337		13		268	18					437			3	7		43		98
Iowa.....	336				163	8				10	202				3		57		48
Missouri.....	217				152	1			143		640		17	43			19		149
North Dakota.....	27		3		45						68	62					8	15	23
South Dakota.....	65				31	4			1		69						14		21
Nebraska.....	183		1		733	(1)		4			70			1			17		41
Kansas.....	152		3		218	5		2	3		133	90	2	4	2		41	75	162
SOUTH ATLANTIC																			
Delaware.....	8		1		33						69	69		5					128
Maryland.....	99		23		201	8		6			671	647	7	7		1	11	4	592
District of Columbia.....	28				57												5		32
Virginia.....	89		2	4	347	542		1			1,010	992	12	34	10		17		300
West Virginia.....	50	1	6		215	44					645	641	6	19	2		8		341
North Carolina.....	52		7		1,086	13	1				711	673	7	11	1		4		331
South Carolina.....	23		12		119	21		4						17	1		10		78
Georgia.....	77		22	3	328	77		12			689	673	34	7	5		5	7	78
Florida.....	87				89	25		10			632		7	9	43		19	27	29

EAST SOUTH CENTRAL													
Kentucky.....	180	665	25	1	9	506	306	4	26	6	8	1	159
Tennessee.....	126	724	52	2	7	1,544	11	11	24	6	11	21	310
Alabama.....	55	297	8	8	7	575	2	2	5	3	43	24	92
Mississippi.....	72	132	5	5	1	555	4	4	14	3	3	16	50
WEST SOUTH CENTRAL													
Arkansas.....	123	57	341	4	30	519	517	22	19	1	4	3	170
Louisiana.....	33	46	3	10	4	480	464	6	14	4	20	7	33
Oklahoma.....	270	128	65	1	17	511	503	13	14	2	32	42	72
Texas.....	464	324	1,302	13	13	1,143	13	13	53	15	52	53	966
MOUNTAIN													
Montana.....	26	95	21	1	1	112	107	18	2	2	5	2	18
Idaho.....	135	74	164	1	1	31	16	5	2	1	5	2	23
Wyoming.....	31	39	1	1	1	16	12	1	1	1	2	3	24
Colorado.....	147	105	109	8	8	763	8	10	10	4	26	29	97
New Mexico.....	35	63	6	2	2	* 289	* 277	1	14	1	2	2	90
Arizona.....	35	68	448	2	10	680	647	1	11	3	2	2	167
Utah.....	108	54	41	1	1	87	82	6	1	1	10	8	125
Nevada.....	12	5	41	3	3	8	8	1	1	1	2	2	15
PACIFIC													
Washington.....	134	532	40	1	1	508	164	2	1	11	4	43	256
Oregon.....	149	187	61	1	1	181	181	2	2	29	29	29	181
California.....	857	991	140	10	1	2,089	1,944	2	30	100	9	30	1,261
Total.....	9,554	14,510	3,830	123	255	27,532	15,903	260	574	335	297	827	349
Fourth quarter 1945.....	9,012	13,522	3,671	144	643	21,847	17,308	304	710	297	317	986	290
Median 1944-48.....	4,606	22,862	3,684	108	443	29,976	17,282	282	717	272	688	1,262	560
Alaska.....													
Hawaii Territory.....	1	4	36	1	1	54	7	1	1	4	6	2	4
Panama Canal Zone.....	2	7	3	2	2	8	8	1	6	4	1	1	25

See footnotes on page 450.

On the basis of information in the latest compilation of the reportable diseases in the several States (Pub. Health Rep. 69:317-340 (1944) Reprint 2644), diseases marked with an () are reportable by law or regulation in all States and the District of Columbia. Typhoid fever is reportable in all States, and paratyphoid fever in all but 6 States. A few States have begun to report paratyphoid fever as "salmonellosis." Syphilis is reportable in all States but is not included in the table, as more complete reports are issued later by the Division of Venereal Diseases Control. Some States have increased and some have reduced the list of reportable diseases since the latest compilation cited above.

† For first quarter report see Pub. Health Rep. 64: 627 (1949); second quarter, *ibid.*: p. 1306; third quarter, *ibid.*: p. 1620.

‡ Includes cases of kerato, suppurative conjunctivitis, and pink eye.

§ All cases contracted within the continental United States, with the exception of those in a few States.

¶ New York City only.

‡‡ Includes the cities of Colon and Panama.

§§ Includes cases reported as Salmonella infection.

