

School feeding : its history and practice at home and abroad / by Louise Stevens Bryant.

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Bryant, Louise Stevens.
London School of Hygiene and Tropical Medicine

Publication/Creation

Philadelphia and London : J.B. Lippincott, 1913.

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SCHOOL FEEDING
ITS HISTORY AND PRACTICE
AT HOME AND ABROAD

LOUISE STEVENS BRYANT

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SCHOOL FEEDING

ITS HISTORY AND PRACTICE
AT HOME AND ABROAD

BY

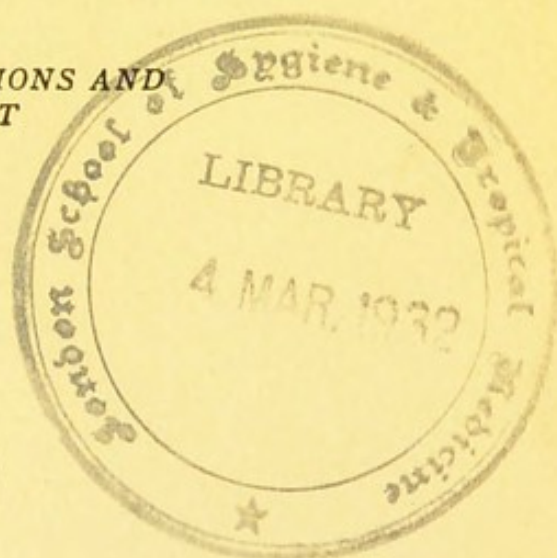
LOUISE STEVENS BRYANT

Of the Psychological Clinic, University of Pennsylvania

WITH AN INTRODUCTION BY
P. P. CLAXTON

United States Commissioner of Education

16 FULL-PAGE ILLUSTRATIONS AND
6 CHARTS IN TEXT



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PHILADELPHIA AND LONDON

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17523.

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PUBLISHED, FEBRUARY, 1913

PRINTED BY J. B. LIPPINCOTT COMPANY
AT THE WASHINGTON SQUARE PRESS
PHILADELPHIA, U.S.A.

TO
DR. LIGHTNER WITMER

IN APPRECIATION OF HIS WORK
FOR "ORTHOGENICS," THE NORMAL
DEVELOPMENT OF EVERY CHILD

THE STATE, THE SCHOOL, AND CHILD WELFARE

THE main principle which should guide us in discussing the question of the State and Child Welfare, I consider, is that the State looks after the child primarily because he is a child, and not because he is destitute or sick or criminally inclined. Therefore it behoves us not to wait until one or more of these calamities overtakes him before we supervise his upbringing. This principle was half conceded by the establishment of an Education Authority. Half only, for until lately the child's parents still had to be destitute before the State concerned itself in any way with his bodily needs. Years of experience, however, in the teaching of underfed children have brought home to our people the fact that we cannot separate mental and bodily welfare.

The prolonged controversy over the feeding of school children has led to the acceptance of a second principle of action: that the welfare of the child should be looked after by one authority only—*i.e.*, that the necessary feeding should be undertaken by the School Authority, and not by the Poor Law Guardians.

It seems to me that the adoption by the Legislature

SCHOOL FEEDING

of these two principles makes it both inevitable and desirable that all public provision for children of school age, whether destitute or not, should be entrusted entirely to the Education Authority. It has become impossible to defend the practice of allowing the responsibility for a child's welfare to shift automatically from the shoulders of the Education Authority to those of the Destitution Authority and back again, according as the parents' means sink below a vaguely defined line or rise above it.

I would add a reminder that the only way of enforcing the natural and proper responsibility of the parent for the general welfare of his child is to set up a definite standard of mental and bodily nurture and to insist that no child shall receive less upon any excuse whatsoever. Without such a standard it is impossible for the State to make any clear demand upon the parent to do his duty. With it the State can really insure the health and efficiency of its future citizens.

Finally, let me repeat the first principle that the child must be looked after *because he is a child*, and must never be sacrificed for the sake of "improving" the moral character of his parents, however much they may need it. If someone must suffer, it is but common-sense to urge that it should be the present generation, not the future one.—BEATRICE WEBB, in "The Child," January, 1911.

PREFACE

THIS book deals, first, with the history and present status of legislation concerning and administration of meals in public elementary schools in all countries, and, second, with the physiological aspects of malnutrition during the growing period, its causes, classification, results, the basis of school dietetics on the food needs of the growing child and the scientific construction of menus to fulfil these. Most of this is brought together for the first time and the presentation is non-technical. The sources were many, for the most part answers to letters of inquiry and official documents and reports.

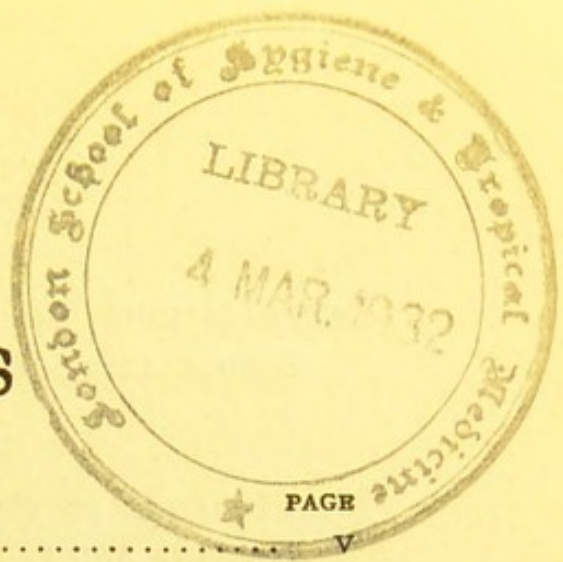
Material on high school lunches has been omitted because this presents quite different problems in education and administration and because the subject has already been widely exploited.

The treatment is primarily informational, controversial matter having been eliminated as far as may be.

During the course of the work, which occupied nearly three years, I had the most cordial co-operation of many people. My thanks are especially due to the following individuals: Dr. Leonard P. Ayres, Dr. Luther Gulick of New York, Mr. H. H. Bonnell, Miss Alice C. Boughton, Miss Mary Leeds of

PREFACE

Philadelphia, Dr. Mary Schwartz Rose of Columbia University, Dr. Ira S. Wile, Miss Kittredge and other members of the New York School Lunch Committee, Miss Haisler and Superintendent Pearse of Milwaukee, Dr. Meyerding of St. Paul, Miss Small of Buffalo, Mrs. Hotchkin of Rochester High School, Miss Cook of Syracuse; and in foreign countries to Miss Helene Simon of Berlin, Dr. Gastpar of Stuttgart, Dr. Tonsig of Padua, Dr. Erismann of Zurich, Mr. Alexander Schiavi of Milan; and to the following organizations whose officers' responses to requests for assistance often involved the special gathering of material and photographs at obvious cost of time and effort: The American Institute of Social Service, The Nutrition Laboratory of Columbia University, The Sheffield Scientific School of Yale, The Boston Home and School Society, The Philadelphia Home and School League, The British Institute of Social Service, the Education Committee of Bradford, England; the London County Council, Zentralstelle für Volkswohlfahrt, Berlin; to the Prefects of the Departments of France and to the French Consulate of New York City, Det Sociale Sekretariat and Bibliotek, Copenhagen; Centralverein zur Bekostigung armer Schulkinder in Wien (Vienna), Austria-Hungary; Central Bureau voor Sociale Adviezen, Amsterdam; Centralforbundet for socialt arbete, Stockholm, Sweden, and to Zentralstelle für Soziale Literatur, Zurich, Switzerland.



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INTRODUCTION

MORE and more are we coming to understand that education is for life, and that physical health is essential to full mental and moral development and effective living. To the extent that the body fails to serve the will, the will is paralyzed and the best emotions rendered useless. Mere good wishes can not accomplish much. Little service can be rendered by him who stands forever "shivering on the brink of action." The establishment of the physical health of children has therefore come to be regarded as a most important part of their education. To a very large extent this must depend on right habits of eating. Children must have food in proper quantities and of the right kind, and must eat in the right way at right times. There must always be doubt as to the value of the results of a school day for the child who is listless from want of food or from eating large quantities of indigestible or non-nutritious food.

The custom of providing meals for children at school has, in recent years, become well established both in America and Europe. In America at least the work was begun first in the high schools. For several years mid-day meals have been provided

for high school children in many of our cities and larger towns. It is only recently that the more important task of providing meals for the smaller children has been attempted, except in a very few places. At present meals are provided in one or more elementary schools in nearly a half-hundred cities. In Europe, this work was begun earlier than here—in Germany a century and a quarter ago—and the school luncheon is now part of the daily program in the elementary schools of many of the most progressive countries.

There is little doubt that the school luncheon idea, now well rooted in this country, will spread very rapidly, especially in our cities. The reasons why it should are easily understood. In our large cities and smaller industrial towns, many children come to school having had little or no breakfast. Many have eaten their breakfast at a very early hour, some as early as 5 or 6 o'clock, and so become hungry and faint before the noon hour. These children should have a light, wholesome luncheon in the middle of the forenoon. For many there is nothing to eat at home if they return there at the noon hour. Many who find food at home at the noon hour find it cold and must eat it alone. Father and mother and the older children of the family are in the shops or in the mills. In the smaller towns and in country communities many

children live so far from school they can not go home for luncheon and return within the time allowed. They must therefore go without luncheon, or eat cold, unsuitable food brought from home in baskets, buckets, or paper bags. Others who do go home for luncheon can do so only by running home, bolting their food and hastening back to school. In many places in which the parents and older members of the family return for the mid-day meal, it is very inconvenient to adjust the meal-time to the convenience of the children in school. In some cities and towns the school day begins at 8.30 or 9 o'clock, and continues until 1.30, 2, or 2.30, with one or two brief intermissions, usually of only fifteen minutes each. Where this practice obtains, many children go without food until the school day is over, and then go home to a cold luncheon, eaten rapidly and in such order as it can be had, losing altogether the social value of the meal. I have known many school children whose daily schedule of meals consisted of a very light breakfast at 6 or 7, a cold dinner bolted at 2 or 3 o'clock, and supper at 6. Again, many parents, instead of providing a luncheon for their children at school, give them small amounts of money with which to buy food, and which the children spend for unwholesome and unnutritious stuff sold at large profits from push carts and at corner stores.

These conditions should not—must not—continue. The remedy seems to lie in the well-managed school luncheon, which can be made wholesome, educative, and saving in money, in time, and in the health of children.

Because the movement already started will probably continue with accelerated speed, there is all the more reason for a book like this which Mrs. Bryant has prepared after a long and careful study of the subject in all parts of the world. In her painstaking correlation and interpretation of the facts concerning this great new movement, she has rendered a distinct service to the children of America and to all who are interested in their welfare.

The book is practical. The information in regard to what is being done in various countries and cities is reliable. Problems not yet solved and difficulties not yet overcome are frankly admitted and pointed out. The book is not dogmatic. In its full descriptions of experiments and clear statements of results it is illuminating.

P. P. CLAXTON.

WASHINGTON, D. C.,
FEBRUARY, 1913.

SCHOOL FEEDING

I

HISTORY AND PRESENT STATUS OF THE SCHOOL FEEDING MOVEMENT

SCHOOL feeding is an educational movement a century and a quarter old, national in scope in many of the important countries of the world and at the present time spreading and developing with wonderful rapidity. The object of the school feeding movement is to supply such facilities as will make it possible for every child to secure an adequate, wholesome noon meal despite the fact that he is attending school. The necessity for special provision to secure this end arises where many of the pupils live so far away from the school as to make it impossible for them to return home at noon, or where there is no adequate warm noon meal awaiting them if they do return. One or both of these conditions may result from any one of a most varying range of causes.

They exist in connection with forms of educational administration which are otherwise most admirable, such as the consolidation of rural schools, and single sessions in high schools in sparsely settled districts. They are found in densely settled portions of great cities, where many mothers are absent from home all day at work. At the other end of the social scale they occur in the homes of the cultured and well-to-do, where parents are frequently absent during the mid-day hours engaged in social and civic work.

It is but rarely that these conditions exist in any very large proportion of the children's homes, but while the proportion is not great, the actual number of children affected in each school system is frequently very large indeed, and the necessity for alleviation then becomes imperative. Society's machinery for meeting this need is school feeding.

GERMANY

The first provision of school meals of which we have record was made in Munich in 1790, when municipal soup kitchens were started by Count Rumford as part of his international campaign against vagrancy. The kitchens were designed to

meet the needs of the people of all ages, and from the start the school were encouraged to send groups of children to them for a warm meal at noon. This work was long unorganized but never discontinued, and in the seventies the obligation of providing meals was put on the school authorities. From this ancient beginning the school feeding movement spread throughout the German Empire until now it is national in scope, and about half of the cities contribute to support wholly or in part school breakfasts or dinners.

FRANCE

School feeding in France began in 1849, when the National Guard of the Second District in Paris presented to the city the unexpended balance in their treasury with the request that it be used to help poor children get a schooling. This was the beginning of the "Caisses des Ecoles" or school funds which were made obligatory throughout the country in 1882 and are employed among other purposes in maintaining the "Cantines Scolaires" or school restaurants that are now universal in France.

ENGLAND

The founder of school feeding in England was Victor Hugo, who in the early sixties provided

warm meals in his own house in Guernsey for the children attending a nearby school, and so gave the initial impetus which led to the establishment in London in 1866 of "The Destitute Children's Dinner Society." During the next forty years similar charitable societies were formed, until in 1905, when the Provision of Meals Act was under consideration, there were in London alone no less than 158 voluntary organizations for school feeding and a total of 360 in England. For the most part these societies were conducted by teachers in the different schools with little attempt at central organization and no aim beyond the immediate relief of acute distress.

The Provision of Meals Act, passed in 1906, gave the Local Educational Authorities permission to instal school restaurants as part of the regular school equipment. This resulted in the rapid development of a system similar to the French Canteens, which by March, 1909, had extended over 100 towns and cities.

WIDE EXTENT

From these early beginnings in Germany, France, and England, and with the various objects of charitable relief, promoting hygiene and encouraging

school attendance, the work of school feeding has spread, until now, grown beyond the local issue, it has received national recognition and been made the subject of national legislation in France, Switzerland, Holland, Great Britain, Denmark, and Bavaria. It is national in scope with support by the municipalities in Germany, Italy, Denmark, Sweden, Norway, Finland, Austria, and Belgium. It has been started in Spain, Russia, and the United States.

PROMINENCE OF MOVEMENT

The movement for school feeding is by no means an obscure one, and during the past two decades has been the subject of serious and extensive investigation in most of the countries mentioned. In England the Provision of Meals Act came as a crystallization of public opinion that had been shaping for forty years and had been tremendously stimulated by the activities of four Parliamentary Commissions appointed to investigate the physical condition of the people.

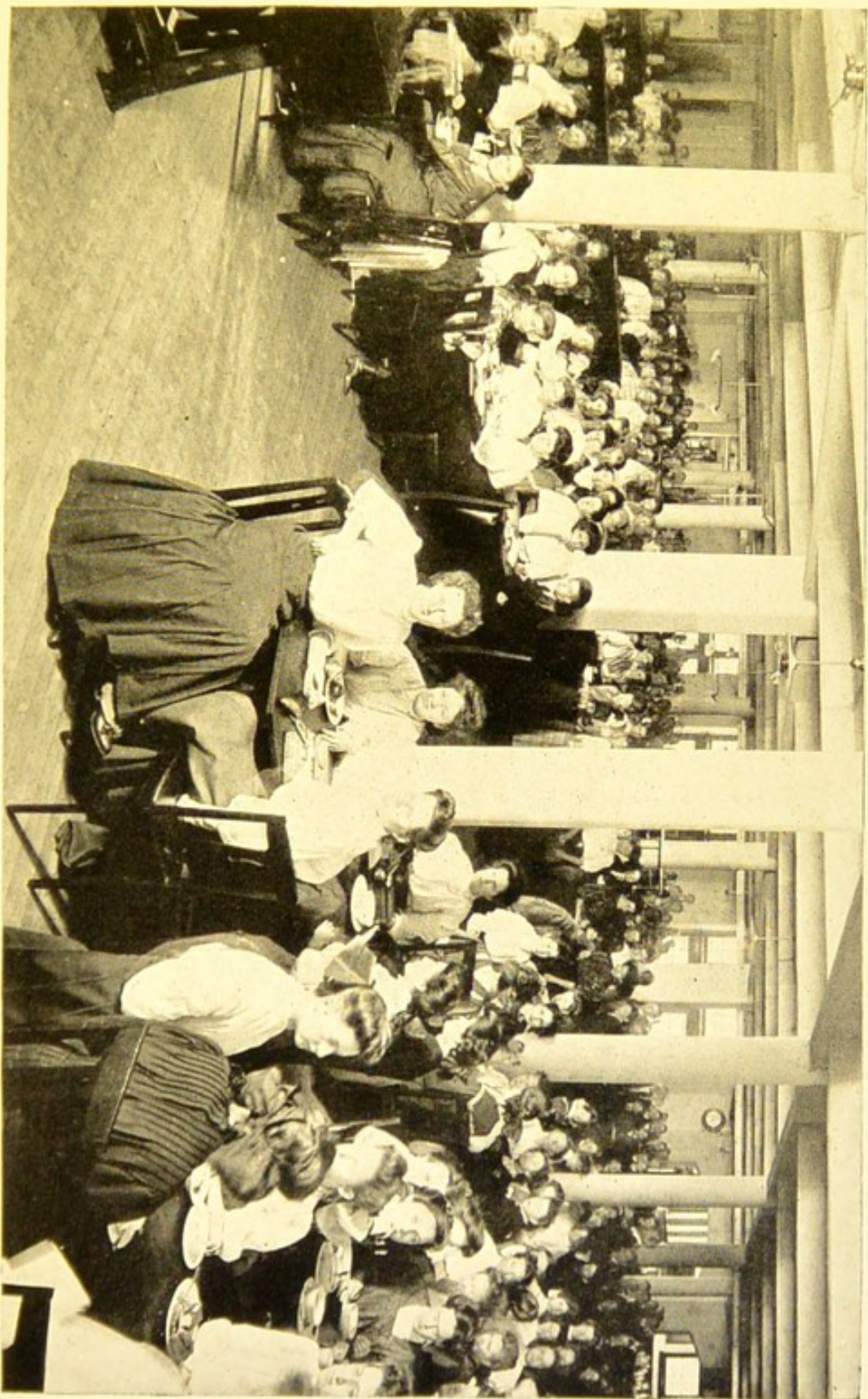
In Germany the problem was first given wide publicity in 1890 when a National Congress was held to discuss problems concerning vacation colonies for school children. At this convention it was

agreed that if children were to receive permanent benefit from their country outings they must be assured good food all the year round. In 1897 the Social Democrats introduced a bill in the Reichstag providing for school feeding in cities, but this was defeated on the ground that such a measure would increase the migration of the people to the large cities. Recently, however, since England has passed her national act, the subject has been extensively studied in Germany, and there is now serious and widespread agitation for national legislation.

BEGINNINGS IN AMERICA

As in the case of many other educational adjuncts, the United States has been slow in following the lead of the European countries in adopting school feeding. Long after it had passed the experimental stage in Europe, it was still regarded as a startling innovation here. Purely charitable work was undertaken as early as 1855, when the Children's Aid Society in New York City began to furnish free lunches for the children of the Industrial Schools.

Almost from the beginning of his superintendency of the New York schools, Dr. William H. Maxwell



ROCHESTER HIGH SCHOOL STUDENTS AT LUNCH. WHY NOT THE SAME PLEASANT AND WHOLESOME PROVISION FOR THE ELEMENTARY CHILDREN?

has urged the installation of lunches in the elementary schools, where all who wish may buy at cost a warm, nourishing noon meal. Since 1908 lunches in the elementary schools have been conducted by the co-operative efforts of the educational authorities and a committee of social workers, physicians, and teachers.

The Starr Center Association started penny lunches in two Philadelphia schools over fifteen years ago; a work that with the co-operation of other societies has continued and grown until at present there are more than ten schools with some form of school lunch.

After two years of agitation and investigation, the Board of Education in Chicago in the fall of 1910 appropriated \$1200 for the experiment of installing lunches in six city schools. It is too early to speak of results. Recent reports show that the meals are a success so far as they may be measured by the attendance and the children's interest.

In twenty-seven other cities in fourteen different States, women's clubs, teachers, and school doctors have organized to introduce lunches in the elementary schools, and in at least twenty other places the matter is being considered.

Though there have been no legislative enactments providing for school lunches in American cities, at least one important step in this direction has been taken in Massachusetts. This takes the shape of a bill favorably reported by the Committee on Education of the Lower House in the Session of 1912 and provides that school boards shall be empowered to expend school funds for the support of lunches in elementary school systems.

SUMMARY

1. School feeding began in Germany. It is a century and a quarter old in Europe and more than half a century old in America.

2. It is a movement national in scope in fifteen important countries.

3. School feeding is provided for in the national legislation of six countries.

4. The movement has attained great momentum in America in the last twenty years, and school lunches now constitute a part of the elementary schools systems of thirty American cities.

There is no longer any question as to whether or not we must seriously face the school lunch problem. School lunches already constitute an important part

of the systems of elementary schools in our largest American cities, and nothing is more certain than that the movement will rapidly extend in the next few years. The problem confronting those who have at heart the welfare of American public schools is no longer "Shall we have school lunches?" but rather, "How may we best guide this movement so as to develop all of its potential benefits and at the same time avoid possible dangers?"

II

PHYSICAL DETERIORATION AND MALNUTRITION IN ENGLAND

The children of a country are the capital of a country, and it is in the use and value of its capital that we may discern a nation's wisdom.—EARL BEAUCHAMP, 1902.

SHORTLY before the close of the Boer War, Major-General Frederick Maurice of the British Army startled his countrymen by announcing that only two men out of every five who wished to become soldiers were physically fit for army life.¹ In Maurice's own words, it was "a vital matter . . . to enquire what is the meaning between the five and the two. Does it mean that the class which necessarily supplies the bulk of the ranks in our army consists in this large proportion of men physically unfit? If so, what are the causes of this fatal condition of things, and are they remediable?"

This roused the country to an eager consideration of its blood and brawn, and a series of search-

¹ Maurice, Sir Frederick, *The National Health*, in *The Contemporary Review*, January, 1902. See also A. Watt Smyth in his "Physical Deterioration, its Causes and the Remedy", ch. i.

ing investigations into the physical make-up of the nation followed.

Attention was first turned to the schools. Immediately after the publication of Maurice's statement the king appointed a commission to find out what means of physical training was provided in the schools and what further education was needed to improve the national physique and to build up the national army.

The Royal Commission on Physical Training examined the opportunities for physical education in all grades of institutions from the universities down. They came to the conclusion that, so far as the elementary schools were concerned, the trouble was not with the lack of gymnastic drill, but with the bodily condition of the children themselves. In many cases they were simply too weak to be trained physically. In Edinburgh, for example, where no less than 30 per cent. of the children in certain districts were under-nourished, it was found that the method of gymnastics followed was not only doing no good, but actual harm.