¶¶ Includes septic sore throat.

‡‡‡ Includes in scarlet fever.

§§§ Includes nonresident cases.

†† 3-year median 1946-48.

The following list includes certain rare conditions, diseases of restricted geographical distribution, and those reportable in or reported by only a few States: last year's figures in parentheses (where no figures are given, no cases were reported last year, or the disease was not included in last year's published tabulation).

Aethnomyiasis: Hawaii 1.

Botulism: New Jersey 3, Kentucky 7, Montana 1.

Cancer: Pennsylvania 2,339, North Dakota 178 (206), Kansas 1,205 (1,194), South Carolina 105 (225), Georgia 70 (59), Florida 2,090 (includes 1,480 cases reported in October (not previously reported) obtained from death certificates (428), Kentucky 3 (18), Tennessee 908 (1,019), Alabama 1,183 (896), Arkansas 135 (154), Louisiana 533 (520), Montana 333 (343), Idaho 146 (164), Wyoming 88, Colorado 874, New Mexico 223 (150), Utah 212 (46) (includes nonresidents, Nevada 7 (3)).

Cocciidiodomycosis: Arizona 28 (9), Colorado 22 (19).

Colorado tick fever: Utah 1 nonresident.

Dengue: Georgia 2, Texas 4 (4).

Dermatitis: New Hampshire 4 (1), Missouri 1 (9), New Mexico 8.

Diarrhea: Connecticut 1 (6), New York 163 (70), New Jersey 1, Pennsylvania 73 (120) (includes enteritis), Ohio 524 (340) (includes enteritis), Indiana 1 (1), Illinois 25 (17), Michigan 16 (31), Minnesota 21, Maryland 28 (12), West Virginia 6, South Carolina 41, epidemic (213, all forms), Florida 29 (35), Oklahoma 3 (2), Texas 1,716, Idaho 24 (73) (includes gastroenteritis), New Mexico 109 (96), Colorado 30 (35), Alaska 100 (23) (includes enteritis).

Encephalitis (other forms): Ohio 4 (2), Maryland 1 (4), Montana 1.

Erysipelas: Connecticut 6 (5), Pennsylvania 5, Ohio 8 (3), Indiana 4 (1), Illinois 87 (70), Michigan 21 (28), Wisconsin 6 (11), Minnesota 1, Iowa 3, Missouri 2, North Dakota 4, South Dakota 1 (2), Kansas 1 (1), Maryland 1 (7), Florida 5 (13), Kentucky 1 (3), Tennessee 9 (8), Arkansas 1 (5), Montana 1 (1), Idaho 5 (2), Wyoming 1, New Mexico 2, Utah 1, Nevada 1 (1), Washington 4, Oregon 13 (7).

Favus: Michigan 1.

Food poisoning: Connecticut 11, New York 228 (434), New Jersey 20 (3), Ohio 11 (8), Indiana 4 cases reported as food infection, Illinois 64 (48) (includes cases reported as food infection, Minnesota 61 (146) Oklahoma 15, Montana 45, Idaho 1 (2), New Mexico 2 (13), Washington 107 (41), Oregon 11 (11), California 237 (266).

Impetigo contagiosa: Vermont 1 (1), Rhode Island 2 (1), New York 117 (36), Ohio 116 (86), Indiana 8 (10), Illinois 3 (13), Michigan 425 (637), Missouri 13 (32), North Dakota 4 (4), Kansas 11 (17), Kentucky 27 (14), Montana 5 (39), Idaho 42 (31), Wyoming 1 (7), Colorado 26 (8), Nevada 27 (26), Washington 432 (284), Alaska 26 (3), Hawaii 20 (14), Jaundice: Maine 3 (7), Connecticut 7, New York 81 (52), Pennsylvania 244 (19), Illinois 19 (3), Michigan 16, Minnesota 7 (4), Kansas 1, Maryland 2 (4), Tennessee 14 (2), Louisiana 1 (1), Montana 2, Wyoming 2, Arizona 2 (6), Nevada 1, Washington 4 (2), Oregon 172 (11), California 122 (46), Alaska 1, Hawaii Territory 4 (3), Panama Canal Zone 11 (4).

Leprosy: New York 6 (2), Louisiana 1 (1), California 2 (2), Hawaii 8 (7).

Lymphocytic choriomeningitis: Minnesota 2, Tennessee 3 (3), choriomeningitis undefined.