In contrast to the conditions in the regular public schools came reports of the rapid development of army and navy recruits in the training schools where

full regular meals were as prominent and important a feature as was military drill. Surgeon-General Don submitted evidence showing that young boys gained from five to seven pounds in weight and an inch in chest girth after seven weeks of army life.

Wherever food was provided as in the case of special schools for the physically and mentally defective, or in industrial schools for truant or neglected children, physical training was reported to have good results. Indeed the children in the industrial schools were in many ways the physical and mental superiors of children of the same social grade in the regular elementary schools. Commenting on this fact, the Commission said: "These institutions certainly give to the boys or girls who come under their influence advantages as regards physical conditions which are not open to the children of independent and respectable though very poor parents."² The difference between these two classes of children was both marked and painful.

With this and a mass of similar evidence before them, the Commission became convinced that, "among the causes which tell against the physical

² Report of the Royal Commission on Physical Training, p. 30, par. 164.

welfare of the population, the lack of proper nourishment is one of the most serious"; and that "the question of the proper and sufficient feeding of children is one which has the closest possible connection with any scheme which may be adopted for their physical and equally for their mental work." They accordingly recommended the general establishment of school lunches for which the children would pay a small fee as they had formerly done for their instruction.

Though the evidence presented by the Commission on Physical Training was valuable and suggestive so far as it went, they did not even try to answer the question the British public was asking, which was, "Is our race deteriorating, and if so what are the causes?" A year later a new investigating body, known as the Interdepartmental Committee on Physical Deterioration, was appointed to study the general social and economic causes for the alleged deterioration of certain classes, and to point out means of diminishing it.

The new commission consulted sixty-eight witnesses, men and women from all parts of Great Britain, who were either officially connected with the government in school, factory, or town adminis-

tration, or else members of well-known institutions of charity and education, and all of them were intimately acquainted with the daily lives of the masses of the people; thirty-seven were physicians.

The first hopeful finding was that there was no hereditary taint apparent that might cause a progressive degeneration of the people. Each new generation started life with a new lease of energy. But shocking conditions of life were found, that for large numbers more than counterbalanced the strength at birth. It was upon these conditions and the possibility of their betterment that the Commission dwelt.

Bad as were the other destructive factors, such as congestion of population, unsanitary dwellings, involuntary unemployment, infant mortality, drunkenness, etc., none was more prominent than the chronic malnutrition, found at all ages, in town and country.

This malnutrition was specially marked among school children, although the decrease in breast feeding and the absence of a good milk supply were responsible for much bad feeding earlier. Nevertheless people seemed to understand the feeding of infants and little children better than that of older

ones. When the children began to go to school they were left to shift for themselves at meal times, and usually adopted the adult habits of tea and coffee and highly seasoned canned food.

Dr. Eichholz, one of the most prominent witnesses, declared that the following was a fair description of the dietary of thousands of city children: "Their breakfasts are nominally bread and tea, and the dinner nothing but what a copper can purchase at the local fried fish shops, where the most inferior kinds of fish are fried in reeking cotton-seed oil." Milk and fresh vegetables were unknown quantities, while meat was almost lacking, except perhaps at the Sunday dinner, when it was of a poor quality. In short, the Commission found that the food was bad for three reasons: first it was insufficient; second it was irregular; third it was entirely unsuitable in quality, and was specially lacking in cell-building elements.

At the same time the strain of school work, added to the demands of rapid growth, made the subject of food during the school period of intrinsic importance. Indeed, Dr. Hutchison, the well-known English dietitian, gave as his opinion that the most critical time of a child's life, so far as its nutrition

goes, is the school period—between ten and fifteen years. This being the case, Dr. Hutchison added that “looking at it purely scientifically, it would be an extremely important thing to ensure to every child at school a sufficient and proper meal.”

Few figures were given to show the precise number of children in the schools who were markedly affected by bad feeding. Dr. Eichholz made the statement that in London there were not fewer than 122,000 children who were underfed, that is, 16 per cent. of the entire school population. In Manchester 15 per cent. were reported underfed. Dr. Kelly, Roman Catholic Bishop of Ross, asserted that, “In the South of Ireland it is commonly the case that children come to school underfed.” There was a good deal more similar evidence, mostly in the form of general remarks about the wide extent of malnutrition in the schools.

With one exception, the witnesses were agreed that bad food was the most serious of all the factors making for degeneracy, particularly juvenile degeneracy. They agreed with Dr. Eichholz that “food is the point about which turns the whole problem of degeneracy,” and with Dr. Mackenzie, that “of the three selective agencies determining

national development, housing, occupation, and feeding, unquestionably the most important is feeding."

Although the poverty and ignorance at the bottom of malnutrition and other evils might be combated only by widespread social legislation and reform, nevertheless the Commission was convinced that the problem as it touched the school might be directly attacked, and, like the earlier commission, they proposed that school lunches be introduced. "We have got to the point," said one witness, "where we must face the question whether the logical culmination of free education is not free meals in some form or other, it being cruelty to force a child to go and learn what it has not the strength to learn."

The members of the Commission, however, were not in entire agreement with this witness, and they therefore suggested that the lunches be maintained wherever possible by private funds, and that the school authorities should be allowed to interpose where these failed, to supply the meals from the public funds.

The situation before the public now was this: The two commissions which had started out to

answer Major General Maurice's question had shown that the physical condition of the people at large was in need of careful attention. This applied most of all to the food of the people, and to that of the children in particular. Both commissions had recommended school meals as a partial remedy, and as a step in the larger campaign against the forces of deterioration.

It remained to find out just what was the exact need for school feeding and what was being done already by private individuals in the matter before proceeding to organize meals on a public basis. A special Commission was appointed to look into the matter of medical inspection of schools and the voluntary provision of school meals throughout the country. The bulk of their attention was devoted to the subject of school feeding. They sent inquiries to all the local school authorities throughout the country to find out just how many schools were equipped with the lunches, and how these were run. In addition they examined thirty-five witnesses, all of whom were actively engaged in the work of school feeding, most of them being school officers as well.

The report of this Commission was published in

November, 1905.³ It was found that there were no less than 355 separate organizations for school feeding in 146 places, town and country, that were serving meals of some sort anywhere from three weeks in winter to four months, to about 100,000 children. Some of these organizations were old—the earliest one dating from 1866 in London.

The Committee on the Medical Inspection and Feeding of Children did not attempt to find out how many children were in need, nor to estimate the efficiency of the existing organizations in meeting the need. This was left for the Select Committee that considered the Provision of Meals Bill, presented in Parliament a few months later, which was designed to give the schools direct responsibility for feeding the children when necessary.

The Select Committee on the Provision of Meals Bill went over the reports of the three earlier commissions, and examined besides twenty-eight witnesses, all of whom had had experience with school meals either as teachers and superintendents, school doctors, members of charitable societies, the Society for the Prevention of Cruelty to Children, etc.

³ Report of the Interdept. Com. on Med. Inspection and the Feeding of Children Attending Public Elementary Schools.

As the final passage of the Bill came as a result of the findings of this Commission, especially in regard to the inadequacy of the existing provisions, we shall consider them somewhat in detail.

VOLUNTARY FEEDING SOCIETIES

The work of the private societies may be illustrated by the following description given before Parliament by Dr. Airy, who had had charge of the Birmingham Free Dinners Association for twenty years.⁴

“ We began with the idea of giving penny dinners to children who could pay for them, thinking, in our ignorance, that that would suffice for the need of the poor population. We speedily found that we were doing a rapidly declining business among the wealthier classes, and that there were thousands of children who could not pay a penny under any circumstances. We therefore reduced the price to a halfpenny, still intending them to be self-supporting or nearly so. We were then confronted with the revelation that there were hundreds of children in every district in Birmingham who

⁴ Minutes of Evidence before the Select Committee on the Educational (Provision of Meals) Bill, 1906, p. 132.

could no more pay a halfpenny for a dinner than they could find change for half a sovereign. We therefore at once determined to give up all idea of self-support, and we resolved to make it a charity and devote it, until we saw our way a great deal further, to keeping alive (I think that is the best expression I can use) the very poorest children who either got nothing at all for dinner, or, if they got anything, only got a bit of bread with a little grease, perhaps, scraped on it. We made a careful census of the city, and in Birmingham at that date (1886) we reckoned that there were from 2,500 to 3,000 children who were in a normal state of semi-starvation. In addition to that we had to reckon for the margin that there always was from any exceptional cause of unemployment. We did our best to (satisfy is hardly the word) meet as far as we could the needs of those children."

The dinners were given only to those children who could expect practically nothing at home. The relief was further limited by the character of the meals which was purposely designed to discourage any children not in desperate straits. Besides this there was a careful inquiry into the home circumstances of each child. Only those children might

receive the meals who were passed on by the head teacher, the class teacher, and the visiting attendance officer. In spite of all this, the society normally fed 2,500 children in ten different centres each day. Some idea of the pressing need may be gathered from this additional comment by Dr. Airy:

“We were much distressed at the fact that the children would come a mile or a mile and a half to eat this poor dinner, and they would come through slush and snow and wet. . . .”

EFFECTS OF THE MEALS

The work of the voluntary societies, limited though it was, had shown good results, as was everywhere asserted by the teachers who volunteered to help in the selection and service of the children. In Birmingham, for example, the teachers were “unanimous that the system pursued enabled the children to do their ordinary school work, and they reported that the difference was perfectly extraordinary.”

Even where the meals were continued only a few weeks, the effect was good. One teacher testified: “Yes, after a week, I can see difference in a child. She becomes less listless, and less fidgety. You can

see a much more healthy tone about the skin after a fortnight. It is most marked." The teachers' interest in helping the children was often increased by the fact that they found the children so much easier to teach after the breakfast or lunch at school.

Dr. Hall of Leeds, who had for years examined children for admission to the factories, and had also charge of school feeding in certain schools, gave most interesting testimony as to the effect of regular meals on children who were seriously underfed.

He took fifty-five children, between seven and eight years old, all considerably below the normal weight, and fed them for a fortnight, weighing them carefully before and after. In that time they gained an average of eighteen ounces (one pound, two ounces) apiece. These children were not "hungry"; they had to be persuaded to eat at first. Dr. Hall says: "I tell you the slum child is not hungry, and will go without food if he cannot have his stale food, his pickles, liver, and onions and blood made up into a sort of pudding. These children are evidently to a medical expert underfed. Look at them. You have at once the evidence of it. You have the ill-nourished skin, the ill-nourished

hair, the stunted growth, the light weight. Lift up the clothes. When I went amongst them first of all I thought they were flea-bitten. Nothing of the sort. They suffer from purpuric petechiæ. I took the children and I fed them well. At the end of six months there was not a flea-bite. It had all disappeared.”⁵

INADEQUACY OF VOLUNTARY SOCIETIES: NUMBER
OF CHILDREN BEING FED VERSUS NUMBER
IN NEED

But societies such as those described were not able to feed anything like the number needing to be fed. For example, in London there were 158 separate organizations feeding something under 30,000 children, for four months in the winter. This was not a quarter of the 122,000 reported to be underfed and probably in need all the year.

In Manchester, Dr. Brown Ritchie examined 10,180 children taken from all grades in twenty schools over the city. The results are shown in the following table:

⁵ Minutes of Evidence Before the Interdept. Com. on Medical Inspection and the Feeding of School Children, pp. 203, 204.

TABLE I. INVESTIGATION OF ILL-NOURISHED CHILDREN,
MANCHESTER, 1904^a

	Number Examined	Badly Nourished	Very Badly Nourished
7 worst schools	2,031	610—30%	367—18%
13 remaining schools	8,149	1,379—17%	806—10%
20 schools	10,180	1,989—19%	1,173—11%

It will be noted that 1,989 were badly nourished and 1,173 were very badly nourished. That is to say 3,162 or nearly a third of all those examined were below par as to their nutrition. The marked cases formed over 10 per cent. of the whole.

At the time of the investigation only about a fifth of the children needing it were being fed at school, although there was a well-organized private society in Manchester.

In Bradford, 6,000 children were found by medical inspection to be underfed, that is to say, 11 per cent. of the total school enrolment, while the private society was able to feed only 2,000 at most. Similar figures were reported from other places, but not in sufficient detail to warrant a specific numerical statement for the whole country.

A summary is given by Dr. Crowley of the Lon-

^a Minutes of Evidence Before the Interdept. Com. on Medical Inspection and the Feeding of School Children, p. 250.

don County Council as follows: "These children of poor nutrition are very common. . . . Speaking for our large towns generally it has been said that they constitute approximately 10 to 15 per cent. of the whole school population."⁷

VOLUNTARY FUNDS SPORADIC AND INSUFFICIENT

The real trouble with the voluntary societies was that their funds were entirely uncertain. It was impossible to raise them steadily enough to plan ahead. Several witnesses called attention to the fact that people seemed willing enough to give at Christmas, or when the weather was very bad, but they did not seem able to grasp the fact that the children's hunger was not an affair of the weather, or even of the time of year. One man, whose business it was to gather funds for several London societies, said: "When wage earning people on small wages are thrown out, the pinch comes. They have no reserve to fall back upon. Then you come to February, when the better class of people who have larger reserves are beginning to sell parts of their furniture, to pawn, and so on. They begin to feel the pinch then. By that time the stream

⁷ Crowley, Dr. Ralph H., *The Hygiene of School Life*, p. 16.

of charity is very difficult to tap; it has really ceased to flow. It is at Christmas time that you hope to get people quickened. A fortnight's really bad cold weather will bring money, but when the bright or mild muggy weather comes, you may as well appeal to the air."

The difficulty of raising funds was well shown in the case of Birmingham, where it was decided in 1904 that a yearly income of 4500 pounds was needed to provide a meal every school day for the 4500 children in need. The man who out of his own pocket had been supplying breakfasts to about a thousand very poor children, was asked if he considered that there would be any difficulty in raising the 4500 pounds "if an appeal were made to the people of Birmingham by duly constituted persons." He replied: "I think there would be more than difficulty; I think there would be an impossibility. As a subscriber, I have seen the last published accounts of the Birmingham Free Dinners Association. This charity has been in operation from fifteen to twenty years, and has had among its officers and subscribers some of the most influential people in the district. Its total list of subscriptions and donations is under 300 pounds per annum, and even this includes 75 pounds contributed by teachers

in the council schools. To raise a sum of from 4000 pounds to 5000 pounds a year by these means seems to me quite hopeless."

It was obviously unjust to expect that the teachers should contribute to the support of the meals especially when they were already giving their services, and yet they often did so feeling strongly the children's need.

ADMINISTRATIVE DIFFICULTIES

Not only were the voluntary societies thus hampered at every turn by lack of funds, but there were administrative difficulties nearly as bad. Owing to the lack of funds the societies were not permanent in many cases, and the meals were stopped during the summer, though the provision was often just as necessary then.

Again, because of the lack of official regulation, there was frequently considerable overlapping of effort in certain districts, while others remained neglected. A third difficulty was that the voluntary societies had no means of prosecuting delinquent parents on the one hand, nor on the other of assuring that provision was made for the most needy children.

SCHOOL FEEDING BY PUBLIC CHARITY

An attempt was made, shortly after the publication of the report of the Committee on Physical Deterioration to relieve some of these administrative difficulties by means of the "Relief of School Children's Order." This was a national order which provided that children found to be underfed at school were, on application by teachers or superintendents, to be put in charge of the public poor officials, and fed free for a month, the cost being chargeable to the father as a loan. Where the father failed to pay, he was prosecuted for vagrancy or cruelty, or else, if he could not pay, he was disenfranchised as a pauper.

The results of this order were as clumsy as its name, and it soon became a dead letter. The school authorities objected to the harsh methods of the "Guardians of the Poor," and declared that they served no good end to education. Parents objected even more decidedly and refused to allow their children to be fed. Voluntary subscriptions fell off at once and as the order limited the relief to the absolutely destitute, a great many children not technically destitute, but who had been helped before, were left unprovided for.

The order served the purpose, however, of showing that the provision of meals was a school problem and of establishing the principle that to be efficient, the provision of meals must be carried out under the direction of school authorities. This principle was recognized in the Provision of Meals Act, passed December, 1906.

We have now considered the growth of public opinion on the subject of malnutrition of children, the awakening of the public conscience by the reports of the Commissions on Physical Training and Physical Deterioration, the careful investigations by two other committees on the existing voluntary provisions for school feeding, their findings as to the inadequacy of these, the unsuccessful attempt to deal with the problem by public charity and the final crystallization of ideas and opinion in the Provision of Meals Act, passed after four years of discussion and inquiry.

The working of the Act, and the present condition of school feeding in England will be taken up in the following chapter.

III

PROVISION OF MEALS IN THE PUBLIC ELEMENTARY SCHOOLS OF GREAT BRITAIN

THE Provision of Meal Act, passed in December, 1906, virtually transferred the obligation of feeding hungry children in the schools of England and Wales from charity, public or private, to the local educational authorities.

It did more than provide for the children in absolute need, and who, in the words of the Act, were "unable by reason of lack of food to take full advantage of the education afforded them." These children, about ten per cent. of all, did not exhaust the number who might be benefited by a wholesome school lunch. Many more were dependent on hasty, cold and irregular meals, snatched at home, or bought with pennies at noon at small shops nearby. This was bad, not only because these children furnished ready recruits for the malnutrition ranks, but because bad habits and low standards of food were being formed to work future ill.

The Act was designed to combat the kind of

ignorance that gave little children tea and bread for breakfast, pickles, fried fish and pastry for lunch, and tea, jam and bread for supper. To do this required more than sporadic "relief work." It meant careful and continuous education of parents and children.

As a step in this needed education, the Act provided that school funds might be used in the establishment of regular school restaurants, where warm, wholesome meals might be served daily to all those wanting them, at cost to those able to pay, and free to those found to be unable to pay. All classes of school children might thus be benefited and the pernicious small food shops supplanted.

This object of the Act and the spirit in which it was conceived are shown in the following statement made by the National Board of Education in the circular sent with the Act to each Local Educational Authority:

The Act, which is purely permissive, and imposes no duty where a Local Educational Authority think it unnecessary to bring it into operation, is primarily of an educational character. Its object is to ensure that children attending public elementary schools shall, so far as possible, be no longer prevented by insufficiency of suitable food from profiting by the education offered in our schools, and it aims at securing that for this purpose suitable meals shall be available just as

much for those whose parents are in a position to pay as for those to whom food must be given free of cost.

There are five general provisions for the conduct of such school restaurants which may be briefly summarized as follows:

1. The meals are to be controlled by special committees known as School Canteen Committees, on which the local school board must be represented.

2. The entire cost of equipment and service may be borne by the school.

3. The cost of the food is to be met wherever possible by the parents of children receiving the meals, or by voluntary contributors. Where money from these sources fails, a local tax, not to exceed a rate of $\frac{1}{2}$ d. on the pound, or 2 mills on the dollar, may be raised to cover the cost of food.

4. Wherever a parent, though able, fails to pay the cost of the food, this is to be collected summarily as a civil debt, but its non-payment is never to be made a cause for disenfranchisement.

5. Teachers are never to be required to take any part in the organization or service of the meals.

The Act includes no further details of administration. The texts of the Act and that of the circular of information above referred to are given in Appendices A and B.

HOW THE ACT HAS WORKED

The experience in Bradford, a manufacturing town with a homogeneous population of 300,000 and about 60,000 school children, may be taken as typical of the way in which British towns generally are availing themselves of the provisions of the Act.

School feeding was not new in Bradford when the Act was adopted. The experiment had been tried before of supplying the very poorest children with food, first through private, and then through public charity, but unsuccessfully, because of lack of funds, and general administrative difficulties. Before attempting to start meals on a large scale, therefore, the authorities waited until they had determined, by definite experiment and investigation, first the extent to which the problem of malnutrition was immediately pressing, and second, what sort of meals should be provided, and what was the best method of serving them.

THE EXTENT OF MALNUTRITION IN BRADFORD
IN 1907

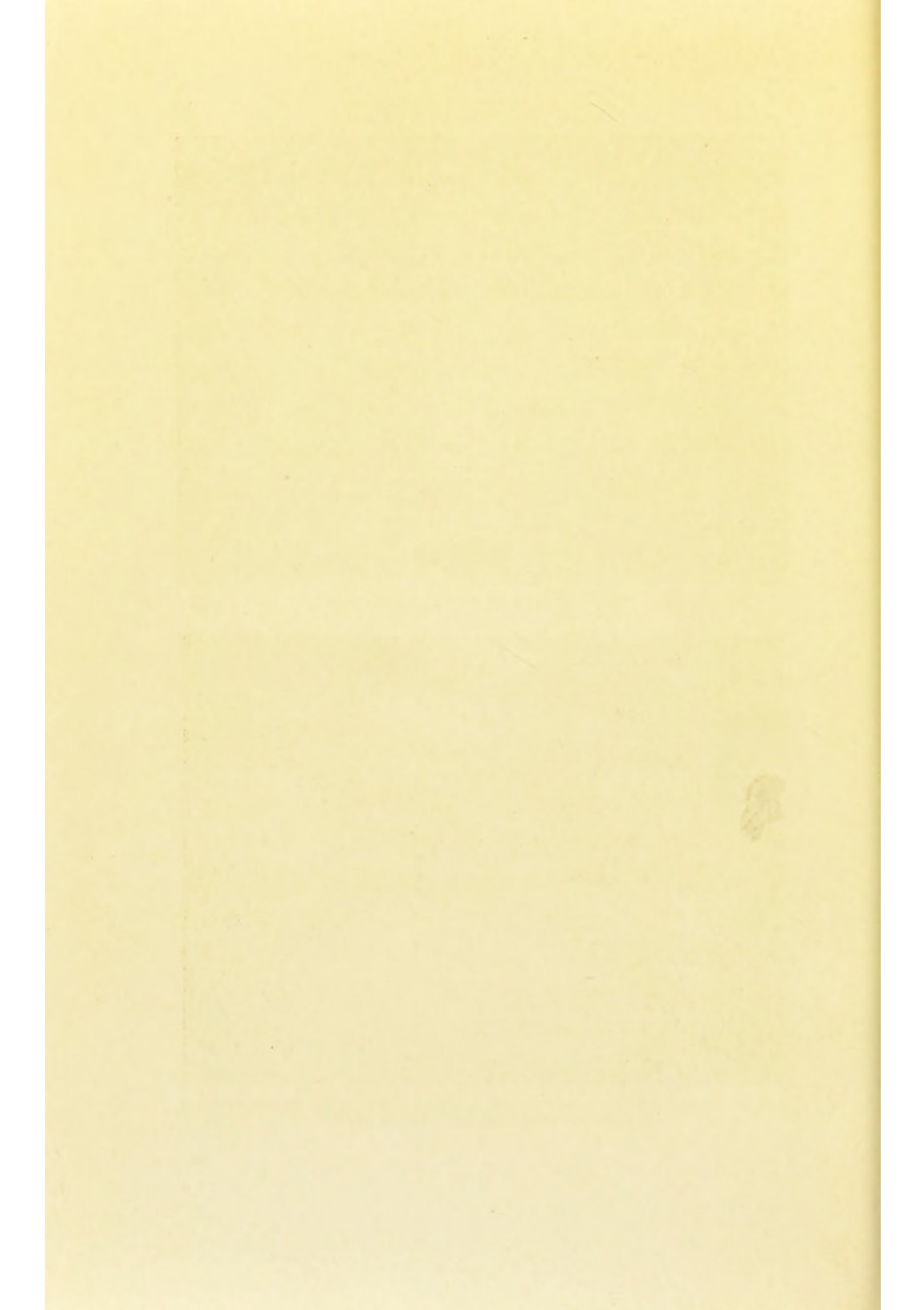
The first thing was to find out the number of children in the Bradford public schools who were in absolute need and because of lack of food were



FULL TABLES. BRISTOL, ENGLAND



SCHOOL DINING-ROOM. BRISTOL, ENGLAND. THE USE OF UPPER STORIES
FOR LUNCH ROOMS IS A HAPPY IDEA



unable to take full advantage of the education provided for them. After an examination of the physical condition of all the children in the schools, Dr. Crowley, the head medical officer, declared that from a personal examination of 2000 children he estimated that there were at least 6000 children in the city who were underfed. This means that 11 per cent. of the total school enrolment were suffering from malnutrition.