Monomelicosis: Connecticut 45 (23), Pennsylvania 2, Ohio 1, Michigan 58 (42), Minnesota 91 (69), Maryland 3 (11), Kentucky 4 (7), Tennessee 8 (10), Oklahoma 2, Montana 2, Idaho 3 (1), Arizona 1, Washington 3.

Pellagra: Kansas (Georgia 28 (18), Tennessee 4 (4), Alabama 8 (1), Arkansas 1, Louisiana 2 (1), Oklahoma 2 (9), Mexico 1, Hawaii 1.

Plague (human): New Mexico 1, Hawaii 1.

Pittacosis: California 6 (9).

Perlepra septicaemia: Pennsylvania 2.

Rabies in animals: New York 195 (443), New Jersey 4, Pennsylvania 5 (27), Ohio 103 (197), Indiana 134 (162), Illinois 102 (18), Michigan 40 (63), Wisconsin 5 (1), Minnesota 4 (1), Iowa 36 (9), Kansas 29 (6), District of Columbia 1, Virginia 21 (29), West Virginia 32, South Carolina 47 (42), Georgia 105 (86), Florida 4 (76), Kentucky 126 (152), Tennessee 380, Alabama 73 (67), Arkansas 20 (22), Louisiana 3 (4), Oklahoma 21 (37), Texas 239 (350), Colorado 9, California 14 (51).

Rat bite fever: Ohio 1 (1), Oklahoma 1.

Relapsing fever: Texas 5 (15), California 4 (1).

Rickettsialpox: New York 33 (31).

Ringworm disease: Connecticut 44 (11), Ohio 174 (36), Indiana 38 (22), Illinois 667 (849), Michigan 568 (546), Minnesota 5 (13), Iowa 5 (18), Missouri 5 (9), Kansas 39 (42), Virginia 99, South Carolina 2, Georgia 35 (35), Nevada 1 (1), Washington 464 (383), Oregon 35 (3), Alaska 5.

Scabies: Pennsylvania 78 (109), Ohio 33 (37), Michigan 248 (383), Missouri 17 (23), North Dakota 10, Kansas 17 (17), Kentucky 76 (38), Montana 7 (43), Idaho 25 (51), Wyoming 5 (9), Nevada 4 (2), Alaska 4 (4).

Schistosomiasis: New York (City) 16 (11).

Silicosis: Idaho 4 (8), New Mexico 3 (4), Utah 3.

Yaws: Panama Canal Zone 9 (11).

INCIDENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED MARCH 11, 1950

For the current week in the Nation, reported cases of influenza increased from 24,705 to 27,045. For the corresponding week last year, 3,948 cases were reported. The 5-year (1945-49) median is 5,532.

The cumulative total is 115,946 as compared with the corresponding total of 45,307 for 1949 and 165,882 for 1946, the highest year during the last 5 years.

Relatively large increases were reported in Iowa (from 35 to 159), South Carolina (from 88 to 389), West Virginia (from 974 to 2,047), and Wisconsin (from 80 to 209).

The reported incidence of influenza increased for the current week over the preceding week in the following geographic divisions: East North Central (126 to 227), South Atlantic (7,047 to 9,334), and West South Central (12,555 to 13,989). The Pacific Division increased slightly because 42 cases were reported in Oregon as compared with 11 the preceding week. The East South Central and Mountain Divisions decreased, and the remaining divisions showed little change from the previous week.

Reported incidence of meningococcal meningitis totaled 103 for the week as compared with 87 last week, 73 for the corresponding week of 1949, and 90 for the 5-year median. Reported incidence of typhoid and paratyphoid fever increased from 45 to 63 cases, and tularemia from 20 to 30.

The number of reported cases of acute poliomyelitis was 86 for the week as compared with 82 for the preceding week, 65 for the corresponding week last year, and 38 for the 5-year median.

One case of smallpox was reported in South Dakota; two cases of psittacosis were reported in Steubenville, Ohio; and one case each of anthrax was reported in Delaware and Massachusetts.

Of 42 States reporting on rabies in animals, for 22 there were no cases. The remaining 20 States reported 185 cases with the largest number of cases in Texas (47) and New York (19). The cumulative total is 1,473 cases of rabies in animals for the current year.