PRELIMINARY EXPERIMENT

The next step was to determine the probable effect of merely feeding these children without altering their manner of living in any other way. It was important to find out whether the school could help matters in the only way open to it—that is by providing food of an assured good quality and served under wholesome and pleasant conditions, it being obviously impossible to enter the homes and change the construction of the buildings or the lives of their inmates.

By way of preliminary experiment it was decided to feed about forty of the most needy children for three months with two daily meals carefully planned to meet the needs of growing children. Before the

meals were started, the children were weighed three times in five weeks to ascertain their average rate of growth. They were fed from April 17 to July 24 and during that time they were weighed and measured once a week and a general account was kept of their physical condition.

At the same time careful records were kept of the growth in weight and height of a group of 69 "control" children who were of the same age and general development as the experiment children and of the same social class. The meals at school constituted the only difference between the two sets of children.

GENERAL CHARACTER OF THE MEALS AND SERVICE

Breakfast and dinner were provided daily except Sunday. The two meals were so planned by the school doctors and the director of domestic science as to furnish about three-quarters of the total daily ration required by the school child. The elements of fat and tissue-building protein were emphasized, as it was in these expensive elements that the home meals were usually lacking. The children were suffering not so much from a general lack of food as from "protein starvation."

The menus of seventeen dinners were made out to fulfil the special requirements of the case and provided such a variety that it was three weeks before any given meal was repeated. The breakfasts were not varied from the general scheme of oatmeal, milk and bread and butter or molasses.

Among the seventeen dinners, four were made up of substantial soups and boiled or baked jam or ginger puddings made with milk and served with a sweet sauce; there were six "vegetarian" dinners made without meat, though butter and other animal products were used in baked puddings and wholemeal cakes. There were six dinners with meat and vegetable pie, stew, etc. One dinner was especially elaborate, with fish and potato pie, green peas and lemon sauce, blancmange and jam. Bread was served with all the meals and milk, the most valuable source of protein for children, was used in nearly all. These menus proved so satisfactory in the preliminary test that they are in permanent use in the schools of Bradford.

The cost of the breakfast, including preparation, was $2\frac{1}{2}$ cents; the average cost of the dinners was not quite 3 cents.

In addition to this care in the choice of food, it

was served in such a way that the whole effect should be educative. There were tablecloths and flowers on the table; monitresses were chosen from the older children in the school who waited on small groups of ten at a table. These monitresses wore clean white aprons and sleeves, and received their dinners free in return for their services. Most of these children had never had any experience in the etiquette of the table and yet there was little trouble about their behavior, "for children soon respond to orderly and decent surroundings."

TRAINING THE APPETITES

It was not enough that the meals should be nourishing and attractive to the normal palate. The children were quite unused to normal food, having subsisted largely on canned and fried food, coffee and baker's bread. They had seldom tasted milk. They had to be taught to like the new tastes. They were watched individually from the first. Dr. Crowley says: "This is an especially important point, and if it be not attended to no system of feeding can give fully satisfactory results. With a little encouragement, by starting with small helpings, by not at first unduly pressing what is distasteful and

in other ways, children whom at first it is difficult to get to eat can soon be made to do so. These children it was found advisable to group together at one table, thus permitting of ready supervision."

When the meals started, only one child of the entire group had ever before eaten oatmeal. This was a Scotch child. The first day thirteen refused to eat it; by the next day curiosity or imitation had conquered all but two, and after that all ate with apparent enjoyment and there was much complaining when the oatmeal was omitted for variation. New dishes in the dinners were adopted in the same way.

RESULTS

Certain good results of the experiment were apparent to all. The children brightened up, their general carriage changed from one of listless depression to alert interest. The teachers reported a corresponding improvement in the lessons.

Aside from these results that cannot be expressed in quantitative form, the actual gains in weight are shown in graphic form in the following diagram in which the fluctuations in weight of the children receiving meals are shown by the solid line and the total gain of the "control group," by the dotted line.

The results may be summarized as follows:

1. Before the meals began the average weekly rate of growth during five weeks was a little over

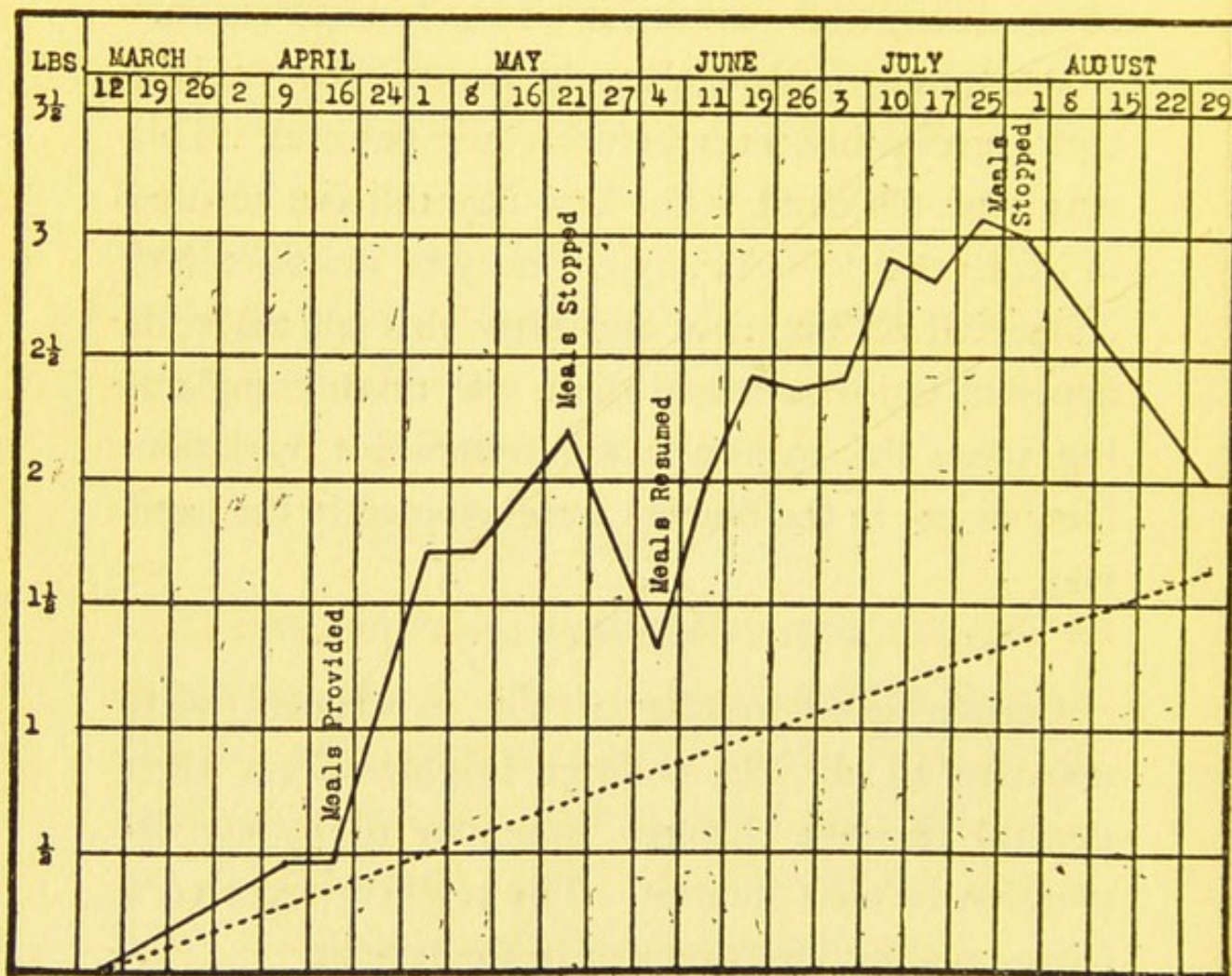


Diagram showing average individual increase in weight of children in Bradford school feeding experiment during twenty-five weeks. Solid line shows average increases and decreases of children receiving meals. Dotted line shows average increase of control children not receiving meals. (Adapted from Crowley.)

an ounce apiece. This was about the average weekly gain of the control children during the experiment, and represents a yearly gain of three pounds and five ounces.

2. The children who were fed gained on an average of six ounces a week in the first four weeks of the experiment. The greatest gain came in the first week, when the average was one pound and four ounces. After this sudden rise the weights remained nearly stationary for a week. The weekly gains of the third and fourth weeks were $5\frac{1}{2}$ and $4\frac{1}{2}$ ounces.

3. During a holiday of eleven days, from May 16 to May 27, after four weeks of feeding, the children were not fed, with the result that they lost a pound apiece in weight, which it took two weeks to regain.

4. During this same holiday the control children, relieved from the strain of school work, gained on an average of eight ounces apiece, as opposed to a gain of $\frac{3}{4}$ ounce in the next eleven days after the vacation. (These variations not shown in chart.)

5. The net average gain of the experiment children from the beginning of the feeding till the end was two pounds and eight ounces.

6. The total average gain of the control children during the same period was one pound and four ounces.

7. At the end of the summer holidays all the

children were about the same again. An increase in weight was again shown in the case of the control children, who gained at the rate of $2\frac{1}{2}$ ounces a week instead of one ounce.

This experiment showed that the single factor of good food could do much even while other conditions hostile to healthy development remained unchanged. Without hesitation, therefore, the school authorities made plans for the development of meals on a much larger scale.

PRESENT ORGANIZATION OF SCHOOL CANTEENS IN BRADFORD

To-day the equipment for school meals in Bradford is probably the finest in the world. The work is in the hands of the Canteen Committee, which is a sub-committee of the city school board, and comprises head teachers, medical inspectors, visiting nurses, and attendance officers.

SELECTION OF CHILDREN

All the children may attend the meals, but special attention is given to those who are to receive the meals free. As a rule the teachers recommend children from their classes who they think are in need

of food. Sometimes the parents apply to the head teachers directly. In any case where free meals are asked for, the child is immediately given food, while the Canteen Committee makes careful investigation of home conditions, and on the basis of what is found, determines whether the parent shall be required to pay the cost of the meal in full or partially, or whether the meals are to be given free.¹

THE POVERTY SCALE

Wherever it is found that the total weekly income of a family falls below 75 cents per head after the rent is deducted, the children are considered eligible for the free list. Exceptions are made to this rule, and the scale is raised in the case of a small family, where the expenses are proportionately heavier than in a larger one, and in cases where there is illness or irregular employment.

Children of all social grades attend the meals, and pay various prices for them, anywhere from threepence to halfpenny, according to their ability. But no distinction whatever is made between those who pay, and those who do not, and the children themselves are entirely unaware of the differences.

¹ Appendix B

PREPARATION AND SERVICE

The preparation of the meals is under the direction of a man who is a professionally trained chemist, as well as a first class cook. He has five helpers, and together they prepare the meals at one central kitchen where there are facilities for preparing 10,000 meals a day. Only the most approved modern appliances are used, and there is no waste either of time or materials in the Bradford kitchen. There are large hundred gallon steam-jacketed boilers, porcelain baths for washing vegetables, potato peelers, dish washers, and other labor-saving devices. The city bakes its own bread in large steam ovens, heated like the other stoves by the same boiler that is used in the heating of the school baths nearby. This means that the cooking of the food does not cost a penny extra.

COST OF THE MEALS IN BRADFORD

The initial cost of the equipment described above was \$20,000. During the year 1908-09 the total expenditure for the meals was \$39,600, including the salaries for cooks, caretakers, and supervisors, the up-keep of the equipment, the cost of administra-

tion and the food. In this year about a million meals were served, a quarter of them being breakfasts. The total cost of a dinner was 3 cents, the food costing 2 and the administration 1 cent. In all about 5,500 children attended the meals sometime during the year, while the average daily attendance summer and winter was 2,700. Of these a daily average of about 240 children paid either the whole cost of the meal or part of it.

EDUCATIONAL FEATURES OF THE MEALS AND SOME OTHER THINGS

The most important educational feature of the meals is that they tend to raise the standard of food above that found in the children's homes. This is true not only of the food itself, but of the way the meals are served.

The dining halls are painted in fresh, light colors. Tablecloths and napkins are provided and the children are encouraged to bring flowers and plants for decoration. The teachers eat with the children, and are paid for the service of supervision for which they volunteer.

Children from the older classes, particularly from classes in domestic economy, wait on the table. The

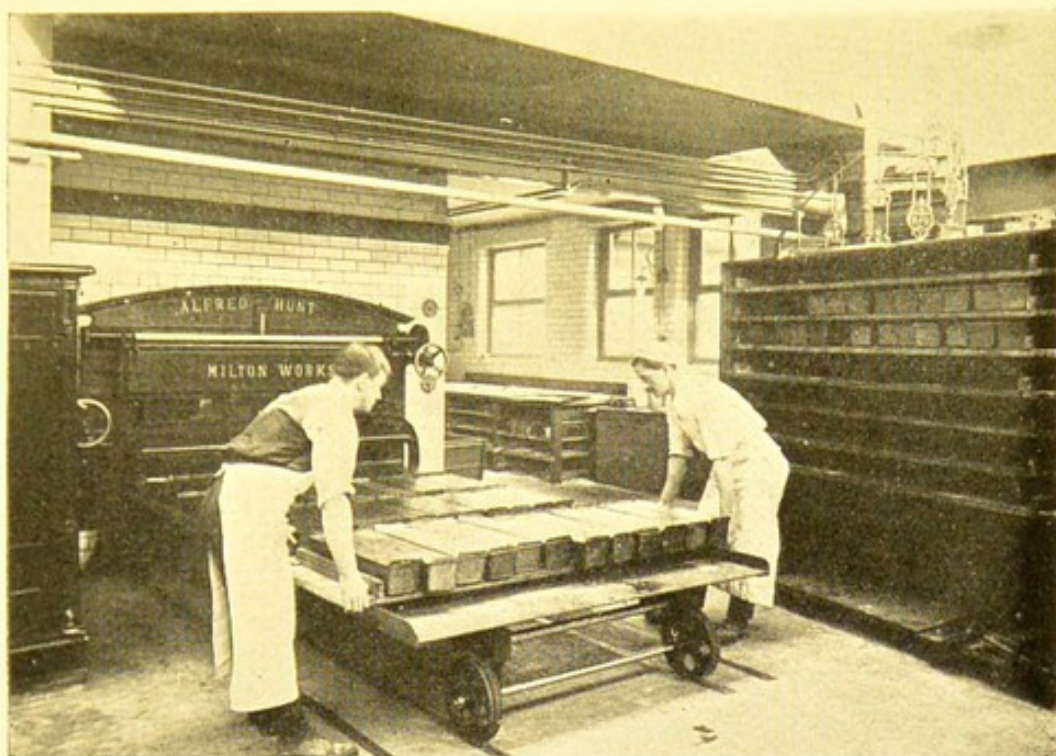
aprons and sleeves worn by the " waiters " are made and mended by children in the sewing classes.

The children must wash their hands and faces before each meal and other lessons in practical hygiene and cleanliness are given at the same time.

The food values and the cost of food are taught to some of the older children, but this work is not confined to the school. Members of the Canteen Committee visit the homes and talk to the mothers about their children's food and health and encourage them to visit the dining rooms at meal time. The Education Committee has also published little pamphlets which are distributed among the mothers giving the recipes of the dinners used at school, with the cost of the ingredients, and directions for preparing them for families of seven.

So far the results reported have been favorable, not only as regard the children's health and physical development, but their manners and conduct as well. When asked after one year if in general and in any or all of these particulars the teachers had seen an improvement, answers were forthcoming from 214 teachers as follows:

One said the improvement was physical only, not mental;
Thirty-seven said they had not had enough experience to give an opinion;



CHARGING OVEN. HEAT SUPPLIED BY SCHOOL BATH FURNACE. BRADFORD, ENGLAND



INTERIOR OF MOTOR WAGON. SHOWING DEVICES FOR RETAINING HEAT. BRADFORD, ENGLAND



Thirty-three thought no improvement was visible; and One hundred and forty-three reported that the meals had improved the capacity of the children.

The work with the parents has been remarkably successful. Miss Margaret MacMillan, the well-known English educator, in a lecture in New York City in 1911 asserted that the institution of school feeding has "enormously increased the responsibility of parents, because they are profoundly impressed with the need of studying their own children, when they learn things about them they have never thought of before." For example, a mother brought her little girl to the School Clinic for examination. The doctor found nothing the matter and inquired why she had brought her and if she had noticed anything wrong. The mother said, "Oh no, I just wanted an opinion." Such a thing as a woman seeking an opinion about her child was unheard of ten years ago, while it is now quite common.

Another account of the work in Bradford closes with this significant statement: "The doctrine that child feeding would undermine parental responsibility has received a rude shock, as scores of letters in our possession show that when circumstances improve, parents are the first to report this to the

committee, are often most grateful for what has been done for them, and are anxious to make way for the children of those less fortunate than themselves."

PRESENT EXTENT AND STATUS OF SCHOOL MEALS IN ENGLAND

Beginning with the spring of 1909, annual reports have been issued by the Board of Education on the workings of the Meals Act from the time of its passage. The first report, covering the period through March, 1909, showed that in 113 places, out of a possible 328, the Act had been put into operation. Five places were not heard from and in 210 places the local authorities stated either that there was no need or that voluntary organizations were sufficient to meet it. Many of these organizations receive substantial support from the city, although not through the medium of the school budget. If we include all forms of organizations, it may be fairly said that there are not fewer than 200 towns in England and Wales where meals of some kind are served at school. With these differences in mind the experience in Bradford may be regarded as typical of what is taking place else-

where in England though not perhaps on such an elaborate scale.

Some idea of the rapidity with which the organization of school canteens progresses may be had from the following figures taken from the reports of the Board of Education referred to above.

By the end of the year following the passage of the Act, forty-one Local Educational Authorities had received permission from the central board to use school money to pay for the food. In the year 1907-1908, eighty-five authorities received permission and during the school year 1909-1910, their number was raised to ninety-six, and in 1910-1911 to one hundred and twenty-three.

So far as returns were available as to the number of children fed, it appears that in 1907-1908, in fifty-six places excluding London, 44,000 children (in round numbers) attended meals and among them consumed about 3,000,000 meals. In 1908-1909 about 118,000 children in 109 places visited canteens and consumed over 9,600,000 meals. In 1909-1910, 119,998 children in 122 places consumed between them over 8,760,000 meals, again excluding London.

If we add to the figures already given the returns from London for these years, we have the following grand totals for England and Wales:

TABLE 2. NUMBER OF CHILDREN ATTENDING MEALS AND NUMBER OF MEALS SERVED IN YEARS FROM 1907-08 TO DEC., 1910

Year	England and Wales Excluding London		London		Total	
	No. Fed	No. Meals	No. Fed	No. Meals	No. Fed	No. Meals
1907-08	44,213	2,751,326	37,979	143,962	82,192	2,895,288
1908-09	117,875	9,671,789	39,632	166,766	157,507	9,838,555
1909-10	19,998	8,766,635	55,000*	7,335,609	174,998*	16,102,244
1910-	13,084	7,160,201	115,000*	9,138,755	228,085*	16,298,950

*Estimates only, based on average number of meals per child consumed in preceding years.

London did not avail herself of Section 3 of the Act until January, 1909. After this date the canteen service was increased enormously till, during the single week ending March 11, 1910, 55,554 children attended the meals in 842 centres, and between March and December, 1910, a total number of over 9,000,000 meals was consumed.

MEALS DURING VACATIONS

In London and in forty-four other places the meals are served every school day, and during the school holidays. In thirty-four places provision is

made for the meals all the year round, even though the attendance is somewhat smaller in the summer. The reason for this practice is because experiments have shown that the children tend to lose weight during the holidays when the school meals cease.

FINANCIAL SUMMARY

There are four different sources for the money used in support of the school canteens. First there is the amount spent on equipment and service. This is drawn from the local taxes, the amount being voted on by the City Council as part of the Educational Budget. Second, there is the local tax (at the rate of $\frac{1}{2}$ d. on the pound) specially levied to cover the cost of food. This is first voted on by the City Council but must be submitted for approval to the National Board of Education before it may be used. The third source of funds is in voluntary contributions, which are mainly used to pay for food. Finally there is the money collected from parents, either in payment for meal tickets, or as a civil debt in cases where they have neglected to pay.

The total amount spent on school canteens in 112 towns of England and Wales during the years

1908-1909, and 1909-1910, is shown in the accompanying table, which indicates also the sources of the funds used.

TABLE 3. PROVISION OF MEALS IN ENGLISH SCHOOLS FINANCIAL SUMMARY, 1908-1911

	1908-09	1909-10	1910-11
1. Money raised by local taxes for food	\$205,445	\$408,640	\$448,045
2. Expenditure on equipment and service	132,175	218,220	256,330
3. Total cost to local taxes for food and service (from 1 and 2)	337,620	626,860	704,375
4. Expenditure on administration.	24,045	43,665	63,465
5. Total expenditure from local taxes	361,665	670,525	767,840
6. Money provided by voluntary contributions	89,155	49,065	37,685
7. Money contributed by or recovered from parents	1,675	4,530	6,850
8. Total expenditure on meals (5 and 6)	450,820	680,455	748,910

In this table the amount contributed by or recovered from parents is small for the reason that the meals have so far served the needs of only the poorest children whose parents, as shown by the use of the "Poverty Scale," are actually unable to pay even the bare cost of the food-stuffs. The significance of this is emphasized by the considera-

tion of the fact that the average price asked for a dinner is 3 cents and for a breakfast 2 cents.

The restriction imposed by law on the amount that may be spent for food has caused considerable trouble, because in several places it has been found absolutely impossible to keep within the halfpenny limit. For example, in Bradford in 1908-1909, \$22,650 was spent by the school for food instead of \$14,425, which was the amount covered by a $\frac{1}{2}$ d. tax. This was partly owing to the fact that the meals were continued during the summer months, and because, in addition to the dinners, it was found necessary to have breakfasts at a time when there was an unusual amount of unemployment. An attempt is now being made to remove this restriction, which is felt to be illogical and not in keeping with the spirit of the Act, which was designed to benefit as large a number of children as possible and at least to provide for all children in actual want.