Telegraphic case reports from State health officers for the week ended March 11, 1950
(Leaders indicate that no cases were reported)

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Menigitis, meningococcal	Pneumonia	Polio-myelitis	Rocky Mt. spotted fever	Scarlet fever	Small-pox	Tularemia	Typhoid and paratyphoid fever	Whooping cough	Rabies in animals
NEW ENGLAND														
Maine.....				72	1	15	1		10				24	
New Hampshire.....			1	22		6			9				9	
Vermont.....				208					149			1	155	
Massachusetts.....	3	2			2				10				27	
Rhode Island.....					1	6			22			1		
Connecticut.....	2			28	1	56							163	
MIDDLE ATLANTIC														
New York.....	7	2	219	804	10	327	4		169			8	191	19
New Jersey.....	3		8	1,018	1	72	2		55			1	169	1
Pennsylvania.....	10			398	7	94	1		164			5	226	4
EAST NORTH CENTRAL														
Ohio.....			7	223	6	48			295			1	264	13
Indiana.....	2		1	38					37				23	
Illinois.....	1		5	182	9	108	3		81			1	83	2
Michigan.....		2		2,110	1	38	5		112		2		253	6
Wisconsin.....	2		209	529	4	23			87		1	1	74	
WEST NORTH CENTRAL														
Minnesota.....	1		10	59	2	20	4		39				23	6
Iowa.....	3		169	1,083		2			14				4	
Missouri.....	3		20		1	27			30		5		34	
North Dakota.....		1	63	17	60	60			10				2	
South Dakota.....				4	4					1			2	
Nebraska.....	5		25	84	1	1			21				8	
Kansas.....			71	12	20				35		2		27	2
SOUTH ATLANTIC														
Delaware.....				28	2				7			1	6	
Maryland.....	3		19	56		47			43			1	73	
District of Columbia.....				98	1	22			5			1	5	
Virginia.....	6		6,534	47	8	155			21			3	40	1
West Virginia.....	9		2,047	207	1	45	1		40				47	14
North Carolina.....	9		162	162	1				23				45	
South Carolina.....	3	1	369	56	1	13		1	12				17	5
Georgia.....	3	1	339	53	2	20	1		13			2	15	15
Florida.....	3		6	41	1	13			2				7	4

EAST SOUTH CENTRAL		1	13	93	2	11	1	24	17	37	11
Kentucky.....	6	589	97	7	1	32	17	32	46	3	3
Tennessee.....	2	521	44	3	63	10	2	10	1	11	12
Alabama.....	5	101	102	3	47	4	3	4	3	3	9
Mississippi.....											
WEST SOUTH CENTRAL		4	788	20	1	81	1	3	3	28	---
Arkansas.....	2	5	12	2	2	25	2	8	2	3	---
Louisiana.....	7	2,072	6	1	91	17	2	17	2	16	---
Oklahoma.....	25	11,124	325	9	1,026	40	33	40	2	241	47
Texas.....											
MOUNTAIN		4	1,007	72	1	9 <th>2</th> <th>7</th> <th>--- <th>4</th> <th>--- </th></th>	2	7	--- <th>4</th> <th>--- </th>	4	---
Montana.....		154	209	1	4	27	1	27	4	4	---
Idaho.....		424	112	1	40	15	1	15	19	2	---
Wyoming.....	1	1	40	5	2	6	2	6	5	22	8
Colorado.....	1	151	108	4	41	11	1	11	1	80	---
New Mexico.....		94	174	1	4	7	1	7	---	18	---
Arizona.....											
Utah.....											
Nevada.....											
PACIFIC		1	5	38	2	3	--- <th>46</th> <th>--- <th>36</th> <th>--- </th></th>	46	--- <th>36</th> <th>--- </th>	36	---
Washington.....		42	19	11	4	36	---	36	---	36	---
Oregon.....	8	13	362	8	66	147	---	147	5	160	3
California.....											
Total.....	143	27,045	9,497	103	2,764	86	86	1,924	1	2,807	185
Median, 1945-49.....	248	5,532	20,408	90	38	38	1	3,079	8	2,264	---
Year to date 10 weeks.....		1,633	115,946	64,082	866	24,541	1,066	17,700	4	25,267	1,473
Median, 1945-49.....	2,972	62,582	122,429	570	443	10	430	28,020	13	22,390	---
Seasonal low week ends.....	(27th)	69	(35th)	(37th)	(11th)	6	(36th)	(32d)	471	437	---
Since seasonal low week.....	July 30	July 30	Sept. 3	Sept. 17	Mar. 19	3	Sept. 3	Aug. 13	Mar. 19	3	---
Since seasonal low week.....	5,904	146,476	83,212	1,769	42,648	34,139	4	34,139	3,844	46,803	---
Median, 1944-45 to 1948-49.....	10,538	95,557	148,553	1,906	19,382	94	94	83,431	3,965	46,477	---