The amounts provided by voluntary contributions show a tendency to decrease from year to year, as the work becomes more and more recognized as part of the school responsibility. But this does not imply a lack of public interest, since this is being shown in other ways, especially by the en-

thusiastic volunteer service of Canteen Committees in doing follow-up work with the parents and children.

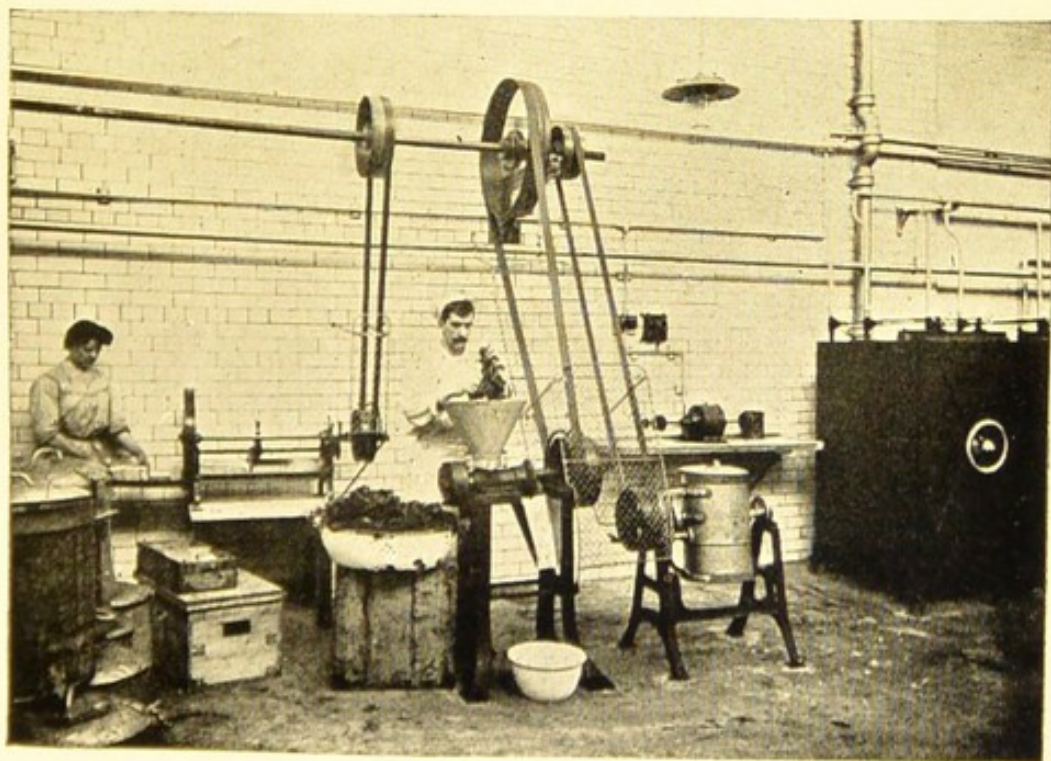
FURTHER LEGISLATION AFFECTING THE CANTEEN SERVICE AND RESULTS SO FAR

The Provision of Meals Act was the first of a series of legislative measures passed in favor of national conservation and growing out of the fear of national deterioration. The most important of the laws which were passed later and have affected the canteen service was the Education Act of 1907, making Medical Inspection compulsory in the schools throughout England. The National Board of Education almost at once placed the general supervision of the Meals Service in the hands of their Medical Department and beginning with 1910, the annual report has been made by the Chief Medical Officer.

This Act requires that an account be kept of the nutrition of each child and that this be made the basis of the general report on his physical condition. In most places the medical inspector is a member of the committee in charge of the canteen work, and frequently it is he who makes the final decision of whether or not a child is to receive free meals.



FILLING FOOD VESSELS WITH SOUP AND RICE PUDDING. BRADFORD, ENGLAND



CUTTING BREAD AND MINCING PARSLEY. BRADFORD, ENGLAND



In the spring of 1909 an amendment was proposed to the original Meals Act which was designed to place the final responsibility of saying whether or not a child is underfed on the medical inspector, who might be required at any time by the school board to examine a child for this purpose. The amendment further provides that wherever a child should be found to be underfed, it should be the duty of the school authorities to see that it was fed.

SCHOOL MEALS IN SCOTLAND

This amending bill was defeated in Parliament. If passed it would have virtually made compulsory the provision of meals by the educational authorities. In its terms it resembles closely Section 6 of the Education Act passed in Scotland in 1908 whereby medical inspection is made compulsory and the school board in any town is obliged to see that children are fed who are declared by medical inspection or otherwise to be "unable by reason of lack of food to take full advantage of the education provided." The school board may make immediate provision of food but must interview the parents as soon as possible and find out why the child is not fed properly. Then if it is found that it is be-

cause of the poverty or ill health of the parents, the school may provide meals for the child as long as it is necessary during the school year. Where the case shows wilful neglect or cruelty the cost of the meals is collected summarily as an "alimentary debt," and the parent may be punished under the Prevention of Cruelty to Children Act.

FEEDING AS A PREVENTIVE MEASURE

Partly because of the excellent results obtained in the open air ² schools for tuberculous and anæmic children, where full regular meals form an important and prominent part of the treatment, British school physicians are now proposing that children showing tuberculous or anæmic tendencies shall be given meals at school as a preventive measure. In this connection, Dr. Lambert of Brighton suggests that "it is frequently advisable to recommend all members of a family known to be tuberculous, irrespective of their stature." ³

In many places, the medical inspectors have begun keeping records of the physical development of the children from year to year. The records thus made

² Ayres, Leonard P., *Open Air Schools*.

³ Kelynack, T. N., *Medical Examination of Schools and Scholars*.

are turned over to the British Association for Anthropometric Investigation, whose aim is to have available at any time material showing the exact physical condition of the nation.⁴ Special attention is given to the children who are underfed and in attendance at the school meals, as this is a convenient and reliable method of testing the value of the canteens.

The following experiment in Northampton, which corroborates the experience of Bradford, shows what may be expected from school meals. During a period of fourteen weeks, forty-four children were given breakfast and supper, and weighed each week. At the beginning of this time they weighed on an average nearly four pounds less than normal for their ages. At the end of the period they had gained so that they weighed only two pounds less than normal, while forty control children, who had not been fed, were as much below weight as before.

Where such measurements of weight have not been made, bodily improvement has been shown in other ways. From Halifax comes the report that the meals have "increased vitality, both as regards

⁴ Report of the Committee on Anthropometric Investigation in the British Isles. London, 1909, The Royal Anthropol. Institution.

work and play," and from Bristol that "In a fortnight after the commencement of the free dinners to necessitous children, the improvement in their physical condition became quite apparent."

One of the chief reasons for having the canteens was that certain children were found to be unfitted to do mental work properly because of their physical weakness. Therefore it is significant that so far the reports show that the meals have had a good effect on the children's mental ability as well as on their bodies. This has been particularly noticeable in the case of those distinctly underfed. Where the meals have been given as a relief from temporary distress, the results have not been appreciable, as they have simply maintained the children's normal efficiency. A few quotations from the official reports will illustrate the general tenor of opinion.

Birkenhead: "The general testimony of the head teachers of the various schools . . . is that the children were brighter, more regular, and better fitted for their work."

Birmingham (Breakfasts): "Beyond question a distinct improvement has taken place in the ability of the children to take full advantage of the education given."

Bristol: "The children's general appearance is

brighter, and they enter into their work with more zest."

Wallesey: "Most of the teachers report that the children show an increased interest and a greater ability in their work; and they also note an improvement in the regularity of the attendance. One teacher says: 'In several cases the dull, tired, and frequently bored look about the children has disappeared, giving place to a brighter manner and keener interest in their work.'"

Only a few exceptions to this general opinion as to the effect of the meals on the learning ability of the children were found. Thus, one teacher in Gillingham stated that "the increase in ability was very slight," and in Coventry it was reported that many cases showed no apparent difference in capacity.

CHILDREN'S CARE COMMITTEES

Just as it has been found that for medical inspection to be effective, a great deal of "follow-up" work must be done with parents and children, so it has been with school meals. To make them effective and to really strike at the root of malnutrition with its complex causes, much more must be done than merely feeding the children once a day. Parents must be visited, shown what good

food is, and taught and urged to spend what they have wisely; bad sleeping habits must be broken up, and the aversion to fresh air combated, and child labor discovered and stopped; finally the little children not yet going to school must be cared for if they are not to be unfitted by malnutrition for their future work.

To do all this is so obviously beyond the limit of the teachers' time and strength that Children's Care Committees have been established in many English towns. These are sub-committees of the local school board and the members are elected from managers (superintendents), principals, and volunteer laymen. They have charge of all the extra-academic activities of the school, especially those relating to physical welfare. While not obligatory, the formation of these committees is strongly urged by the Medical Inspection Act of 1907.

In London, where the committees in charge of the meals were at first merely "feeding committees," they were reorganized on the larger basis of "Care" committees, after two years' experience with the more limited activity. The handbook published by the London County Council for the use of the thousand committees shows a wide range of

duties extending beyond the school into the children's homes, into their early childhood; into the terms and conditions of their industrial life, after school years.

Members of the Care Committees look up the records of the children applying for free meals, investigate home conditions, talk to parents, and give help and advice about their children. Beside this they supervise the dietaries in use at the canteens, appoint the people who cook and serve, and superintend the entire service of the meals. One important part of their work is the attention to individual children at the table, to insure that each child gets enough and is benefited according to his particular need. It seems that, as a rule, about ten per cent. of the children require this special attention, to be induced to eat the food, or even to attend the meals at all, while these are often the very ones most in need.

Other good results of the individual work done by these committees was reported from Bristol, where it was found since the meals have been served at school "the parents have fallen in more readily with medical inspection, and the teachers have less trouble now in securing cleanliness."

MANNERS AND CONDUCT IMPROVED BY MEALS

In general the teachers report a marked improvement in the manners and conduct of the children, especially in places where the meals are served in special dining-rooms with personal supervision from the teachers or members of the Care Committees. One Head Teacher in Bath describes the meals as "Practical lessons in unselfishness, cleanliness and self help." A characteristic report comes from Gorton, where "in many cases the children never sit at table when having meal at home. The wholesome influence of preparing for the meals—by washing hands and faces, singing or saying grace together, sitting at table with others and talking to them quietly, learning to handle knife and fork or spoon, and to eat in seemly fashion—all this has had its due effect which has extended beyond the meals' centre itself to the school, the home, and even to the street."

FEEDING OF YOUNGER CHILDREN, BEFORE SCHOOL AGE

Beside this provision for children of the compulsory school age, England is attacking the problem of food at an earlier stage and day nurseries on the

pattern of the French Crèches are being established widely. Special attention is paid to the proper feeding of the children sent there.

In 1908, Parliament passed the "Children's Charter," which includes in a codified and revised form all previous legislation in regard to children, with many new features. Section 12 provides for the prosecution of all people who fail through their own fault to provide sufficient food for the children under their charge. In this section "wilful neglect" includes the failure on the part of the parent or guardian to obtain needed help from governmental sources.

In 1910 a law was passed which, while not dealing directly with children or with the educational system, is destined to remove one prolific source of malnutrition. This was the Board of Trades Law, which provides for the fixing of a minimum wage in certain low grade industries. The agitation for this law began some twenty years ago while a school fee was still charged, and many women chain-makers, the most unprotected class of wage-workers, were being fined for not sending their children to school. These women apparently had two alternatives: to pay the school fee, and send

their children to school, or to keep them home and pay the fine imposed under the Truancy Law. The condition of these women was relieved but slightly by the removal of the school fee, as their wages remained entirely out of proportion with the increasing cost of living, and the children were often sent hungry to school. The new law, though rudimentary in its implications, is the first step toward an adjustment of wages that may end in abolishing the need for free meals.

By these legislative measures—providing for school meals, as a part of the regular school system, for the examination and registration of the nutritional condition of all school children, for special committees to do follow-up work and home visiting in connection with the meals, for a means of dealing legally with persons who neglect the feeding of children in their care, and finally for the legal adjustment of a minimum rate of wages above the starvation line, England is in a fair way to eliminate malnutrition from her list of school problems, and thereby from the list of obstacles in the way of a healthy national life.

IV

THE CANTINES SCOLAIRES OF FRANCE

After bread, education is the first need of a people.

—DANTON.

IN 1849, the battalion of the National Guard in the second district in Paris found that they had a surplus in their treasury for which they had no special use. All agreed that it must be used to some good purpose—to benefit the community if possible. The good fellows, many of them fathers, most of them poor men, remembered that their neighbors' children were often unable to go to school because they had no decent clothes or shoes. Their parents could not give them the extra food necessary for the extra work, far less buy for them the expensive books. Here then was a use for the guardsmen's money. They turned it over to the district authorities to form the nucleus of a "caisse des écoles," a school fund that was to help poor children get a schooling.

The people of the district became interested; other sums were added, and the Caisse became an important affair in that section. In 1862 another

district adopted the plan, and in 1867 its value had become so apparent as to attract the attention of the Minister of Public Education. The school law passed that year contained a section authorizing the establishment of School Funds in every commune in France. The section ran as follows:

The municipal council, with the approval of the prefect, may establish, in any commune, a school fund destined to encourage, and facilitate school attendance, by rewards and help given to the industrious and poor pupils.

The revenues for this fund shall come from voluntary gifts, and subventions from the commune, department, or state.

Several communes may combine in forming and supporting such a fund.

The collection of this fund shall be made gratuitously by the teacher.

In 1882, when primary education was made compulsory, Article XVIII of the law enacted that:

The school fund instituted by Article XV of the Law of April 10, 1867, shall be established in all the communes.

The *Caisses des Écoles* were thus made compulsory and were put under statutory obligation to share in the medical inspection, school lunches, provision for holidays, excursions, vacation schools,

savings banks, and whatever extra services the school authorities might institute for physical or other welfare of the children.

THE CANTINES SCOLAIRES

One definitely recognized part of the functions of the *Caisses des Écoles* soon came to be the *Cantine Scolaire*, or school lunch room. The support for this branch of the work was definitely assumed by the government in Paris in 1880 and has since become generally recognized throughout France as regularly comprising part of the expenses of public education.

As early as 1867 Victor Duray, the minister of public instruction, had recommended to the prefects that they look after the hygienic conditions of the schools, and direct special attention to the nutrition of the children. As a result, during the next decade school meals for the very poor children were started in about 464 places. These meals, not yet cantines in the strict sense of the word, were generally in the hands of the *Caisses des Écoles* committees. By the term *cantine* is meant a school restaurant where any child can get a meal at noon, on presentation of a ticket that represents the payment of the cost

of the food. Further, the term only applies to restaurants supported in part or entirely by public funds.

There are at present, according to the latest report, about 1400 communes in France supporting school cantines of one kind or another, with provision for about 187,000 children. This report covers only 55 out of the 88 departments making up the French nation, and there is good reason to suppose that the other 33 departments are well supplied. The cantines in Paris may be taken as the type of the true *cantine scolaire* in its most developed form.

ADMINISTRATION OF THE PARISIAN CANTINES SCOLAIRES

Paris was the first of the great world cities to make complete and adequate provision for the proper nourishment of all her school children, and this, not as a matter of charity but as the expression of a fundamental conviction in education; that is, that the state, in assuming responsibility for the mental culture of the children, must be also responsible for their physical preparedness for this culture. London followed her example some twenty years later.

The municipal provision of cantines was first considered in Paris in 1877 when one of the city councillors proposed that every child whose parents' names were on the lists of the Poor Board should receive warm food and clothing from the city in order that it might attend the public schools. Cantines were at once started in a few schools, but it was not until 1880, after two years of study and experiment, that the council voted financial support and the cantines were established in every school district. From the beginning the cantines were entrusted to the administration of the *Caisses* in each district, which received a special subsidy of 480,000 francs or \$96,000 toward their support, being required to furnish the balance of the cost from local sources.

With the development of the cantines, the subsidy from the city was gradually increased, till finally it covered the entire cost and the committee in charge of the *Caisses*, now entirely official bodies, were responsible only for the administration of the cantines. By 1900 the cost of the cantines had risen to 1,000,000 francs or \$200,000 in 1905 to 1,050,000 or \$210,000 where it has remained. In 1900, the expenditures for the cantines amounted

to a little over four per cent. of the city's entire educational budget.

This figure \$210,000 does not include the amount given to the teachers who supervise the meals each day. They are paid 1 fr. 50, about 25 cents a day for an hour's attendance at noon. This fee was gained in 1904 after a long struggle on the part of the teachers, who, while they gave their services gladly enough, felt it was unjust to be *required* to serve without pay.

Each year the different districts apply to the city council for an amount that they think will cover their expenses. At the same time they report the work of the past year and give in detail their plans for the next. The council then distributes the entire amount set aside for the cantines in proportion to what they think each district needs. Three general principles of procedure that have been followed ever since were decided upon when the cantines were first established in Paris.

MEALS FOR ALL, FREE FOR THOSE WHO CANNOT PAY

The first is that the meals, although open to all children, whatever their economic class, shall not be free to all but free only to those children unable to

pay the cost of the food. Although the cost of the food does not cover the cost of equipment and services, it was felt that if the parents were required to pay for the food, it would be an ample safeguard against the possibility of weakening their sense of responsibility. "The requests for free food are referred to the principals of the schools; they are then investigated carefully by a special delegate of the Caisse des Écoles, who includes in his report not only the parents' statements but also all the circumstances which oblige the family for the time being to ask for charity. Moreover, the privilege is granted for only one school year at a time."

UNIFORM MEAL TICKETS

The second principle, developing from the first, is that in distributing the food, no distinction is made between those paying and those receiving the food free. "In order to avoid making any distinctions of such a kind as to wound the feelings of the less fortunate families, it was decided to adopt for all portions distributed, whether paid for or not, a system of uniform checks, to be sold to those families able to pay for them and to be given gratuitously to the needy children. These checks

are received by those in charge of the cantines, who are absolutely forbidden to receive any payment in money.

The distribution and sale of the tickets is taken care of at the town hall under the direction of the mayor, and of a committee appointed by the *Caisses des Écoles* and of a second committee appointed from the Cantonal Delegation.”¹

LOCAL INDEPENDENCE OF THE DISTRICT CANTINES

The final principle is that the *Caisse des Écoles* in each district shall have complete control of all other points in the organization of the cantines. This provision allows for local variation in administration to meet the differing local conditions in the various parts of the city.

There are two general methods of organization. By the first, or indirect method, the *Caisse* entrusts the service of the cantine to a caterer, paying him so much per meal, usually about 15 centimes or 3 cents. By the other, known as the direct method, the Cantines are under the direct supervision of a

¹ Extract from a statement made by the Director of Primary Education in Paris, on “The Organization of the School Cantines in Paris,” published in manuscript manifold for distribution.

committee elected by the Caisse. The latter is in use in the majority of districts and is considered the better from every point of view. It is more economical, as the cost of a single meal rarely exceeds two cents, as against three or four cents, by the indirect method.

MANAGEMENT OF THE CANTINES BY THE DIRECT METHOD

In those districts where the direct method is used, the Caisse des Écoles gives the entire management of the cantines into the hands of a committee consisting of twenty of its members. This committee meets at least once a month. It chooses the tradesmen that are to be patronized, the staff of workers in charge of each cantine, and issues orders for the purchase of food, etc. There is always one woman inspector appointed by the committee, who has fifteen or twenty woman helpers, all of them responsible to the committee.

At the outset the committee, having chosen the trades-people, gives specific direction for the buying of the foods, the price to be paid, the quality used, etc. The food bought must always be of excellent quality. Beef, legs of mutton, and fresh pork for

roasting are the meats most commonly used. The vegetables must be fresh in summer.

The menu must include meat or vegetable soup, and meat with a vegetable or macaroni.

As a rule, each cantine supplies two schools, though where the schools are very large they may each have their own cantine. At the head of each cantine is a "cantinière," who is responsible for the receiving, preparation and safe-keeping of the food, as well as for attending to the care of the equipment and fuel. She has one or more assistants, according to the size of the cantine. The salaries of these women vary according to the amount of work they have to do, but all are allowed their lunches.

The head woman inspector must visit as many cantines as possible in a day, and see the food both in the raw and cooked, as well as watch the processes of preparation and service. Her assistant inspectors visit the other schools, and members of the cantine committee are expected to make frequent visits as well. The inspector, her assistants and the committee are required to report the results of their investigations on blanks provided for the purpose. These blanks are submitted to the Cantine Committee at each monthly meeting.

REAL MEALS, NOT "FEEDING"

The spirit of the Parisian cantines is thoroughly democratic. The principle is to encourage all the children, rich and poor, to eat together, and there is no distinction made between those who pay and those who do not. A child may bring his own meal with him, but it is never so cheap, is always cold and is rarely as good as the meal provided by the canteen, which, as all observers agree, is remarkably good.

"From the very first," writes an English visitor, "the greatest care has been taken not to allow any loss of dignity to arise from the free feeding. The fundamental principle of the whole management is the absolute innocence of the children. They cannot be expected to pay. Their parents may be at fault; if so there is only the greater reason to shelter the children and try to preserve in them that sense of self-respect which might so easily be wrecked by their parents' bad conduct."² To avoid any possibility of the children themselves knowing who pay and who do not, the simple device is used of a small box-office through which each child goes to purchase his ticket. If he claims that he cannot

² Lancet, Reports on the Free Feeding of School Children.

pay, the ticket is still given, but his name and address are noted, and inquiries are at once made about his parents. Where the parents are found able to pay they are compelled to do so, but where they cannot, tickets are given to the child without further question for as long as may be necessary. Lists of those who are to receive free tickets are made out at the beginning of every school year.

A THREE COURSE DINNER FOR THREE CENTS

The food that may be bought for three cents at any Paris school cantine is surprisingly good in quality and there is enough of it to satisfy the hungriest little stomach. Three cents will buy soup, meat and vegetables and sometimes even a little sweet by way of dessert, not to mention all the bread wanted. The older children receive 30 grams of meat, and the younger ones twenty.

The menu is changed every day in the week. To quote the Lancet Commissioner again, it is generally something as follows:

“Three days in the week there is ‘bouillon gras,’ a delicacy unknown in England, as no ordinary English cook will take the trouble to add the proper

proportions of flavoring herbs and vegetables to the beef. Only twice a week is the boiled beef with which the soup has been made given for the second course. As this meat is lighter than roast meat care is taken to supply for the third course the most substantial vegetables—namely, lentils or haricot beans. On three days a week roast beef, pork, veal, or mutton is given, preceded by a tasty vegetable soup, and followed by a dish of mashed potatoes, or macaroni cheese, or of rice and milk, all well flavored, well cooked, and of excellent quality.”

Though only the midday meal is compulsory, in a number of districts soup is distributed at the beginning of school to the poorest children, and a “goutte,” or little bite, of bread and milk in the afternoon at four o’clock.