1 Including cases reported as salmonellosis.

2 New York City only.

3 Inclusions cases reported as streptococcal sore throat.

4 Inclusions: Smallpox—Wyoming, week ended Feb. 25, 2 cases; tularemia—Arkansas, week ended Jan. 28, 1 case.

5 Anthrax: Delaware and Massachusetts 1 case each.

6 Pertussis: Ohio, 2 cases.

7 Alaska: Influenza 63, measles 10.

8 Hawaii: Influenza 7, pneumonia 1.

PLAGUE INFECTION IN LEA COUNTY, N. MEX.

Under date of March 9, 1950, plague infection was proved in Lea County from the following specimens: Fifty fleas, *Anomiopsyllus* sp. from 14 wood rats, *Neotoma albigula* trapped February 21, 1950, 1 mile east of Hobbs; 46 fleas, 45 *Anomiopsyllus* sp. and 1 *Orchopeas sexdentatus*, from a wood rat nest, *Neotoma*, 1 mile north of Hobbs; and 18 fleas, *Orchopeas sexdentatus*, from 5 wood rats, *Neotoma albigula*, trapped February 25, on U. S. Highway 62, 8 miles west of Hobbs.

DEATHS DURING WEEK ENDED MARCH 11, 1950

	Week ended Mar. 11, 1950	Correspond- ing week, 1949
Data for 94 large cities of the United States:		
Total deaths.....	10,464	9,829
Median for 3 prior years.....	9,829	-----
Total deaths, first 10 weeks of year.....	97,833	98,877
Deaths under 1 year of age.....	626	682
Median for 3 prior years.....	682	-----
Deaths under 1 year of age, first 10 weeks of year.....	6,304	6,725
Data from industrial insurance companies:		
Policies in force.....	69,832,693	70,550,203
Number of death claims.....	13,377	14,913
Death claims per 1,000 policies in force, annual rate.....	10.0	11.0
Death claims per 1,000 policies, first 10 weeks of year, annual rate.....	9.8	9.8

FOREIGN REPORTS

CANADA

Provinces—Notifiable diseases—Weeks ended February 18 and 25, 1950.—During the weeks ended February 18 and 25, 1950, cases of certain notifiable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Week Ended Feb. 18, 1950

Disease	New-found-land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alber-ta	British Columbia	Total
Chickenpox.....	3		67	1	433	274	43	36	55	101	1,013
Diphtheria.....			1		15	1					17
Dysentery, bacillary.....							3			3	6
Encephalitis, infectious.....						1				1	2
German measles.....			31		21	197		37	255	299	840
Influenza.....			156			7	4	4		2	173
Measles.....			23		720	504	25	23	112	102	1,509
Meningitis, meningococcal.....											1
Mumps.....			124	9	165	576	15	37	124	230	1,280
Poliomyelitis.....					1	1		1		1	4
Scarlet fever.....	2		4	6	91	40	14	3	51	11	222
Tuberculosis (all forms).....	21		2	15	91	38	25	3	51	32	278
Typhoid and paratyphoid fever.....			1		13					39	53
Undulant fever.....					2	1					3
Veneral diseases:											
Gonorrhoea.....	5	1	9	18	92	50	12	11	34	67	299
Syphilis.....	2	2	5	8	54	27	5	6	2	16	127
Other.....									1	1	1
Whooping cough.....			9		176	61	3	8	4	14	275

Week Ended Feb. 25, 1950

Disease	New-found-land	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alber-ta	British Columbia	Total
Chickenpox.....			30		314	318	47	37	48	65	859
Diphtheria.....					2	2	1				5
Dysentery, bacillary.....						1	2			2	5
Encephalitis, infectious.....							1				1
German measles.....			21		16	408		34	228	274	981
Influenza.....			70			4	1	2		8	85
Measles.....			14	46	747	620	19	50	78	112	1,686
Meningitis, meningococcal.....						2					3
Mumps.....			101	2	272	522	11	24	129	258	1,314
Poliomyelitis.....							3				3
Scarlet fever.....	2			1	118	42	14	5	68	7	257
Tuberculosis (all forms).....	15		7	9	76	40	16	10	12	48	233
Typhoid and paratyphoid fever.....					8	1	1			1	11
Undulant fever.....			1		2	2					5
Veneral diseases:											
Gonorrhoea.....	3		12	6	95	49	14	18	24	79	300
Syphilis.....	5		2	4	59	28	5	9	4	10	126
Whooping cough.....			25		82	33	6	4		17	167

JAPAN

Notifiable diseases—4 weeks ended January 28, 1950.—For the 4 weeks ended January 28, 1950, and for the year to date, certain notifiable diseases were reported in Japan as follows:

Disease	4 weeks ended January 28, 1950		Disease	4 weeks ended January 28, 1950	
	Cases	Deaths		Cases	Deaths
Diphtheria.....	1,183	131	Scarlet fever.....	371	2
Dysentery, unspecified.....	272	72	Schistosomiasis.....	6	
Filariasis.....	5		Smallpox.....	3	
Influenza.....	1,837		Tetanus.....	112	
Leprosy.....	29		Trachoma.....	6,778	
Malaria.....	37	7	Tuberculosis.....	25,444	
Measles.....	3,263		Typhoid fever.....	278	48
Meningitis, epidemic.....	85	18	Typhus fever.....	18	2
Paratyphoid fever.....	77	5	Veneral diseases:		
Pneumonia.....	19,110		Gonorrhoea.....	11,146	
Polioomyelitis.....	134		Syphilis.....	8,243	
Puerperal infection.....	74		Whooping cough.....	9,786	
Rabies.....	6				

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX TYPHUS FEVER, AND YELLOW FEVER

From consular reports, international health organizations, medical officers of the Public Health Service and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

(Cases)

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place	January- December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
ASIA						
Burma.....	1,253					
Bassein.....	183					
Moulmein.....	14					
Ragoon.....	13					
Ceylon.....	2					
Trincomalee.....	2					
China:						
Amoy.....	1					
India.....	97,589					
Ahmedabad.....	1					
Allahabad.....	17					
Bombay.....	16					
Calcutta.....	15,512	312	187	177	110	
Cawnpore.....	190					
Cocanada.....	12	2				
Cuddalore.....	2			3	6	6
Lucknow.....	134					
Madras.....	434	3		1	3	1
Mangalore.....				14		
Masulipatam.....	1		17	17	2	3
Nagpur.....	44					
Negapatam.....	29	42	5	1	3	2
New Delhi.....	20					
Tellicherry.....		10	7	10		
Tuticorin.....	14	7	6	3	5	2
India (French):						
Karikal.....	55					
Pondicherry.....	100					
Indochina (French):						
Cambodia.....	45					
Cochinchina.....	11					
Pakistan.....	31,147	1,602				
Chittagong.....	75					
Dacca.....	101	7	2			
Lahore.....	124					
Siam (Thailand)						
Bangkok.....	9					
	8					

¹ Includes imported cases. ² Suspected. ³ Imported.

⁴ Week ended Jan. 7. ⁵ Includes 2 deaths reported as cases.

PLAGUE

(Cases)

(P—present)

Place	January-December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
AFRICA						
Basutoland.....	42					
Belgian Congo.....	18			1	2	
Costarmansville Province.....	6			1	1	
Stanleyville Province.....	12				1	
British East Africa:						
Kenya.....	5					
Tanganyika.....	15					
Madagascar.....	129	15		6	1	
Tananarive.....	3					
Rhodesia, Northern.....	2					
Union of South Africa:						
Cape Province.....	112	3	1	P		
Orange Free State.....	57					
Southwest Africa.....	14	1				
Transvaal.....	3					
	4					
ASIA						
Burma.....	501	19	7	12	3	
Mandalay.....	1					
Moulmein.....	6					
Pegu Town.....	1					
Rangoon.....	8					
Yenangyaung Town.....	1	1				
China:						
Chahar Province.....	69					
Chekiang Province.....	7					
Wenchow.....	7					
Fukien Province.....	20					
Kiangsi Province.....	9					
India.....	35,218	2	2		2	
Indochina (French):						
Annam.....	128	9		5	1	5
Cambodia.....	69	4		5		5
Cochinchina.....	24	5			1	
Laos.....	32					
Java.....	3					
Jogjakarta Residency.....	929	166	68	8	1	
Siam (Thailand).....	895	165	68	8		
	183	12	2	3	15	
EUROPE						
Portugal: Azores.....	5					
SOUTH AMERICA						
Brazil:						
Bahia State.....	3					
Ceara State.....	9					
Pernambuco State.....	19					
Ecuador:						
Loja Province.....	19	1				
Peru:						
Lambayeque Department.....	10					
Libertad Department.....	3					
Lima Department.....	8					
Piura Department.....	10					
Tumbes Department.....	1					
Venezuela:						
Aragua State.....	2					
OCEANIA						
Hawaii Territory.....	1					

¹ Includes cases of pneumonic plague. ² Feb. 1-10, 1950. ³ Feb. 11-20, 1950. ⁴ Includes suspected cases. ⁵ Suspected. ⁶ Includes imported cases. ⁷ Outbreak July-November 1949. ⁸ In Jogjakarta City.