TEACHERS AND PUPILS EAT TOGETHER

Perhaps the most striking proof of the attractive character of the dinners is the approval shown by the teachers who attend regularly even when not supervising. Their presence at the meals is of obvious value, not only in assuring the quality of

the food, but even more for the opportunities it offers for unconscious culture.

Mr. John Spargo, who has visited the cantines and eaten at them, states that "fully 90 per cent. of the teachers use the canteens more or less regularly, though there is absolutely no compulsion in the matter. They prefer to do so on account of the cheapness and wholesome character of the meals." He goes on to say, "I have myself sat down to a three cent dinner in the company of a well-known member of the Chamber of Deputies, a professor of languages, and several teachers, each one of us having gone through the little box-office and bought his ticket in exactly the same manner as the most ragged urchin. All of the children are provided with paper napkins. The presence of the teachers is a sort of practical education in table manners. These cantines serve therefore as a great educational and ethical force as well as a remedy for one of the worst evils arising out of the national poverty problem."³

The principal of each school is responsible for the distribution and sale of the meal checks, and for

³ Spargo, John, in his "The Bitter Cry of the Children," p. 286, 1906, New York, the Macmillan Company.

keeping an account of the numbers of children who buy them or receive them free. He is also responsible for "the material and moral well-being" of the cantines.

MEDICAL INSPECTION IN THE CANTINES

Medical Inspection is obligatory in the schools of most French cities. In Paris one of the duties of the school doctor is to visit the cantines in each district. He must examine the food and see that the children get the proper kind and amount according to their ages. If he finds any child in need of a special sort of diet, he reports this, and leaves orders with the cantinière and principal which must be carried out. Sometimes tonics or cod liver oil are prescribed and furnished at meal time to the children needing them.

THE COST AND EXTENT OF CANTINES IN PARIS

All the districts of Paris have cantines except the eighth, where food is provided for the very poor children only, with no provision for children who can pay. In the school year 1908-1909 there were 353 school restaurants. These supplied meals to the pupils of 588 schools and 38,531 children

were accommodated. This means an average of 109 children to each cantine and 66 children from each school. The entire number of meals served amounted to nearly eight millions, or a little over 200 meals for each child. This does not mean that each child was fed for two hundred days, for in some districts light meals are given in the morning and evening as well as at noon.

The number of cantines and the numbers accommodated vary greatly in the different sections. In the 18th district, where the service is considered the most satisfactory by the city government, 7,128 children are accommodated daily, in 22 cantines.

In about one-half the city the cantines accommodate about 150 children apiece. In the other districts the cantines accommodate on an average of 50 apiece.

The meals vary somewhat in cost in the different districts. In the ninth district the average net cost of the meals was just two cents per meal, while in the third it was slightly over six cents. The average cost was just under four cents, to be exact, 3.8 cents. The prices paid by the children who purchased their meal averaged three cents per meal. This has come to be the standard price for a meal

ticket in Paris. In thirteen districts three is the regular amount, in two the tickets are only two cents, while in one district only does it rise as high as four cents.

The following summary gives the salient facts about the service of school meals in Paris:

CANTINES SCOLAIRES IN THE CITY OF PARIS, 1908-1909

Number of schools	588
Number of Cantines Scolaires	353
Total number of different children fed.....	38,531
Total meals distributed	7,790,627
Meals paid for	2,480,827
Per cent. of meals paid for	32
Meals given free	5,309,800
Per cent. of meals given free	68
Average cost per meal in cents	3.5
Average charge per meal in cents	2.9
Subsidy from city in dollars	210,000

CANTINES IN THE REST OF FRANCE

The pioneer town in France to have school meals was Angers, where as early as 1871 a society known as "The Society for People's Kitchens in the Public Schools" (*Société de Fourneau des Écoles Laïques*) was established with the approval and support of the city authorities. With the co-operation of the teachers this society still serves a warm

midday meal free to all who cannot pay and at a cost of two cents to others, from the beginning of November to the end of May. About 1800 children were served daily in 1908.

The cantines arose independently in the different sections of the country, Angers leading in 1871, and Paris making them compulsory in 1882. They now constitute a part of the school equipment in cities, small villages and country districts. An inquiry regarding the number of places having cantines, the number of children accommodated, etc., was directed by the author of the present work in 1909 to the prefect at the head of each of the 88 departments. The prefects of 55 departments replied, and in only two places were there no cantines; a third prefect replied that he could not give any information about them. All three of these departments were country districts. In at least 52 departments of France there are cantines, providing meals for anywhere from 100 country children on the Swiss border, to 55,000 in the thickly populated department of the Seine.

In the majority of cases, the commune holds itself directly responsible for the maintenance of the meals. Out of 43 cases, the support and administra-

tion were entirely public in 27, while in the other 16 cases the administration was in the hands of a semi-public society, receiving public subsidy. In other words, the available information seems to indicate that something like three-fifths of the cantines are supported directly and entirely by public funds, while the other two-fifths are supported indirectly and partially by public funds.

The following analyses of official reports make a convenient summary of the present system of Cantines Scolaires in France:

I. ANALYSIS OF THE REPORTS FROM FIFTY-FIVE DEPARTMENTS OF FRANCE CONCERNING THE CANTINES SCOLAIRES

Among fifty-five departments thirty-four reported the number of cities. They were 816 in number.

Among fifty-five departments forty-five reported the number of communes. They were 1,391 in number.

Among fifty-five departments thirty-nine reported the number of Cantines Scolaires. They were 2,720 in number.

Among fifty-five departments forty-seven reported the number of school children receiving meals. They were 186,505 in number.

Among fifty-five departments forty-three reported facts respecting the source of support of the Cantines Scolaires. In twenty-seven departments they were supported from public funds; in the remaining sixteen, from public and private funds.

Among fifty-five departments two reported no Cantines Scolaires.

Among fifty-five departments one gave no information.

II. ANALYSIS OF THE REPORTS FROM PARIS AND THE OTHER FIFTY-FOUR DEPARTMENTS REPORTING

	No. of Schools	No. of Cantines	No. of Children Receiving Meal.
Paris	588	353	38,531
France, exclusive of Paris.. ...		2367	147,974
	<hr/>	<hr/>	<hr/>
Total		2720	186,505

SUBSTITUTES FOR THE REGULAR CANTINES SCOLAIRES

We have already noted that the term cantine has a definite meaning, and that it does not apply to privately run meal centres, nor yet to those run as relief measures even where the government supports them. In a large number of places, where for some reason or another regular cantines have not been installed, the teachers or janitors serve warm soup to the children at a nominal sum, usually during the winter months only. These are called by the general names of "Soupes Chaudes," or "Soupes Scolaires," and may exist in the same town with regular cantines.

Still another form of the school meal that is yet

not a cantine, is found in country districts or in the smaller towns, where the children bring the raw material for the soup, vegetables, meat, flavoring, etc., from which a sort of communal soup is prepared by the teacher, of which all partake. Beside the soup stuff, the children bring their own bread and sometimes a little wine and water, or a small cake for dessert. There is one more form of provision for the school child's lunch. Most schools, whether or not they have a cantine, or a system of "Soupes Chaudes," do have a stove for warming the children's food. Thus, a child may bring a little pail of soup, a piece of meat, or an egg, and the teacher or janitor will warm it for him if he is too little to attend to it himself.

There are four important points about the public provision of meals in France:

1. Although there is no specific national legislation in regard to school restaurants in France, their provision is nation-wide. The communes are obliged to have school funds, the *Caisses des Écoles*, which may be used for the provision of meals whenever there is need.

2. The cantines are supported directly by the municipalities in the majority of cases. To a less

degree they are entrusted to semi-private bodies, receiving public subsidy.

3. Where well developed, the service of the canteens is closely allied to that of Medical Inspection, being under the direct supervision of the school doctor, who may at any time suggest a special diet for a particular child, or prescribe a tonic or other medicine. The doctor's orders must be carried out at public expense in these cases.

4. Finally, in no case is the provision of meals regarded as charity, but always as an expression of the ideal "*mens sana in corpore sano*."

It is a cardinal point in the French theory of education that a child must have a warm meal in the middle of the day. How far the government has been interested to put this theory into practice may be judged by the foregoing account of school restaurants, "*Soupes Chaudes*," the "*communal soup*," and the handy school stoves.

V

SCHOOL MEALS IN GERMAN MUNICIPALITIES

It is easy enough to discover and feed the hungry children, but if we are content with observing the merely external, we run the danger of overlooking the real underlying conditions, and of veiling the social shame that they represent.—DR. CUNO, 1896.

IF one were to attempt to characterize in a single phrase the movement for school feeding in France, that phrase might well be “unconscious evolution.” For England, the term “national necessity” would seem justified. In Germany the movement in its national aspects assumes the character of scientific experiment.

Shortly after the passage of the British Provision of Meals Act, in 1906, it was discovered in Germany that from forty-four to forty-six per cent. of conscripts for the Imperial Army were rejected for the same reason of physical unfitness that caused the failure of three out of five men in England. One result of this discovery was to stimulate national interest in the subject of school feeding because here, too, malnutrition during the period of growth

was held to be accountable for a good share of the trouble.

The way in which the problem was attacked was characteristically thorough. An exhaustive study was undertaken beginning with the history, extent, character and methods of the organization already providing school meals in two hundred and thirty-nine cities with populations of ten thousand and over.

For the most part, these organizations were designed to meet the need of only a limited number of children who were in acute distress and the statistics of attendance of these societies were no indication of the real condition of nutrition among the children at large. Therefore the home meals were studied of over 500,000 children representing all social grades in over a hundred cities. Among other things it was discovered that there was widespread ignorance among parents as to the proper food for children, and that as a consequence, many thousands of children were growing up with wretchedly bad habits of eating.

The social and economic causes of such acute malnutrition as had forced attention from the school

authorities were studied in over 23,000 cases, and were found to be almost without exception laid in poverty.

The dietaries in use in a score of towns having typical organization for school feeding were subjected to chemical analysis in order to determine their food value. This led to an extensive study of the proper diet for the school age, and the construction of suitable menus for school use.

Finally, school feeding was studied in its relation to the general progress of social reform, and a plan of action was laid out that included the formulation of legislative measures involving the schools and the cost of living, and the expense of food.

The results of this investigation conducted by Dr. Kaup, director of medical inspection in Berlin, were discussed in May, 1909, during a three days' conference of the League for Social Welfare.¹ They are of sufficient value to be enumerated here somewhat in detail for the use and guidance of the movement elsewhere.

¹ Kaup, Dr. J., Die Ernährungsverhältnisse der Volksschulkinder. Vorbericht und Verhandlungen der 3 Konferenz der Zentralstelle für Volkswohlfahrt.

GENERAL HISTORY OF THE MOVEMENT IN GERMANY,
1790-1909

The most striking things about the history of the school feeding movement in Germany are first that it is very old, antedating compulsory education laws, and second that many different forms of social and educational endeavor have contributed to its long development.

The beginning was made over a century ago in Munich when it was discovered that the soup kitchens, established in 1790 for the relief of the city's unemployed, and as a guard against vagrancy, might serve also as a relief to the child victims of the bad industrial conditions incident to the introduction of the factory system. From the beginning the schools were encouraged to send groups of children to the kitchens at noon each day, where a warm meal was sold or given free to all who might need it. This work was unorganized and sporadic, as was that in the Children's Homes, which, during the next fifty years, undertook to supply breakfasts or lunches to children in extreme need in the schools in different places.

MAKING SCHOOL ATTENDANCE EFFECTIVE

In 1875 "The Philanthropic School Society" was started in Hamburg. This society, like many others, started at this time in Germany and in other countries, had as its purpose the promotion of attendance and efficiency in the public schools, by means of the provisions of free text-books, prizes for good scholarship and clothes and food to such children as needed help. School feeding soon came to be one of the main activities of these societies, which were early subsidized by the cities.

PRIVATE RELIEF WORK

Curiously enough the work of school feeding by purely private effort was begun relatively late with the organization in 1880 of the Dresden "Society for Feeding Needy School Children," and while many similar societies developed elsewhere, this form of administering school feeding has never been so prominent in Germany as other forms which are more closely related to school administration.

VACATION COLONIES AND SCHOOL FEEDING

Vacation Colonies were started in different parts of Germany in the early seventies, and developed

during the next twenty years until nearly every city had its little group of men and women—mostly teachers and doctors—who saw to it that sickly and weak children from the crowded sections were sent into the country for a few weeks in the summer. When these vacation colony workers met together in a national convention at Leipsic in 1890, they reported the same thing; the colonies were a good thing, there could be no doubt that the children were benefited by them—but—when the children returned to the old bad conditions at home, crowded quarters, bad air, and particularly, bad food—the good effects of the weeks in the country were soon lost.

Because of this, many colonies had attempted to extend some of their benefits through the winter by feeding a few of the children, and this work, which involved much home visiting, impressed the teachers with the need existing even among the stronger children. In many cities it was discovered for the first time that “thousands of children come to school every morning without having had the least thing to eat.” In this way the work of feeding the children when they came home from

the country came to be considered quite as important as sending them away.

As a result of the Leipsic convention an investigation of the subject of school feeding was started with the authority and backing of the Prussian Government. The results were published by Dr. Cuno in 1896. At that time there were 79 cities where some sort of provision for school feeding was made. The organization conducting it included private societies, publicly endowed societies, and Children's Homes, beside the work of the vacation colonies. Reports from 42 cities, showed that a total of 27,635 children were being fed.

Popular interest in Dr. Cuno's report was so great that a year later, in 1897, the Social Democrats introduced a bill into the Reichstag, calling for the provision of school meals in all cities. This bill was opposed and defeated on the ground that the provision of meals at school would cause a migration of population to the cities. However, the agitation resulted in an increased subsidizing of local societies by city councils and the movement grew apace.

SCHOOL FEEDING BECOMES A NATIONAL ISSUE

During the next decade, when all England was being stirred by the rumor of national deterioration, when France was working out its national legislation in regard to children, and at the height of the campaign in Germany for a national Child Labor Bill, the problem of school feeding became more sharply defined and took on the characteristics of a national issue.

In Germany, as in England, there was an alarming percentage of physical unfitness among army recruits. Of all these coming up for service, during a period of ten years, from 1890-1907, between 44 and 46 per cent. were rejected, in spite of a lowering in the standard physical requirements.² On the face of it, this did not look quite so serious as England's 60 per cent., but it must be remembered that because of compulsory military service the Germany figures are based on a far larger proportion of the male population.

As in England, underfeeding during the period of growth was pointed to as one great cause. The matter was taken up in Labor Bulletins, at

² Simon, Helene, *Schule und Brot*, p. 65.

teachers' conventions, national and international, in congresses of child hygiene and by the non-technical press, and work for national action was begun in earnest with the investigation now under consideration.

PRESENT ORGANIZATIONS FOR SCHOOL FEEDING IN GERMANY

According to Dr. Kaup's report, there are 239 cities with some sort of provision for school feeding. The majority of the organizations are supported entirely or in part by city subsidies.

SCHOOL BREAKFASTS IN STUTTGART

In most places the meal served is breakfast either before school or in the forenoon recess at 10 o'clock. The best form of organization is probably that of Stuttgart, where since 1906, a breakfast of bread and milk has been served each week-day morning during the entire year. The work is under the direction of the Medical Inspector of Schools, and is supported entirely by the municipality. In order to keep the expense of provisions down, no children are given free meals save those who are known to be in real need of help. All others must pay.

There are careful municipal regulations governing the service, the location of centres, the kind of milk sold, and the general sanitation of kitchens and dining-rooms. These regulations together with the provisions for supervision and the rules governing the free admission of children to the breakfasts are given in Appendix D of this book. The most important of the regulations are as follows:

1. Each school district must have at least one school where bread and milk are served in the morning.

2. Meal tickets costing 8 cents for six, are sold each week in the schools to those children who are listed as wanting breakfasts.

3. No child can receive free meal tickets, unless the committee of inquiry for the school has discovered a real need.

4. No visible distinction shall be made between children paying for the breakfasts and those receiving them free.

5. Each child shall receive at each meal $\frac{1}{4}$ liter, a little over a half pint, of warm milk and a bread roll.

6. A special director is in charge of each centre and is responsible for promptness and cleanliness

of service. The dishes and all utensils must be washed after each meal in hot water, and rinsed in cold and must be kept in a place especially provided.

In the year 1907-1908 the meals were served in 25 centres, to an average of 2,350 or over 17 per cent. of the school population, at a total expense to the city of \$6,800. The breakfasts are pronounced a success by the teachers, who find the children much better able to follow the lessons, which in Stuttgart are heaviest in the morning.

SPECIAL PROVISIONS IN POOREST SECTIONS

In the very poorest sections, where the mothers and fathers of the children are away from home all day, the city serves a warm dinner of soup and meat and vegetables at noon in four kitchens, specially erected for the purpose, each of which accommodates something over 200 children daily. In addition there are 475 children fed daily in the subsidized Children's Home. Including these three forms of feeding, the municipal breakfasts in 25 centres, the municipal dinners in four schools, and the work of the children's homes is a total of over 3,600 children, or 26 per cent. of the school population who are fed in the Stuttgart schools.

SCHOOL DINNERS IN CHARLOTTENBURG

Charlottenburg, now well known to schoolmen as the place where the first open air school was started, has the best form of midday meal, in addition to a system of breakfasts modelled on the Stuttgart plan. In 1906, when the breakfasts were started, a careful canvass of the home feeding of all the children was made, and it was discovered that about 3,000 children were fed irregularly, going without one or more meals a day, or having no warm meal at noon. This meant that 14 per cent. of the school population were in need of some sort of provisions.

A system of meals was inaugurated, under the direction of the Board of Health. Under this system breakfasts are provided in the schools, and dinners are served in special centres under the immediate direction of the Children's Home Society. All expenses are paid by the city. In the case of the dinners, the city pays the society in charge 4 cents a portion, 3 cents of which is for the raw material and one for the general expenses of service. By the fall of 1908 the breakfasts and lunches were being served to about 1,400 children in all. The service is continued throughout the year.

The food is prepared according to special directions furnished by Dr. Max Rubner, the celebrated authority on nutrition. The breakfasts and dinners together are so planned as to meet half of what is thought necessary for a day's ration for the growing child. Meat is served twice a week, but vegetables and rice, cooked with bacon, are served daily. In warm weather fruit is served. The children are allowed as much as they want. The meals are served with care, the children being seated at tables which are laid with cloths and decorated with flowers.

There is considerable "follow-up" work done in connection with the Charlottenburg meals, and in each case the children's home conditions are studied. The attempt is made to find and provide for every case of need. Personal interviews are held with parents, who are instructed in the care of their children. Children whose parents' names are already on the lists of public or private charity associations are admitted to free meals without question. Wherever possible, however, parents are held strictly responsible for payment for the meals.

To summarize: The best practice in Germany school feeding as illustrated by Stuttgart and Char-

lottenburg includes: Provision all the year round for any children who care to come. Meals free to those who cannot pay. Supervision during meals and follow-up work in connection with the meals. Correlation with Medical Inspection. Careful preparation of menus, to embody a dietary suited to the needs of growing children. The service, clean, sanitary, and pleasing in appearance.

The investigation showed that for one reason or another the meals in Stuttgart and Charlottenburg could not be considered typical of the service throughout the country. Rather they represented the ideal, or model. The most serious difference between the meals in these two cities and elsewhere was found to be in the character of the food itself. First as regards the breakfasts.

GENERAL CHARACTER OF FOOD SERVED

There are 153 places beside Stuttgart where a breakfast of some sort is served. In 110 of these warm milk and bread are given. Nine cities give coffee and bread—merely a stop gap, and not real food. In the other soup and bread, cocoa and bread, or a sandwich is served.

In order to determine the best form of breakfast for children, the menus given in six typical organizations were analyzed. One of these breakfasts consisted of bread and milk; the others of soup, made with milk and cereals, peas, beans, or meat stock. The superiority of bread and milk was demonstrated when it was shown that in only one other menu was the food value anywhere near equal to that found in the Stuttgart breakfast. The meals of bean and pea and meat soups, were found to give one-third to one-half of the proper amount of energy, while the protein or tissue-building element was very low indeed.

As regards the menus in the dinners, the condition was found to be even more serious. Dinners of some sort are served in 86 cities out of 189 reporting. Upon analysis of the food served in 12 different cities, chosen as types from 77 cities whose menus were ascertained, it was found that not one contained what was considered a normal amount of nutritive value. The standard used for comparison was that of Dr. Erisman, a Swiss authority on the feeding of school children, who considers that the main meal should contain about one-half of the total amount needed during the

day. As in most cases the school meal was planned to be the chief meal of the day, it seemed fair to apply the standard. In the twelve cities, not one furnished such a standard, that is a meal yielding 816 Calories of fuel value. The one that came nearest to meeting this standard served 76 per cent. of this, and the percentage dropped, through the 12 cities, to 25 per cent. in one. On the average the meals yielded 475 Calories each, not bad at all for a light lunch, but not enough for one-half the day's food supply. The amount of protein was far lower than the standard in nearly all cases, sometimes falling as low as 27 per cent. of normal. On an average, the meals contained about three-fifths the normal requirements of meat or other protein material.

GENERAL CHARACTER AND SUPPORT OF SCHOOL FEEDING ORGANIZATIONS

The kind of organization and support varies considerably in the different cities. There are in general three forms. First there are private societies giving meals as relief measures to the children, and receiving no money support from the city, though nearly always the school authorities

co-operate in the work of supervising and service, and in many cases the rooms, and even gas for cooking are supplied free. Such societies were found in 78 cities out of 189 reporting. In 1907-1908 these societies fed over 17,000 children, a number amounting to 4 per cent. of the school population in these cities.

The next form found in 68 cities is in the hands of private organizations, which, however, receive financial support from the city governments and are usually under its supervision. These societies served meals to about 56,000 children in the cities where they operated.

Finally there are 43 cities, where the work of school feeding is a municipal affair entirely, and as a rule is in the hands of the school authorities, though occasionally it is conducted by the Board of Health. In these cities nearly 18,000, or six per cent. of the children, attend the meals.

In addition to regular forms of school feeding just enumerated the Children's Homes in 43 cities assume part of the work. If we include 16,000 school children fed in this way this makes a total of 111,000 or 6.5 per cent. of the school population that are provided with meals outside their homes.

School feeding is, as we should expect, more extensive in the great cities than in the smaller ones. Of the 41 cities in the empire with populations over 100,000, there are 32 having organizations for school feeding. It is by no means confined to the great cities, however; indeed it is in cities of the fourth class with populations from 20,000 to 30,000 that the largest percentages of children attend the meals; and it is the small cities of 10,000 to 20,000 that have the largest per cent. of municipally supported organizations.

The movement is best developed where children are best cared for in other directions as well. For example, the State of Hesse has the best child labor laws, and four out of five Hessian cities have school feeding. Over one-half of all the cities in the Empire with school feeding are in Prussia, where compulsory education dates from 1802.

CO-OPERATION OF ORGANIZATIONS WITH SCHOOL

Whatever the source of funds supporting the meals there is in all cases the closest co-operation between the school authorities and those in charge of the school meals. In the majority of cases it is the teachers who determine which children shall

receive the meals. In a few cases, where the meals are supported by public though not school funds, the preliminary investigation is made by the public poor officials. The meals are nearly always served in the school buildings, and the supervision of the children at their meals is nearly always done by the teachers. In Munich, a municipal ordinance passed in 1874 and still operative provides for the supervision of the children during meals and after, before the afternoon work begins.

There is the greatest variety in the number of months during the year that the meals are served in the different cities. Of 151 places reporting over a third have meals from 3 to 5 months in the winter; in a quarter they are open from 2 to 3 months; in about one per cent. they are open throughout the school year; and in 32 or one-fifth of all, for the entire year, winter and summer. Another point of difference is the kind of meal served, the majority of places giving breakfasts, some dinners, and some giving both meals. Finally there is the fact that some organizations serve meals only to the poorest children while others conduct regular school restaurants, where all may come who care to pay the cost of the food.

Because of this great diversity in the form of organization and the length of service a summary as to the number of children involved or the cost of the work is well nigh meaningless. However, from 189 cities enough data were given to make possible the general statement that school feeding of some kind reaches some time during the year 111,000 children, who form 6.5 per cent. of the total school population in those cities.

The general statement that 6.5 per cent. of the children are served does not hold uniformly for all states in the Empire. For example, in Saxony the numbers fed form slightly less than 2 per cent. of the whole, while in Alsace-Lorraine, the numbers fed formed 11 per cent.; in Wurtemberg, 12 per cent.; in Hesse, where 3 cities out of 4 provide school meals, 14 per cent.; and in Baden, 16 per cent. These figures vary even more widely in the separate cities, as in some cities only one-half of one per cent. of the children attend the meals, while in others, for example, Konstance, the numbers form as much as 34 per cent. of the total school population.

EXPENSE

The total expenditure in 160 cities reached in 1907-1908, \$146,136, exclusive of the amounts paid for the meals, by the children themselves. About one-quarter of the children pay 2 cents for breakfasts and 3 cents for dinner.

An estimate was made by Dr. Kaup of the probable expense of extending the present system of school feeding to all cities, and having the same percentage of children fed on every school day during the year. This would amount to 8,330,333 marks, or \$1,666,066.

In the open air schools in Charlottenberg, the question of food preparation has been so carefully studied, that the expense of feeding each child five meals, one of which is a substantial dinner—is a trifle over nine cents a day. If the same care were exercised in the preparation of the lunches in the ordinary schools, \$1,666,066 would be sufficient to supply all needy children in city and country with a milk breakfast and a warm dinner every day in the year.

The following statements are a summary of the

present provisions made in German cities for school feeding:

From an inquiry sent to 525 cities with 10,000 inhabitants and over, replies were received from 487.

Of the 487, 239 reported some form of school feeding and 189 gave details of organization. In 189 cities the financial support of the school feeding was entirely municipal in 43; partially private and partially public in 68; and entirely private in 78.

A total number of 111,000 children are fed in 189 cities, these forming over 6 per cent. of the total school population in these cities.

THE FOOD HABITS OF GERMAN CHILDREN

The next important thing to determine was how well the organizations for school feeding were meeting the need, and this meant that the real conditions of school children in general must be known; first the actual food consumed daily, and then, how the children were thriving, or failing to thrive on their diet.

Careful inquiries were made by teachers and doctors and social workers in winter and summer, and the results obtained made it possible to account for the food habits of over 500,000 children, with a fair amount of detail. The inquiry embraced

altogether 74 cities, details for the summer months being had for only 53 of these. With eight exceptions, the cities involved were small, that is with less than 50,000 inhabitants and most of them with 10,000 to 20,000. The conditions therefore may all the more be taken as typical of the country at large and not merely as exaggerated results of congestion.

In general the findings of this inquiry were as follows:

For breakfast, 80 per cent. of the children, in all classes of society throughout these cities, have coffee, mostly with but some without rolls or bread. Ten per cent. have milk in some form, usually bread and milk. Five per cent. have tea or cocoa and bread. Nine per cent. have other things—soup, eggs, etc. Finally, over one per cent. have no breakfast of any kind, despite the widespread provision of school breakfasts. In some cities the number of children without breakfast of any kind reached 8 per cent. of the school population. Assuming that the average percentage holds throughout all cities, there are over 30,000 children going daily to school without breakfast.

The large majority of children have a warm mid-

day meal, either at home or in school. About 5 per cent. of all have a cold lunch in winter. This percentage runs much higher in industrial centres, so that, in some factory towns, as many as one-quarter of the children have a cold lunch, sometimes of very meagre quality. Assuming again that the general per cent. of 5 holds in all cities, there are 170,000 children who ordinarily have a cold lunch, often of an entirely inadequate nature for their only midday meal.

For supper, about half have a warm meal, and about half a cold lunch. Less than 1 per cent. of all go supperless to bed, though here the figures vary considerably in different places. The custom of having the children wait till night for a warm dinner is growing rapidly, especially in large towns where the mothers are working away from home all day. In Berlin, whose figures have not been included in the data given so far, 7 per cent. of the children reported that their main meal was between six and seven at night.

One rather disquieting discovery was the extent to which alcohol is used—23 cities reported 2 per cent. of children receiving alcohol in some form at breakfast; 40 cities reported 4 per cent. having it

at dinner, while 36 cities reported 5.2 per cent. having it in the evening. This makes a total of 18,299 children having alcohol as a rule once a day.

This survey of the food habits, while suggestive, could not give an adequate view of the nutrition of the children, because in so extensive an inquiry the questions of quantity and quality of the food eaten might not be considered.

A superficial survey made by teachers of nearly 170,000 children, showed 12 per cent. well nourished, 23 fairly and only 5 per cent. badly. But this was admittedly the result of a superficial inspection, and was not regarded as at all exact.

Later, a special examination of 27,440 of these children, of all social grades, in 22 cities, was made by medical inspectors. They found 11,422 children, or 42 per cent., whom they were able to term well nourished. About fifty per cent., 13,823, were fairly well nourished. The remainder, 2,195, or 8 per cent., were distinctly undernourished.

MAIN CAUSE FOR SERIOUS UNDERFEEDING

Throughout this inquiry special attention was paid to the economic and social causes for the large amount of serious underfeeding everywhere

evident. Specific data were gathered in the cases of over 23,000 children, by doctors, teachers and social workers who visited the homes and left no stone unturned to get accurate and adequate information, filling out elaborate blanks for each child.³

The causes discovered in this way were grouped in the original report under eleven different heads, as follows: Chronic poverty, sickness of bread winner, death of bread winner, unemployment, family too large for the income, child labor, mother's employment outside the home, culpable neglect by lazy and drunken parents, children's haste and loss of appetite, from nervousness or illness, long distance to school, and miscellaneous.

The first six causes may be grouped as "Poverty." The mother's employment outside the home is an increasingly important factor socially; although it as a rule belongs logically under the caption "Poverty," it is listed separately. Haste and loss of appetite from illness or from nervousness, may be grouped as loss of appetite. The long distance from school, a cause of no breakfast and a scanty lunch, was found chiefly in the smaller towns. Culpable neglect was found in relatively few cases. Finally

³ Kaup, pp. 71-72 and 93-94.

under the head miscellaneous came sporadic accidents, temporary illness of children, deserted mothers, and many other ill-defined factors which probably all belonged in other groups.

The relative importance of these various causes in producing malnutrition is shown in the following table:

TABLE 4

Causes	Number of Cases	Percentage of Total
1. Poverty	14,725	62
2. Miscellaneous	2,986	12
3. Loss of appetite	2,709	11
4. Mother works out	1,653	7
5. Culpable neglect	1,093	5
6. Long distance	446	2
	<hr/>	<hr/>
Totals	23,612	99

SUMMARY AND CONCLUSION

The conclusion arrived at by the delegates to the national conference of the League of Social Welfare where this report was presented, and discussed during three days, was as follows:

A survey of children representing all social classes and all school grades had shown that there was undoubted need existing for some sort of provision of meals at school, not only to relieve distress, but to educate, and raise food standards.

The amount of extreme need as shown by acute malnutrition, represented, according to the doctors, about 8 per cent. of the whole school population. In addition to the acute cases, 50 per cent. of the children were only fairly well nourished, leaving only 42 per cent. who were really well nourished.

This condition of insufficient feeding and underfeeding was fully accounted for in the study made of the home feeding of the children, when it was discovered that 80 per cent. of the children had breakfasts of coffee and bread, and thousands had none at all, while many thousands went till evening before having a warm meal.

Underfeeding was found to have a hindering effect on school progress, because the children were dull and listless in work and play. Evidence was submitted to show that malnutrition lay at the bottom of many diseases and physical defects in school children. For example, Dr. Delitsch of Plauen said that food was quite as necessary as medicine in helping certain eye and ear troubles that result from scrofula, and also in preventing the development of tuberculosis. Underfeeding during childhood was further held responsible for the failing war strength of the country.

Not quite half the cities were making any sort of provision for school meals.

Even where meals were served they were reaching but a trifle over 6 per cent. of the children. The need was the same in towns without provision, and in country districts.

The meals as usually given were inadequate in quality and amount, and even at that were not served throughout the year.

PROPOSED NATIONAL PROGRAM

Various plans for future work in school feeding were discussed at the conference.⁴ Among those that found most favor were the suggestions made by Dr. Max Rubner of Berlin University, who said that school feeding must be considered as one phase of the larger problem of the nutrition of the people as a whole. A definite plan for a campaign for national legislation was then presented by Miss Helene Simon, a well known German writer on social economy, who is a leader in the school feeding movement and the author of several books on the subject.

⁴ Kaup, *Die Ernährungsverhältnisse der Volksschulkinder*, p. 132, ff.

The most significant of Dr. Rubner's suggestions were the following:

"Since the problem of nutrition for school children is part of the larger food problem, all measures taken to influence this last will of course have a great influence on the first. Among the necessary reforms affecting the nutrition of the people as a whole are:

"(a) Widespread education in all that has to do with nutrition, and the determining of the correct nutritional minima upon physiological grounds.

"(b) Selling of foodstuffs, etc., at cost in municipal markets and stores to poor families, especially those with a large number of children.

"(c) Establishment of People's Diet Kitchens by municipal and by private societies."

PROVISION FOR NATIONAL LEGISLATION

The following summary for the provisions that should be made in any national legislation on School Feeding that might be undertaken, was made by Helene Simon, who considers that this legislation to be effective must be compulsory.⁵

⁵ This was printed in the form given, in Simon, Helene, *Schulspeisung*, pp. 77-78.

(a) School feeding must be provided where it is an assured need. The children of those parents who are on the lists of charity associations as well as those who pay no taxes, *i.e.*, whose income falls below 900 marks, shall be considered as needy without further question.

(b) Lists of cases requiring help shall be made out and investigated periodically.

(c) The dietaries shall be determined on physiological grounds. Provision should be made possible for breakfast and dinner, for the whole year. Needy children shall be fed every day.

(d) The rooms where the meals are held should be in the schools or in adjoining buildings. All details and directions as to the kind, time, place and organization of feeding, must be left to the discretion of the local municipalities and school boards. Only where these neglect their duty or do not carry out in the right way shall the State Supervision Board interfere.

It will be noted that these proposed measures do not differ very much from those in the Provision of Meals Act in England, except for the fact that they are designed to be compulsory.

Since the conference in May, 1909, the question of school feeding has been given increasing attention in Germany, and there is every indication that a national act will be passed at no far distant date.

VI

SCHOOL FEEDING IN OTHER EUROPEAN COUNTRIES

COMPULSORY EDUCATION AND SCHOOL MEALS IN HOLLAND

HOLLAND was the first country to have national legislation providing for school meals. The law of 1900 enforcing compulsory education contained a section authorizing the municipalities to provide food and clothing for all school children whether in public or private schools "who were unable, because of the lack of food and clothes, to go regularly to school or to those who probably would not continue to attend school regularly unless food and clothes were provided."

The law provided that this work might be done directly or by supporting voluntary societies. Up to this time considerable school feeding had been done by voluntary societies and as early as 1892 no fewer than 53 communities had such provisions. By 1907 there were 37 towns that had adopted the provisions of the act, in accordance with the Royal

Decree, and were contributing wholly or in part to the school feeding.

The organization is about the same as in other countries, except that the work is almost entirely confined to giving free meals to those in absolute need. The work, however, is entirely a school affair. Teachers and principals select the children and have charge of the meal tickets. The cost per meal is restricted by law, not to exceed one cent and a half. According to reports from 11 cities a total of 17,000 children are fed every school day. Some of the towns, for example Amsterdam, provide meals winter and summer.

HOW THE SWISS GOVERNMENT PROVIDES FOR SCHOOL MEALS

The finest buildings in the Swiss towns are the school houses. But the principle on which they are built seems to be that it is better to have a relatively small number, far apart but of excellent quality, than to sacrifice this excellence by having more of them nearer together. This means that a good many children have a long way to go to school, and so, as it is impossible to go home at noon, a warm lunch, usually of soup and bread, but sometimes of soup,

meat and vegetables, is provided in most schools. The public funds are used for this purpose, and the lunches are free in the larger number of cases.

Eighteen years ago, in 1894, the Federal Bureau of Statistics¹ found that no less than 35,000 children, or eight per cent. of the primary school enrolment, were receiving lunches at noon, and that 23,000 of these had over a half hour's walk from home. In other words one child in each twelve received a school lunch, the usual reason being that it was too far for him to go home at noon.

Most of the lunches provided in this way had originally been started by private societies, sometimes with the object of promoting school attendance and more rarely as charitable relief measures. At the time of the government investigation cited above, the support of the work had been largely taken over by the municipalities and cantons.

Dr. Huber, the official who made the investigation, stated that the results of school feeding had been universally praised by teachers, who testified that because of the lunches there was better school attendance, better attention and better results in

¹ Jahrbuch des Unterrichtswesens in der Schweiz, 1894. Federal Bureau of Statistics, Bern, Switzerland.

studies as a consequence of better health. Dr. Huber was convinced that the work should be extended to accommodate at least 50,000 children, or ten per cent. of the school population.

Nine years after this, in 1903, the Federal Government issued an order in regard to the support of the public elementary schools, which put the cantons under obligation to supply food and clothing to whatever children were in need.²

During the next three years the work of school feeding spread rapidly, and in 1906 the Federal authorities authorized the use of state funds for their support, as well as for vacation colonies and milk stations, but with the understanding that in no case should the cantonal or city support be lessened because of the Federal support.

Switzerland, following Holland's lead of 1900, was thus the second country to make national provision for school meals. The point which distinguishes her legislation from either Holland's or the English Provision of Meals Act of 1906, is that the Federal ruling of 1903 was *obligatory*.

Before Federal funds were available, it was the custom to use the money raised by the tax on

² Educational Act, January, 1903. Art. 2, Section 8.

alcohol to pay for the lunches, and this form of poetic justice is still effective in several cantons. Another source of income, before the state assumed more direct responsibility, was from the "school funds" (Schulkassen) that had their origin in a quaint old custom of the young people giving a sort of thank-offering to the village for their schooling when the time came for them to be married. These funds, which were the precursors of the *Caisses d'Écoles* of France, were used to encourage school attendance, by supplying medals and books and to support vacation colonies, school baths and other outside activities of the school.

The latest report on school feeding in Switzerland, made in 1908 by Dr. Erismann, the head medical inspector in Zurich, showed that eighteen of the nineteen large cities have provisions for school meals.

The movement is not confined to the cities, but has developed quite as much in the country districts. Thus the central authorities reported that eighteen of the twenty-five cantons give subsidies for school meals.

Sufficient data are not available to make a definite statement of the exact number of towns having

school meals, the number of children fed, etc., but it is safe to say that lack of provision is the exception.

The subsidies from state and canton frequently cover 50 per cent. of the entire cost, and a good share of the remainder is paid by city or village funds, leaving only a very small part to be raised by private endeavor.

The subsidies are distributed to the schools in different ways. In some places the state or canton or both are responsible for a certain percentage of the entire cost, whatever this may be. In others a special rate per child is decided upon, as for example, in Uri, the state provides an annual amount, 25 cents per child, and the canton supplies the balance of the cost. The larger cities provide their own funds, with only a slight subsidy from the cantons or state.

An idea of the exact care with which the meals are administered may be gained from conditions in the city of Zurich, which may be regarded as typical of those in Switzerland as a whole. In this city, parents fill out application blanks for the meals in the same way that they do in Bradford and Charlottenburg. (Appendices C, D.) There are

careful regulations for the conduct of the meals themselves, both in their preparation and service. The bread must be cut so that each slice weighs 100 grams. Bread and cheese or bread and sausage are served only after the child has eaten at least one plate of soup.

The boys and girls eat at separate tables, each group being made up of older and younger children, in a "family." The older children are expected to look after the younger ones, and see that they get all they want. In some of the schools having kitchens and dining-rooms in the building, the older girls and boys help in the clearing away and washing of the dishes. The teachers are held responsible for overseeing the work, appointing the monitors and keeping the reports.

Care is taken to make the school meals come up to the right standard of food value, and the city requires that on certain days at least, cheese or sausage shall be given with the bread and soup. This is owing to the work of the chief medical inspector, Dr. Erismann, who found in 1901 that the meals were unplanned, and lacking particularly in protein and fat.

Dr. Erismann gives the following points among his conclusions in regard to school feeding, after

studying the question throughout Switzerland, and after many years of practical experience in Zurich.³ What makes these recommendations of particular value is that each one has been tried out in practice in some part of Switzerland.

1. Provisions for a free meal at noon should be made everywhere, and meals provided for: (a) school children coming a long distance each day from home; (b) school children who are undernourished on account of the poverty of their parents; (c) school children whose parents are away at noon.
2. Children whose parents so desire should be able to buy a meal at cost, where there is no question of poverty. The price asked should never exceed the actual cost of the food.
3. All children who on account of poverty do not receive a sufficiently nourishing breakfast should be given warm milk and bread at school before lessons.
4. The school lunch should be a full nourishing meal. The portions should have enough food value to furnish 816 Calories or one-half the day's required total of Calories per child. It should be especially rich in protein and fat and the food values should be distributed in about the following amounts: 40 grams protein, 26 grams fat, 100 grams carbohydrate for a ten-year-old child. Proper variety should be insisted on.
5. The supply of food to poor children must never be regarded as charity or pauperizing in any way.

³ Erismann, Dr. F., Stadtrat, Zurich, Ernährung und Kleidung dürftiger Schulkinder, 1908.

Dr. Erismann's outline shows the ideal held by workers in school meals in Switzerland. This ideal is already carried out in many parts of the country. Stated in brief it calls for school lunches for all, free to those who cannot pay, as a help to efficient education, and of such a character as to raise the physical standard of the children's development.

REFEZIONE SCOLASTICA IN ITALIAN CITIES

School feeding as a municipal venture began in 1896, when the Council at San Remo reorganized as a regular city institution the system of school meals, till then supported privately. Other cities followed San Remo's example until at present there are fifty cities with school feeding organizations, over half of which are supported and administered entirely by the community, and the rest of which are administered by specially subsidized voluntary committees under the supervision of the city officials.

Milan.—The work in Milan is typical of the Italian organizations generally. It was begun in 1894 by a semi-official body known as the Committee of Patronage. In 1900, the city, then under a conservative administration, assumed control and introduced a system of lunches into all schools.

At first these lunches consisted simply of sand-

wiches made with sausage, cheese or sliced meat, costing 1 or 1.2 cents. In 1904 warm meals were introduced in certain schools and are gradually being installed in all, consisting of soup and bread, or rice pilaff, meat or cheese and macaroni. Olive oil is used in the preparation of these dishes so that there is a maximum of food value. The portions are slightly larger for the older children; for example, the bread is cut so that the three younger classes receive 120 grams and the three older classes 150 grams; the rice is served in portions of 300 grams for the little children and 355 grams for the older ones. Delicate children are given eggs in place of the regular menus.

The entire cost including preparation and administration of the warm lunch is 1.4. The meal tickets are one and one-half cents.

There are at present an average of 17,600 children in daily attendance and these form 38 per cent. of the entire enrolment. Of these 30 per cent. receive their meals free. The total expense to the city was \$81,322 in 1908-1909. This amount includes the special fee paid to the teachers who supervise the children and eat with them.

One of the results of the school lunches in Milan has been to decrease the number of absences. Be-

fore 1894 the average daily absence was 28 per cent. of the school enrolment; this number steadily fell until 11 years later the average number of absences formed but 6 per cent. of the school enrolment.

Other Cities.—In general the Rifezione Scolastica are, like the Paris Cantines, designed to be school restaurants, open to all who may care to come. As a result a larger proportion of school children attend than is the case in any other country. In the large cities, Rome, Genoa, Padua, Venice, etc., the meals are attended by about one-half of the children and are paid for in a large majority of cases. The average attendance in forty-three cities was about 100,000 in 1908-1909, and this formed 37 per cent. of the entire school population, while in several the attendance rose to over 70 per cent. The total expense to the cities in 44 cases was nearly \$215,000 in this year.⁴

*Experiments with Free and Compulsory Feeding.*⁵—In several towns the experiment was tried, of having the meals free for all and attendance upon them compulsory in the same way that school at-

⁴Information sent to writer by Alessandro Schiavi, director of Bureau of Labor, of the Societa Umanitaria, Milan.

⁵Lancet Reports, and Spargo's Bitter Cry of the Children, App. A and B.

tendance is compulsory. In Vercelli, the best known of these places, it was not altogether a success, because it was found too expensive to provide a really adequate meal for all, free. If a cold meal with a rather low food value was served it was possible to provide for all, but this did not meet the real need. After six years of trial Vercelli returned to a method similar to that of Milan, where warm meals are served to a large proportion of the children, but are free only to those children who are known to be unable to pay.⁶

Padua.—The work in Padua is distinguished for being the first in the world where an attempt was made to have the school meals planned scientifically to meet the special needs of the children. Dr. Tonsig, the director of medical inspection, plans the meals so that they furnish one-half of the day's total need and are so proportioned that three-quarters of the necessary fat and protein are provided. The fact that 69 per cent. of the children attend the meals makes this careful planning of considerable importance. Padua's example has been followed in many other cities.

⁶Letter from the Director of Public Instruction in Vercelli to His Excellency Mayor des Planches, the Italian Ambassador at Washington, June 11, 1910.

In the smaller Italian towns and villages the custom is followed of having the meals served out of doors in fine weather. In several places it is reported that street begging of the children ceased after the introduction of the meals.

To summarize: School feeding is now thoroughly established in Italian cities, most of which provide school restaurants serving daily on an average over a third and in many cases over two-thirds of the children. The large numbers involved make the Italian school meals more important from an educational point of view than they are in any other country. The meals are supervised by teachers who are paid an additional fee for these services. Special care is given to the scientific planning of the meals to serve the physiological needs of growing children.