SMALLPOX

(Cases)

(P=present)

Place	January-December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
AFRICA						
Algeria	301	13		6	4	
Angola	748					
Basutoland	1					
Bechuanaland	6					
Belgian Congo	2,224	114	23	84		
British East Africa:						
Kenya	25					
Nyasaland	1,296	46	4			
Tanganyika	970	27				
Uganda	41					
Cameroon (British)	24					
Cameroon (French)	70	3		7		
Dahomey	437	36		86	2	
Egypt	4	1			1	
Eritrea	1					
Ethiopia	12					
French Equatorial Africa	420	23				
French Guinea	1					
French West Africa: Haute Volta	21	14		10	18	
Gambia	66					
Gold Coast	56					
Ivory Coast	356	48		34		
Liberia	3					
Libya					2	
Morocco (French)	17					
Morocco (International Zone)	2					
Morocco (Spanish Zone)	3					
Mozambique	374	39				
Nigeria	8,564	690				
Niger Territory	889	164		43		
Portuguese Guinea	1					
Rhodesia:						
Northern	22	1				
Southern	862	113				
Senegal	16	1		1		
Sierra Leone	143					
Sudan (Anglo-Egyptian)	1,258	5	3		7	5
Sudan (French)	159	12		5		
Togo (French)	155	15		8		
Tunisia	1					
Union of South Africa	1,444	21	P	P	P	
ASIA						
Afghanistan	259					
Arabia	1,284	107	15	8	10	9
Bahrain Islands	68	7		4		
Burma	1,432	616	242	330	295	
Ceylon	12					
China	1,031	51	2	68	30	2
India	72,180	1,581	595	563	555	388
India (French): Yanaon	1					
India (Portuguese)	224					
Indochina (French)	2,749	50		45	25	4
Iran	509	32				
Iraq	750	36	5		4	3
Israel	7	15				
Japan	124					
Korea (Southern)	8,951	10				
Lebanon	1,145	1				
Malay States (Federated)	46					
Manchuria: Port Arthur	9					
Netherlands Indies:						
Java	12,901	136	32	27	12	19
Riouw Archipelago	2					
Sumatra	1,225				127	
Pakistan	4,553	232				
Palestine	188					
Philippine Islands:						
Mindora Island	11					
Rombon Island	14					
Tablas Island	2					

See footnotes at end of table.

SMALLPOX—Continued

Place	January-December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
ASIA—continued						
Portuguese Timor.....	4					
Siam (Thailand).....	110	325				
Straits Settlements: Singapore.....	1 ²					
Syria.....	668	6			2	
Transjordan.....	199	17				
Turkey. (See Turkey in Europe.)						
EUROPE						
Belgium.....	1					
Germany (U. S. Zone).....	3					
Great Britain: England and Wales.....	1 22					
Italy.....	4 99					
Portugal.....	9					
Spain.....	3					
Canary Islands.....	6					
Turkey.....	92	1		1		3
NORTH AMERICA						
Cuba: Habana.....	16					
Guatemala.....	4					
Mexico.....	760	13				
SOUTH AMERICA						
Argentina.....	500	87	26			
Bolivia.....	35					
Brazil.....	375	8	1	3	3	1
Chile.....	2					
Colombia.....	2,846	19				
Ecuador.....	647	28				
Paraguay.....	12					
Peru.....	3,769					
Uruguay.....	10					
Venezuela.....	2,339	1				
OCEANIA						
Guam.....	2					

¹ Includes imported cases.

² Suspected.

³ Imported.

⁴ Includes 95 cases of varioloid reported in Rome Jan. 1-June 10, 1949.