One specially interesting thing about the Italian school feeding is that it was begun in San Remo 15 years ago when the majority of the council happened to be Socialists. For this reason, the movement was looked upon with distrust and was opposed by conservatives in San Remo and other cities. But the good effect of the meals on school progress was so apparent as to overcome political prejudice, and now the different parties vie with

each other in formulating in their platforms attractive plans for school feeding. Moreover the majority of the meals are paid for and this Socialistic activity contrary to prophecies has not resulted in the "pauperization" of the children.

Austria.—There is no national school feeding movement in Austria, but most of the larger cities have organized provisions. In Vienna a central school feeding society has been in existence for over twenty years, having charge of the work throughout the city. In 1907-1908 the meals were served to 10,583 children at a total expense of \$35,737, of which \$20,000 was furnished as a city subsidy. In spite of this activity, all who need it are not fed and the meals are continued for four winter months only. The meals are inadequate in every way, especially in the outlying districts. For these reasons the city is gradually assuming direct control. Kitchens and dining-rooms were built in 1909 in four new public schools and this work is being extended in all city schools.

Sweden.—Most large Swedish towns have well organized systems of school meals, some of them twenty years old. The majority of these are ad-

ministered by subsidized societies with co-operation by the school authorities. In larger and newer city schools, kitchens and dining-rooms are provided and the work is being gradually taken into direct control by the city authorities. From 8 to 32 per cent. of the children in the different cities attend the meals.

The principle is everywhere recognized of providing food for the poorest children first. In some places a regular dinner of soup, meat and bread is given every day in the week to the very poorest children, and on three days only to others. In some places breakfasts of milk and soup are served. Where there are cooking classes, these prepare each day the meals for a small number, not usually more than twenty. The teachers pick out the poorest children and meals are given free or at a slight cost, according to the ability of the children's parents to pay, as determined by special investigation.

In Sweden the problem of school feeding in country districts has received considerable attention, because the schools are so far apart that in some cases, the children have to walk as much as twelve miles each day to and from school. As a result, in about twenty places the system of warm

midday meals has been introduced. In some cases these meals are simply warm milk and cocoa, or soup, designed to supplement the lunches from home, and in others a regular meal is given.

Norway.—Christiania has had a municipal service of meals since 1897. A midday meal is provided every day during the fall and winter terms. There is a large school kitchen on the Bradford plan from which the meals are sent to the different schools, each one of which is equipped with a special dining-room. Two days in the week meat is given and the other days cereal with milk, and every child is allowed as much as it wants. During the year 1907-1908, 6000 children out of a total of 30,000 were fed, and a great majority of the meals were free, only 11 per cent. being paid for, at a rate of 2.5 cents apiece. School meals are found in many other Norwegian cities.

Belgium.—Belgium has no compulsory school law, but it has a school feeding problem. The general custom in cities is to provide food at least in the kindergartens and in the guardian schools which are for very poor children, or for children whose parents work away from home at day. In many

places there are subsidized organizations providing meals in the regular elementary schools. In 1888 a private society, with the consent of the educational authorities, began to provide a warm meal at noon for the poorest children. Six years later an investigation of underfeeding was made by the school authorities and from daily reports by teachers and directors covering 14,500 cases, it was found that 23 per cent. were underfed. As a result the city granted a subsidy of \$1000 to the society, to provide meals, and by 1906 this subsidy had been more than doubled.

Denmark.—In 1902 a provisory law was passed allowing municipal subsidies to private societies for school feeding, whose work in some cities was over 30 years old. Although a number of cities have adopted the act, in 1907 a campaign was begun for compulsory national legislation, because it has been found that while meals were more and more a necessity in city schools, local initiative and private effort even with the help of city subsidies, could not be relied upon to furnish them in an adequate manner.

VII

LUNCHESES IN AMERICAN ELEMENTARY SCHOOLS

LUNCHESES AND EXPERIMENTS IN NEW YORK CITY

“AGAIN I appeal to you, in the name of suffering childhood, to establish in each school facilities whereby the pupils may obtain simple wholesome food at cost price.” Superintendent Maxwell of New York City made this appeal in his annual report for 1908. The following fall, with the approval of the Board of Education, a school lunch committee was formed of physicians and social workers who undertook to find out if a three cent lunch might be made self-supporting.

They chose two schools for the experiment, one Public School 21, in the Italian district on the lower East Side, and the other Public School 51, in a district on the middle West Side where the population is largely Irish-American. After two years the Board of Education formally endorsed the lunches and gave permission to instal them in other schools, with the understanding that the Board would sup-

ply rooms, equipment, and gas, and that the cost of the food and of service must be met by the sale of meal tickets. The lunches are now being served in seven schools in Manhattan under the auspices of the School Lunch Committee. Certain schools in Brooklyn and Flushing have also been equipped to serve lunches through the efforts of individual workers.

ORGANIZATION OF LUNCHES

In each school there is a superintendent who does the buying and oversees the cooking and serving. A cook is employed at \$1 a day. In the Mott Street School, No. 21, the meals are served in the basement yard and the quarters are crowded so that the children have to stand at long tables.

Certain of the older children are chosen for helpers, and sell tickets, help serve, and clean and wash up afterwards. For this they are given their lunches each day. They wear white caps and aprons and those who handle the bread wear white gloves.

The working out of the dietaries is in the hands of a physician who has planned them not only in accordance with the special needs of growing children but with reference also to the national customs



WASHING UP AFTER NEW YORK SCHOOL LUNCH



PREPARATION OF NEW YORK SCHOOL LUNCH



of the local population. This means that there is considerable difference in the menus of the different schools. The lunches are designed to provide at least one-quarter of the necessary daily ration of the children; as a rule one-third, sometimes one-half, is actually provided. The main dish is usually a substantial soup or stew or a thick rice pudding, served with big pieces of bread. In addition there are "extras" or desserts, such as cocoa, fruit, cakes, lettuce sandwiches and bowls of vegetable salad, which cost a cent apiece. There is a rule that no child may buy an "extra" until he has eaten the regular food.

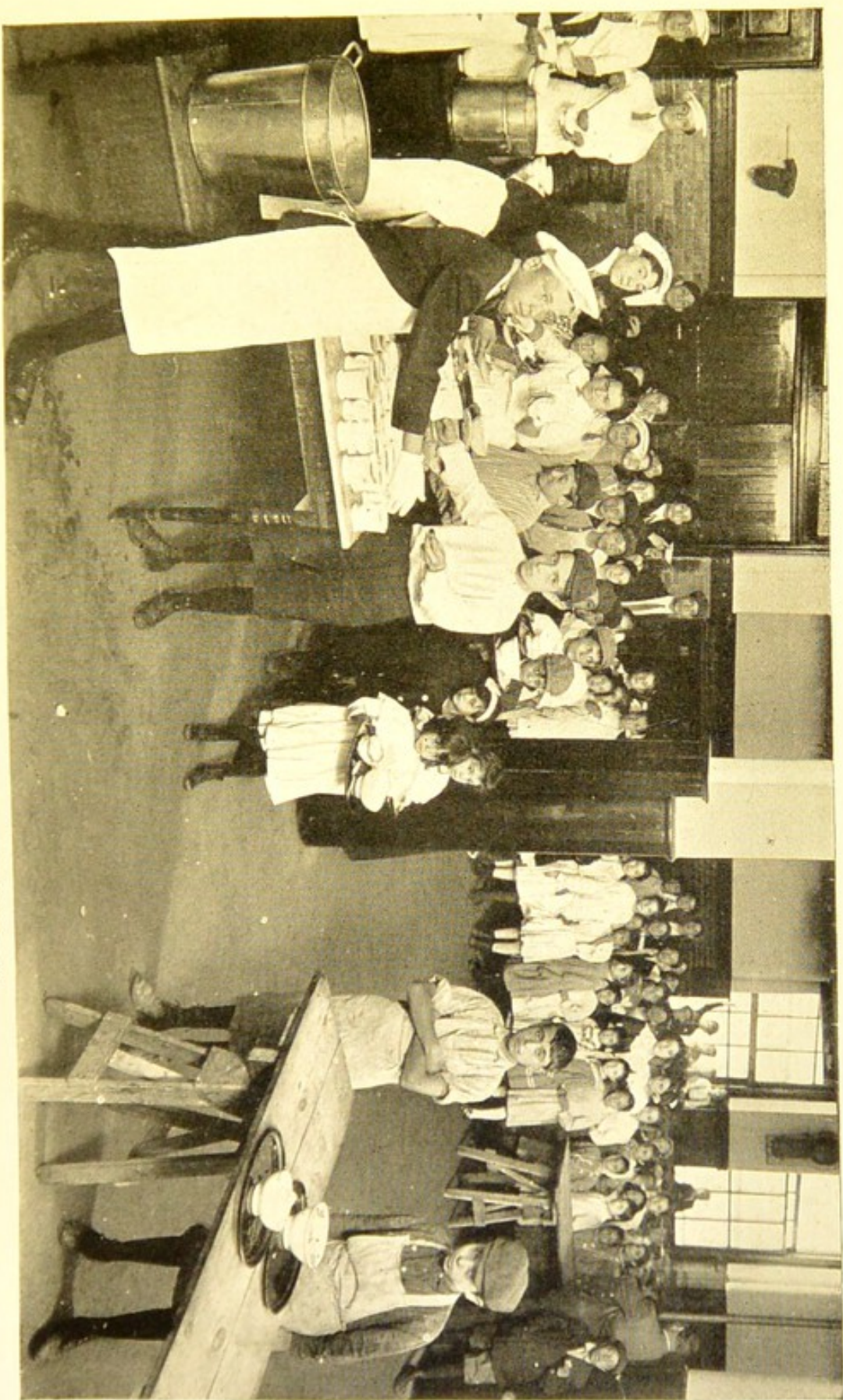
EXPENSES IN TWO SCHOOLS

During 1909-1910 the lunches served in the Italian district cost \$.047 apiece. Those in the Irish-American district cost \$.048 apiece. During the year there was a total expenditure in the two schools of \$2,453. Because of the fact that a number of children were served free and because of the expense entailed by an inadequate equipment, the receipts for the meal tickets did not quite cover the expenses. There was a daily deficit of about one cent per meal. The School Lunch Committee

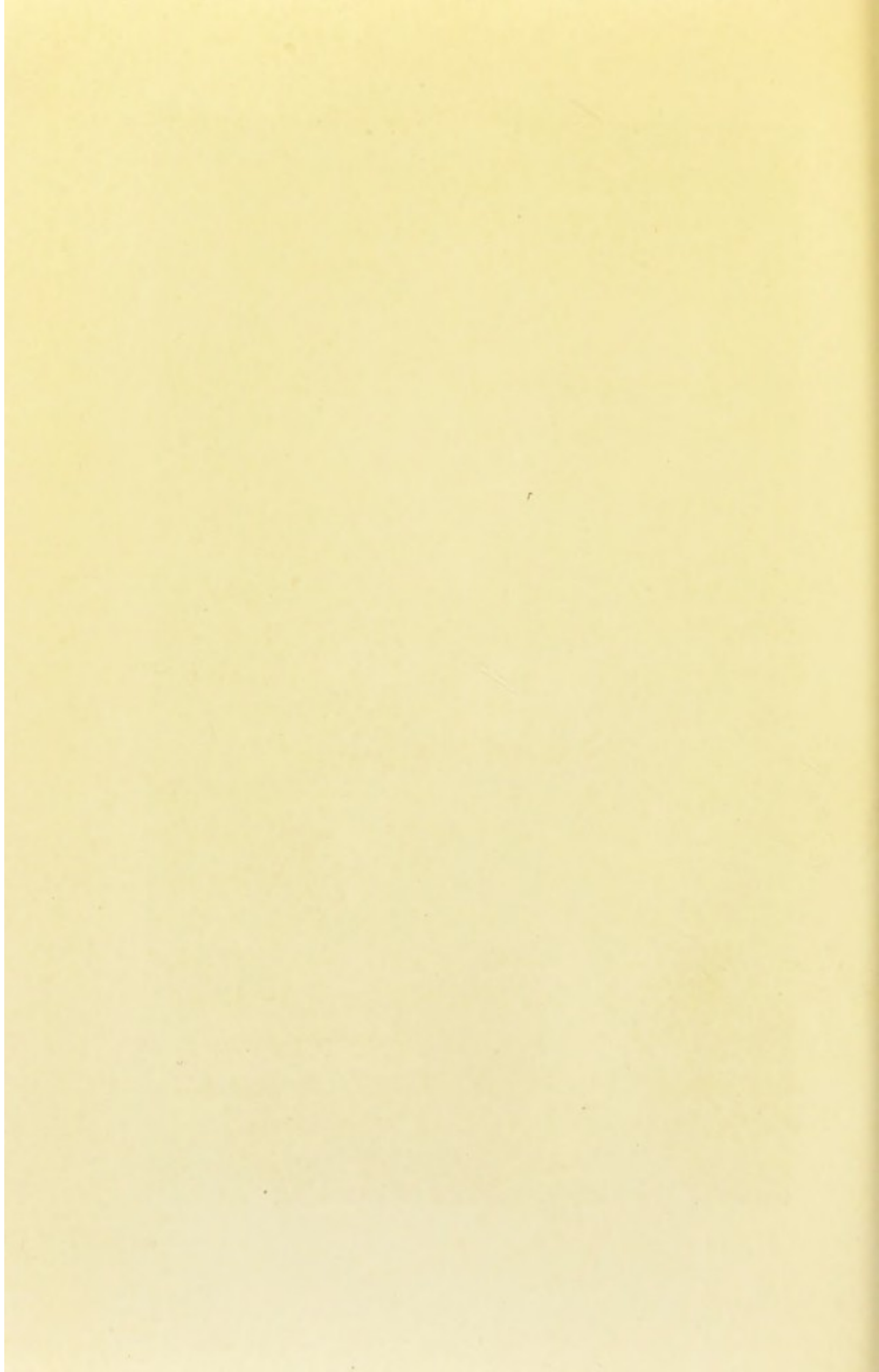
estimates that the lunches may be made self-supporting if there are three hundred children buying them daily at each school and that this would suffice to cover the relatively few free lunches. In the first half of the year 1910-1911 the number of children fed daily in Public School 21 averaged 230, of which 30 were fed free, which means that the lunches came nearer to being self-supporting.

RESULT OF FEEDING ON WEIGHT

In order to find out what effect one meal a day might have on the development of these children, a careful record was kept during three months of the weights of 143 children who attended the meals regularly. At the same time weight records were kept of 81 children who did not eat the lunches at school. At the end of three months, the children taking lunches showed a total net gain of 91 lbs. 4 oz., while the net gain of the 81 children not taking the lunches was 17 pounds. This makes the average gain of the children taking the school lunches 10.2 ounces, while that of the children not taking the lunches was 3.4 ounces. It was found that in both groups a certain number showed a loss in weight, but that the proportion of those losing



SERVING AND WAITING IN LINE. NEW YORK CITY



was considerably less in the group taking the lunch.

Careful study of the original figures shows that the result of the feeding was not that the children who increased in weight gained so much more rapidly than is usual, but that more of them gained. This emphasizes the real effect for good in one planned meal a day at school.

SCHOOL LUNCHES IN PHILADELPHIA

School lunches are more than 15 years old in Philadelphia and have existed ever since the Starr Center Association began them by serving lunches at the forenoon recess in several schools. At present the management of the lunches has been taken over by the Home and School League and the work extended to include some ten schools. The meals provided are of two sorts. In some schools there is a forenoon lunch given at 10.30, during recess time. In others a fuller meal is offered during the noon intermission, in addition to the forenoon lunch. In all of them the meals are paid for by the children and range in price from one cent, which is the cost of the forenoon lunch, to three or five cents, which purchases the fuller meal provided at noon.

Each morning after the opening exercises, the teachers in the schools providing the noon meals ask the question, "Which children wish to buy lunch tickets to-day?" Then those who want lunches go forward to the teacher's desk and buy little yellow lunch tickets which cost three cents each. The teacher marks their names in a special roll and makes out and sends to the school kitchen an order slip stating the number of lunches desired.

At noon, the children, after washing their hands and faces, go to the room that is set apart as a dining-room, where are long tables covered with white oilcloth and set with black japanned trays, on which are paper napkins, and part of the lunch—usually bread and apple butter, or stewed or fresh fruit or a few dates. Then as the children seat themselves, at high, low, or middle size tables, according to their needs, the servers in white aprons bring white enamel bowls filled with soup, corn chowder, rice pudding or whatever is the warm dish of the day. Each child gives up the little ticket, which is destroyed after being counted.

Besides the long tables there is a small one on which are displayed plates of Graham crackers, dates, and most attractive of all, little cakes of sweet

chocolate in tin-foil wrappers, three for a cent. Children who have not eaten the lunch cannot buy the chocolate, but the other things may be bought by children who either want to supplement a lunch brought from home, or who have not three cents to spend. There is always one warm dish to be had for a penny in this way, sometimes bean soup, sometimes warm milk and a half of a shredded wheat biscuit.

In the schools where the forenoon lunches are served, the standard price is one cent and for this amount the child can buy a simple dish such as bean soup, rice pudding, milk toast, creamed potato, milk, cocoa, or stewed fruit and shredded wheat. In all of the schools the principals and teachers enthusiastically co-operate in the work and frequently buy the lunches themselves. Sometimes they sit down with the children to eat and sometimes the lunches are sent to their rest rooms.

EQUIPMENT

The special equipment necessitated by the lunches is simple. Each kitchen is fitted with a gas stove, large double boilers, agate kettles, and a porcelain sink with drainer. The tables are made of long

boards resting on horses and so are easily taken down and set up if the lunch room has to be used for other purposes. The tableware consists of white enamelled pint bowls, white enamelled half pint cups, little trays and spoons. Paper napkins are supplied free by a department store for the advertisement that comes from the legend "Buy it at E——'s" which is printed on each.

CLEANLINESS

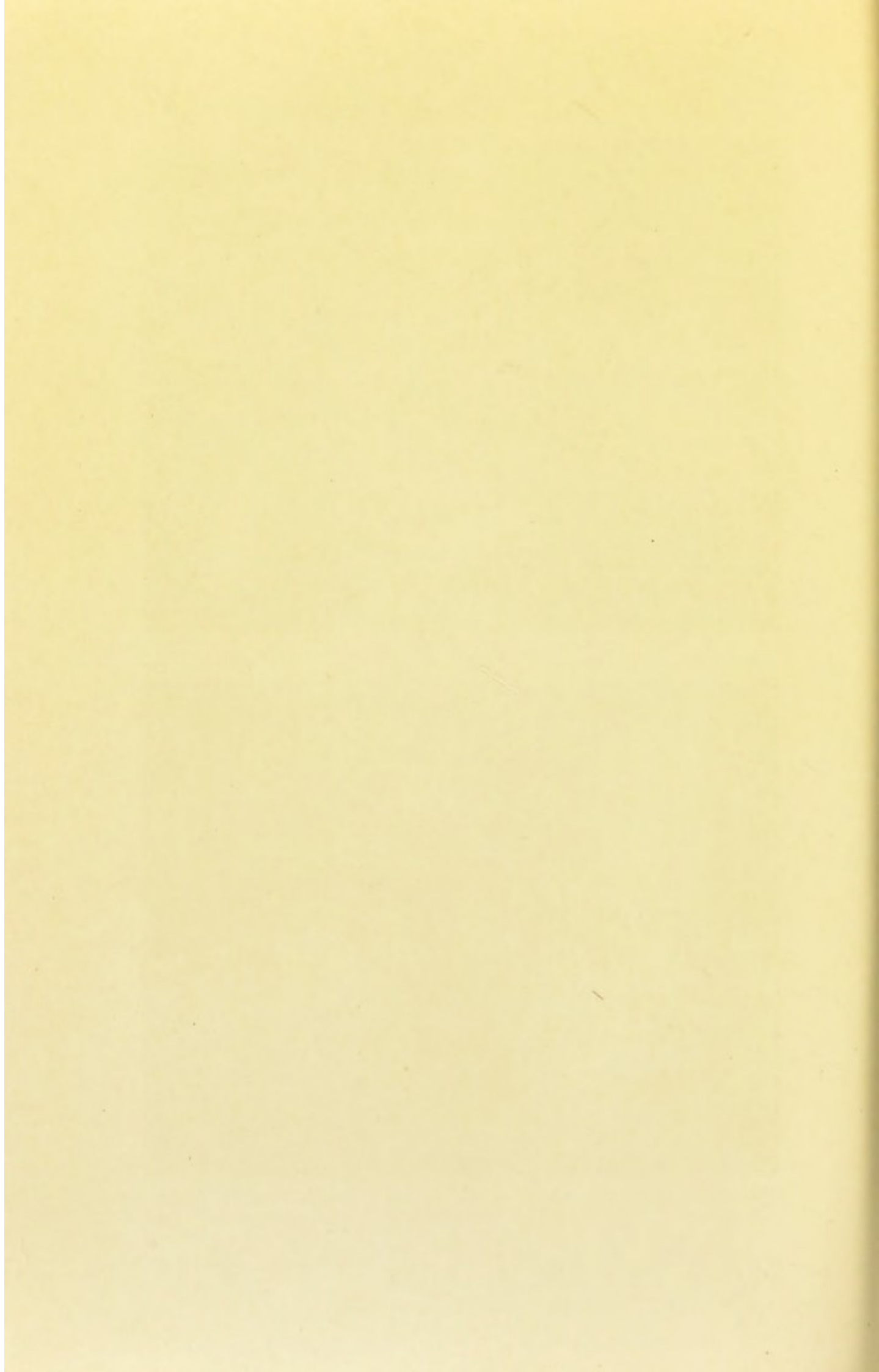
The clearing up and washing of the dishes is done by "aids," chosen from among the older children, who receive their lunch free for this service. The children are not left to themselves in this work, but are carefully watched by the worker in charge, who sees that the dishes are washed perfectly clean and then sterilizes them by pouring boiling water over them. Once a week all the dishes are boiled. The dish cloths are washed and boiled daily after using.

DIETARIES

The extreme care in the planning of the dietaries, the arrangement of food values in the menus and the careful accounting system are the most striking things about the lunches. The superintendent plans



THREE-CENT DINNER IN PHILADELPHIA SCHOOLS. NOTE "PENNY TABLE" IN UPPER PICTURE



the lunches a week ahead in each of the schools, having a personal interview with each school worker. She does all the buying, and so is sure of the quality of the food used.

In order to simplify the planning of the menus, she keeps a card catalog of the different dishes served, giving the amount and exact food value of each constituent, and the total number of Calories per portion, as shown in the accompanying card.

A minimum requirement that is observed in planning each lunch is that one cent shall buy at least 100 Calories of food value, and as a rule, one cent buys more than this. The menus show considerable variety, but dishes that are very popular like rice pudding, cocoa and bean soup are given often.

RECORDS

A monthly account of the menus, receipts and expenditures in each school is kept by the superintendent on loose-leaf pages like the one shown in Table 6.