TYPHUS FEVER*

(Cases)

(P—present)

AFRICA					
Algeria.....	95	16		8	
Basutoland.....	27	3			
Belgian Congo.....	1 49	2 4			
British East Africa:					
Kenya.....	76				
Nyasaland.....	4				
Tanganyika.....	2				
Egypt.....	182	3			
Eritrea.....	81	3	3		
Ethiopia.....	647				
Gold Coast.....	6	1			
Libya.....	196	10		7	4
Cyrenaica.....	21	4		4	2
Tripolitania.....	175	3			
Madagascar: Tananarive.....	10				
Morocco (French).....	20	1			1
Morocco (International Zone).....		1			
Morocco (Spanish).....	46				
Nigeria.....		1			
Sierra Leone.....	13				
Sudan (Anglo-Egyptian).....					4
Tunisia.....	73	2			
Union of South Africa.....	210	P	P	P	P

See footnotes at end of table.

TYPHUS FEVER—Continued

Place	January-December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
ASIA						
Afghanistan.....	1,616					
Arabia: Aden.....	42					
Burma.....	5					
Ceylon: Colombo.....	16					
China.....	64	3				
India.....	239	4				
India (Portuguese).....	74					
Indochina (French).....	24		1			
Iran.....	192	22	1	6		
Iraq.....	106	7	1	1	3	1
Japan.....	115	70	14	102	238	96
Korea (Southern).....	1,196	8				
Lebanon.....	4					
Pakistan.....	629	4		9	5	3
Palestine.....	114					
Philippine Islands: Manila.....	11					
Straits Settlements: Singapore.....	5	2				
Syria.....	30	1				
Transjordan.....	69	2				
Turkey. (See Turkey in Europe.)						
EUROPE						
Belgium.....	45					
Bulgaria.....	393					
Czechoslovakia.....	22					
France.....	5		1			
Germany (U. S. Zone).....	2				1	
Great Britain:						
England and Wales.....	14					
Malta and Gozo.....	131					
Greece.....	79					
Hungary.....	20					
Italy.....	27					
Sicily.....	21					
Poland.....	373	22				
Portugal.....	6					
Rumania.....	417					
Spain.....	13	1				
Turkey.....	239	20	2	10	5	6
Yugoslavia.....	234	7				
NORTH AMERICA						
Bahama Islands: Nassau.....	11					
Costa Rica ¹	52		1			
Cuba ¹	4					
Guatemala.....	58					
Jamaica ¹	19	2		1		
Mexico ²	253	5	2	7		
Panama Canal Zone ¹	13			7		
Panama (Republic).....	15					
Puerto Rico ¹	44	1		1		
SOUTH AMERICA						
Argentina.....	12					
Bolivia.....	53					
Brazil.....	6					
Chile.....	376	15	6		2	
Colombia.....	2,795	26				
Curacao.....	15					
Ecuador.....	356	23				
Peru.....	1,399					
Venezuela ²	129			1		
OCEANIA						
Australia ¹	133	15	1			
Hawaii Territory ¹	17					

* Reports from some areas are probably murine type, while others include both murine and louse-borne types.

¹ Murine type.

² Includes murine type.

³ In Dar es Salaam.

⁴ Includes imported cases.

⁵ Corrected figure.

YELLOW FEVER
(C=cases; D=deaths)

Place	January-December 1949	January 1950	February 1950—week ended—			
			4	11	18	25
AFRICA						
Belgian Congo:						
Stanleyville Province..... D	5					
French Equatorial Africa:						
Bangui..... D	1					
Gold Coast..... C	22	1				
Accra..... D	1					
Ankobra Ferry..... D						
Komenda Village ¹ D	1					
Nkwanta Dunkwa Area..... D	1					
Oda Area:						
Akwatia..... C	4					
Atankama..... C	1					
Bawdua..... C	3					
Esuboni..... C	3					
Osekrome Village..... D	1					
Winneba Area:						
Apam..... D	1					
Akukuom..... D	1					
Nyakrom..... C	5					
Nigeria:						
Kaduna..... D	1					
Lagos..... D	12					
Sierra Leone:						
Freetown..... D	11					
Kolnadugu District..... C	1					
Sudan (French):						
Bamako..... D	11					
NORTH AMERICA						
Panama:						
Colon Province..... D	3	1				
Pacora..... C	8					
SOUTH AMERICA						
Bolivia:						
Chiquisaca Department..... C		70				
Brazil:						
Acre Territory..... D	1					
Amazonas State..... D	1					
Para State..... D	3					
Ecuador:						
Napo Pastaza Province..... D	1					
Peru:						
Cuzco Department..... D	3					
San Martin Department..... D	1					

¹ Imported.

² Suspected.