TABLE 5. SAMPLE RECIPE CARD SHOWING CONSTITUENTS AND FUEL VALUES OF INGREDIENTS

No.	To Serve	Recipe	Rice Pudding						
	Materials	Measure	Weight	Cost	Proteid Grams	Fat Grams	Carbo- Hydrates Grams	Asb Grams	Potential Energy Calories
	Rice	1/2 cup	3 3/4 oz.	.02	9.05	3.69	85.39		393
	Sugar	1/2	1/4 lb.	.0195			115.4		462
	Milk	1 qt.	2 lbs.	.06	29.24	36.28	45.36		624
	Water	1 qt.	1 lb.						
	Cinnamon			.0001					
	Salt			.00097					
	Totals			.09457	38.32	36.649	249.15		1479
	Per Portion			.0105	4.26	4.072	27.68		165

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TABLE 6. MONTHLY ACCOUNT SHEET IN USE FOR PHILADELPHIA LUNCHES

Washington School: Saleswoman, Mary Shephard

SCHOOL LUNCHEON ACCOUNT

December 1-2 Luncheon receipts—1st week.....	\$4.12
December 5-19 Luncheon receipts—2nd week.....	10.79
December 12-16 Luncheon receipts—3rd week.....	11.63
December 19-23 Luncheon receipts—4th week.....	13.18
<hr/>	
Total	\$39.72
Crackers	\$27.96
Milk (9.12—1.14 discount)	7.98
Sugar, 9 lbs. ....	.45
Cereals: Oatmeal, 4 lbs. ....	.20
Soup bones, 3 .....	.15
Rice, 3 lbs. ....	.25
Hominy	
Fresh Fruits	
Chestnuts, 4 qts. ....	.28
Dried Fruits, Prunes .....	.09
Vegetables, Potatoes, Onions .....	.07
Salt, Pepper, Cinnamon, Nutmeg	
Soap .....	.05
<hr/>	
Total	\$37.48
Total receipts	\$39.72
Total expenditures	37.48
<hr/>	
Balance on hand December 23.....	\$2.24

The saleswomen at the schools keep daily accounts of the menus, the number served, and the money collected, delivering the cards weekly to the superintendent. The card shown happens to be one used in connection with the penny lunch at 10.30.

TABLE 7. DAILY RECORD CARD KEPT BY SALESWOMAN AT SCHOOL LUNCH

Washington School

Saleswoman Ellen Shepherd

SCHOOL LUNCHEONS.

Day	Date	MENU FOR DAY	K'D'N.	Aids	Teachers	1st Recess	2nd Recess	Total Receipts
Mon.	11/3	Cocoa, Crackers, Prunes, Milk	21	4	5	97	113	2.40
Tues	11/4	Rice Pudding, Milk Cranberries, Crackers	9			97	87	1.93
Wed	11/5	Bean Soup, Milk, cranberries, Crackers	18	2		131	100	2.69
Thurs.	11/6	Ricepudding, milk, boiled chestnuts, crackers.	21		2	146	97	2.68
Fri	11/7	Cocoa, Milk Fruit Crackers	20	1	2	65	21	1.09
		Totals	89			536	418	8.10.79

FOLLOW-UP WORK

During the first year the committee in charge of the lunches definitely experimented to find out which form is best suited to the need of each of the various localities. One school in a very poor district where large numbers of the children come from families frequently dependent on public or private charity, is provided with both a forenoon lunch and a three cent dinner at noon. A second school, in a slightly better district, was equipped with a forenoon lunch. A third, in an even better, though still poor district, was equipped with a noon-day dinner.

A Home Visitor who was a graduate dietitian visited the homes of all the children in the three schools, but gave special attention to the children who were registered as attending the lunches and to those obviously underfed. She got as complete an account as possible of the conditions there, and talked to the mother especially about the food of her children. She tried to persuade the mothers to send the children regularly to the lunches, whose use and value she explained. In

the case of children obviously underfed, she advised the mother as to the necessary food and treatment. If there was special need she referred the case to the Society for Organized Charity or some other philanthropic body.

This part of the work was shown to be most valuable, and the Home Visitor was retained indefinitely as a salaried member of the committee.

SCHOOL LUNCHES AND CHILDREN'S DEVELOPMENT

During 1910-1911 two studies were made of the physical development and school progress of the children attending the lunches.¹ In the first experiment, measurements were taken and recorded of 362 children from two schools of whom 114 were in more or less regular attendance at the noon three cent dinner and 248 were not. Among the children taking the meals the average number of dinners per child was 50.6. Measurements were made of weight, height, hand-strength and lung capacity of the two groups of children at the beginning and

¹ Annual Report of the School Lunch Committee, Home and School League, Philadelphia, 1911, page 12.



LUNCH ROOM EQUIPPED AND SUPPORTED BY THE MOTHERS CLUB. ROOM USED ONLY FOR THIS PURPOSE, AND FLOOR KEPT



end of a six months' period. The gains of the two groups are shown in the accompanying table:

TABLE 8. AVERAGE GAINS OF CHILDREN ATTENDING LUNCHES VOLUNTARILY FOR SIX MONTHS COMPARED WITH AVERAGE GAINS OF CHILDREN NOT ATTENDING THE SCHOOL LUNCHES.

	Weight	Height	Hand- Strength	Lung Capacity
114 "diners"	3.44 lbs.	1.36 in.	3.43 lbs.	12.55 cu. in.
248 "non-diners" . . .	3.21 lbs.	1.07 in.	4.18 lbs.	10.47 cu. in.
<hr/>				
In favor of "diners"	.23 lb.	.29 in.	.75 lb.	2.09 cu. in.

This experiment was designed to show the result of what might be called haphazard feeding. No special attempt was made to have the children attend the meals. They came or not according to their own choice and the attendance was irregular.

The second experiment was one in which the factors were more definitely controlled. The principal of an elementary school was called on to choose 80 children who were conspicuously poor and ill-nourished. Of these 40 were given a daily dinner for three months. The 40 children who were fed averaged 55.3 dinners each. At the beginning and the end of the period records were kept of the weight, height, hand-strength and lung capacity of

the two groups of children. The average gains of the two groups are shown in the following table:

TABLE 9. AVERAGE GAINS DURING THREE MONTHS OF CHILDREN FED REGULARLY COMPARED WITH AVERAGE GAINS OF A SIMILAR GROUP OF CHILDREN NOT FED REGULARLY.

	Weight	Height	Hand- Strength	Lung Capacity
Children fed	1.78 lbs.	.90 in.	3.19 lbs.	11.96 cu. in.
Children not fed ..	.80 lb.	.68 in.	4.13 lbs.	5.40 cu. in.
<hr/>				
In favor of children				
fed .....	.98 lb.	.22 in.	.94 lb.	6.56 cu. in.

LESSON AVERAGES AND CONDUCT

The physical results were not surprising in view of the many similar experiments that have been tried elsewhere. More interesting was the study made of the marks in school work and conduct of the second group of children. Results are shown in the following table:

TABLE 10. SHOWING COMPARATIVE MARKS IN LESSONS AND CONDUCT AT THREE MONTHS' INTERVAL OF FED WITH UNFED GROUP OF CHILDREN.

	Average Lesson Marks			Average Conduct Marks		
	Before	After	Gain	Before	After	Gain
The forty fed	64.0	70.1	9.5	69.4	72.0	3.7
The forty not fed	64.5	69.2	7.2	74.2	76.7	3.3



JUST TO SHOW HOW IT LOOKS. THREE-CENT DINNER, PHILADELPHIA



KINDERGARTEN CHILDREN. THREE-CENT DINNER, PHILADELPHIA



It will be noted that although the effect of the feeding on mental ability and conduct was not great, still even in this short time the children fed gained perceptibly over their comrades.

ORGANIZATION

The School Lunch Committee of Philadelphia comprises first, a small Executive Committee meeting at least twice a month, and an Advisory Board of twenty members meeting two or three times a year. The Executive Committee is organized as follows:

A superintendent of lunches, an expert dietitian, devotes all of her time to the work, planning the menus, buying the material and keeping all the accounts. Under her are the workers in the various schools who do the cooking, serving and immediate supervising of the lunches, keeping daily account of the number served.

A specially trained social worker—also a dietitian—devotes her time to visiting the homes of the children who attend the meals.

Two members of the Psychological Clinic of the University of Pennsylvania serve on this committee and in 1910-1911 had charge of the mental and

physical examinations made to test the value of the lunches.

Finally there are two men who are financially responsible and who act as adviser and supervisor of the committee.

The Advisory Board includes in addition to the Executive Committee, members of the Board of Education, superintendents, teachers, school physicians, and persons engaged in social and philanthropic work. To this board are submitted questions of general policy and organization and from it are elected sub-committees to work on particular problems of administration.

THE BOSTON MORNING LUNCH

Although the matter had been under discussion for some years, lunches in the Boston Elementary Schools were not begun till 1909. Shortly after a meeting of the Home Economics Association in December, 1909, at which the New York and Philadelphia work was described, a Hygiene Committee of the Home and School Associations was formed, with the late Prof. Ellen H. Richards as chairman.² Work was begun immediately in one of the

² Second Annual Report of the Boston Home and School Association, Oct., 1910, Boston, Mass., pp. 32-37.

schools that was fully equipped with kitchens for cooking classes. Before the end of the school year, there were lunches in five other schools. The cost of equipping these with sinks, stoves, kitchen utensils and table ware, etc., was \$300. By the fall of 1911 the work had been extended with additional appropriations to twenty-two schools.

Once the equipment was supplied, the lunches have been entirely self-supporting. In schools where there is a kitchen, the cooking classes prepare and serve the meals each day, and here the one cent paid by the children has been found ample to cover the cost of the food. In other schools, outside help is hired and an extra cent per meal ticket meets this expense.

The following dishes are served: Pea soup with crackers; potato chowder; corn meal with milk, sugar and crackers; rice and prunes with milk and sugar and crackers, sandwiches made with peanut butter or jam and one-half pint of milk; apple-sago pudding; rice pudding; Indian pudding; apple sauce and crackers; ginger cookies with a glass of milk.

All of the food is chosen with regard to its cheapness and to its high nutritive value. Of course the fact that the materials are bought at wholesale

gives a distinct advantage. In general each lunch yields a fuel value of 300 Calories.

The way in which it is possible to serve so satisfying a lunch for one or two cents is explained by the statement made by Mrs. Richards, the food expert and veteran in the fight for the common health: "The milk used is skimmed milk, costing at wholesale about three cents a quart, appreciably lowering the cost, and the only loss in food value is the fat; the casein of the milk which is a valuable and expensive element is as high as in whole milk and the milk sugar is retained. That fat is made up by butterine, a cheaper product than butter which has, however, as great a food value and is as easily assimilated in most cases.

"The chairman of the committee took the responsibility for the use of these foods. There is probably less danger in this combination than in the whole milk as commonly found to-day. The increase of lactic acid organisms in the skimmed milk tends, as Metchnikoff has shown, to crowd out others present and the conditions of manufacturing butterine oleomargarine render it exceedingly improbable that disease germs shall have access to the product.



THE PRINCIPAL EATS DINNER EACH DAY WITH THE CHILDREN IN THIS PHILADELPHIA SCHOOL



THE FIRST SCHOOL LUNCH IN PITTSBURG



"Sugar is one of the least expensive as well as the cleanest of foods and is used freely. The best authorities apparently agree that under four ounces a day the child may be allowed it freely. Flour in the form of crackers is also inexpensive and nutritious. Ferguson's bread proved to be well baked and well liked. There is little danger in loaf bread which is crusty and baked through."

The very fact that such care and attention are given to the selection of a penny's worth of food is a lesson to the mothers, who are encouraged to visit the lunches. Mrs. Richards says, "To those who give little children a penny to spend without any suggestion as to what to buy with it or where to buy it, this extreme care given to a luncheon must be a revelation, and in time this influence must tell for good. One of the worst habits of children of this age is the patronizing of the candy and pastry shops."

So far, if reports from teachers and principals are to be trusted, the lunches have been an unqualified success, from a school point of view. The children are more attentive and interested than before the lunches were started in the lessons during the last hour of the morning and this is shown by improved recitations.

In addition, noon lunches are being introduced to serve the needs of a large number of children, known as the "shut outs," whose mothers are away at noon and who, locked out from their homes, roam the streets. It is hoped to form a class of these children in each school to prepare their own lunch and this, judging from the interest the cooking classes have taken in working to serve real needs, should be a successful venture.

CINCINNATI PENNY LUNCHES

In Cincinnati penny lunches have been introduced in five schools by the combined efforts of teachers, the Civic League and the Council of Jewish Women. The School Board pays for the equipment as is the custom in most places. The following account is taken from a report of the Lunch Committee of one of the schools to the School Board. Superintendent Dyer in his report of 1911 remarked that the Board should also pay the cook.

"In beginning our work at the Sherman School we realized the fact that this school is not in a neighborhood where the direst poverty prevails, but where many mothers are the principal wage-earners of the family. They have to leave their homes early

in the morning, and this is one of the reasons why many of the children are obliged to go to school without a nourishing breakfast, or with a very meagre one. Before a penny lunch was provided, it was a frequent occurrence for children to buy, during the forenoon recess, at the school gates, for the penny or two they brought with them, food that was anything but wholesome. As we were reliably informed by teachers in the school, it was a common occurrence to see children come into the school during recess with a pickle in one hand and a cone of ice cream in the other. This, with a scanty breakfast at home, in many cases was all the food obtained by the children until their evening meal. Our aim is to give the children something that will nourish them at a cost of one cent.

“EQUIPMENT

“Our first equipment was donated by generous friends. It comprises two fireless cookers, two gas cooking stoves without broiler ovens, one gas radiator, six wire baskets for sandwiches, four cone racks to hold 200, three wooden chopping bowls, six large tables covered with white oil cloth, six asbestos lids, one dozen tea towels, one-half dozen

pot cloths, six paring knives, one meat grinder, one sandwich cutter, three granite kettles and two colanders, etc. We find it economical not to use a refrigerator. All our supplies are delivered daily.

“ THE FOOD THAT IS PROVIDED

“ The following is a complete list of all the articles we have provided in the lunch room, each item of which is sold for one cent :

One hot wiener, with one slice rye bread.

Hot meat sandwich, consisting of chopped boiled beef, with two pieces bread.

One baked sweet potato in jacket.

Mashed sweet potato in cone.

Rice pudding in cone (5 cent size).

Baked beans in cone.

Baked beans with sausage in cone.

Boiled baked dried peas with sausage in cone.

One orange.

One apple.

One banana.

Three figs.

Three Graham crackers.

One Graham jelly sandwich.

Ice cream sandwich, one Graham cracker with slice of cream.

Half orange peeled and one Graham cracker.

One candy ball (puffed wheat rolled in molasses and sugar).

Five molasses candy kisses.

Two small cakes.

" We serve five articles each day—two of them hot.

" We change the bills of fare daily. The following are a few samples:

1. Hot meat sandwich; baked sweet potato; oranges; candy balls; Graham crackers.

2. Hot wieners; rice pudding in cones; candy; bananas; cakes.

3. Baked beans with sausage; hot sweet potatoes; candy balls; ice cream sandwich; oranges.

4. Hot wieners; baked beans in cone; Graham crackers; candy; fruit.

" PURCHASE

" Our purchases are all made at wholesale prices. We have always impressed the dealers that ours is philanthropic, not charitable work. And it gives us pleasure to state that we have always found them responsive in the way of accommodation and liberal discounts.

" In a school of 900 children, we served on an average 600 daily. We used twenty loaves of bread—fourteen of rye, weighing 18 ounces each, and six of white, weighing 12 ounces each. We used daily either twenty-five pounds of wieners or fifteen pounds of choice solid beef, boiled and chopped and mixed with bread crumbs for sand-

wiches. We used daily either one and one-quarter quarts of rice or two quarts of navy beans. These are boiled for twenty minutes and put in fireless cooker the day before they are used.

"We give these details in order that they may serve as guides for others who may wish to engage in similar work.

"MANAGEMENT

"We have a corps of directors, one of whom serves regularly the same day of each week during the entire year. We have also a volunteer corps of assistants so arranged that six ladies serve the same day each week for one month, thus making the task not arduous, but one of pleasure. All expenses of the lunch room but the salary of our paid assistant, who does the cooking, have been met by the receipts of the lunch room. The salary of our cook is paid out of the Philanthropic Fund of the Council.

"All our receipts being deposited in bank, our bills are paid by check, either weekly or monthly, out of this account.

"Since co-operation is the watchword of the day, we are now planning to establish a Penny Lunch Room Club. We hope thus to meet all the workers

of the several school lunch rooms in Cincinnati, and by exchange of ideas bring about a perfect system and closer affiliation of interest."

MUNICIPAL SCHOOL LUNCHES IN ST. LOUIS

In October, 1911, an experiment was begun to extend the luncheon services long provided in high schools to the elementary schools of St. Louis. A noon lunch is served in five schools in congested sections of the city. The lunches are primarily intended to benefit poorly nourished children, but are also designed to provide wholesome food at cost to all children who do not eat lunch at home. The patronage is entirely voluntary. Approximately 900 children are served daily in all lunch rooms. The manager of one of the high school lunch rooms is also the manager of the grade school lunches.

For about a month the food was prepared at the Central High School kitchen and distributed in fireless cookers by rapid delivery to the schools. On account of the expense of carriage, this method was abandoned for the plan of preparation in the separate schools. Luncheons are served under the direction of a paid assistant, but the larger girls of the schools can receive their lunches as compensation. The

work of accounting and reporting is handled by the principal in each school. The School Board pays for equipment and the children's money covers the cost and service.

MENUS

The following dishes are served, each costing $2\frac{1}{2}$ cents:

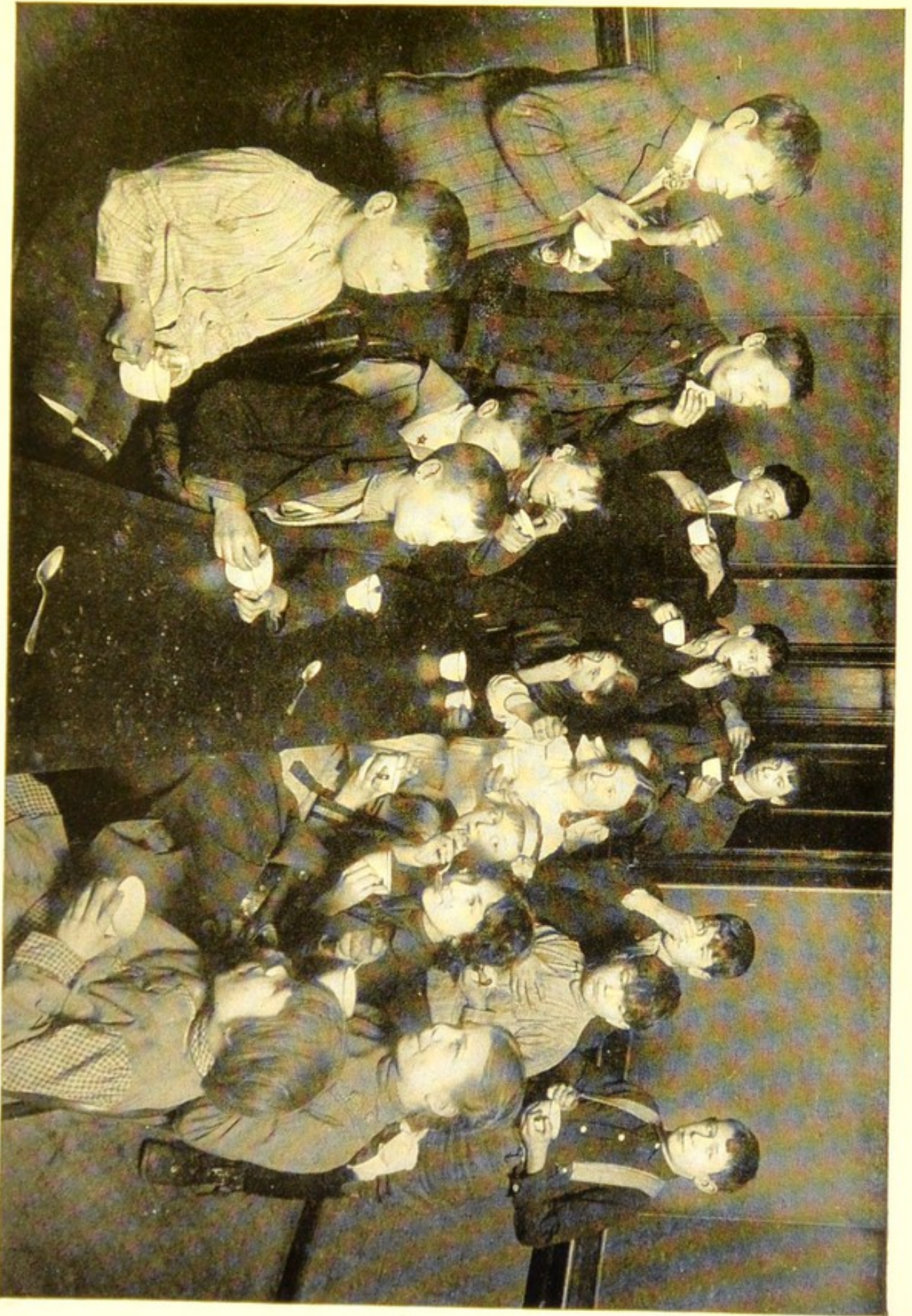
1. Soup, baked beans or stew with one slice of bread.
2. One meat sandwich.
3. One jelly, cheese or salmon sandwich.
4. One cup of milk and two slices of bread.
5. One dessert, such as pudding or gingerbread.

EQUIPMENT

The equipment provided by the Board comprises the following: Two-burner gas stoves, folding chairs and kindergarten tables, mugs, plates, teaspoons, tubs for washing dishes and towels, milk cans, metal checks and slot boxes for same.

LUNCHES IN CLASSES FOR MENTALLY DEFECTIVE CHILDREN

There is one form of school lunch that meets with immediate approval and is growing rapidly, and that



SPECIAL CLASS OF MENTALLY DEFECTIVE CHILDREN AT LUNCH. AS SHOWN BY THE PSYCHOLOGICAL CLINIC, PHILADELPHIA



is the lunches served in classes and schools for mental defectives.

In Philadelphia, the School Board has given permission to the School Lunch Committee to serve lunches in all special classes. This work has come largely as the results of the demands of special class teachers, who eagerly assume the additional responsibility which they know will in the end lighten their burden. One special difficulty is to get the children to remember their pennies; it takes several weeks to establish this habit gained by normal children in a few days, but this is valuable training.

Because the percentage of underfeeding in these classes is far greater than among normal children—sixty instead of ten—the need for carefully planned meals is larger, but there is no difference in the kind of food required. There is a real difference in service, however, in that these retarded children need even more than their brighter fellows the training that comes from preparing, serving and cleaning up. Indeed, for these children, to whom so many of the normal channels of learning are closed, the relatively simple movements associated with such a fundamental interest as the food interest afford an unrivalled educational opportunity.

Fortunately, the fact that the classes are small makes it possible to take advantage of this opportunity in most places.

The experience of Milwaukee, where the lunches have been organized for several years, is typical. Here many of the children in the class are underfed and so the menus are chosen with special care. The following things are given: thick vegetable soups, or porridges of oatmeal and cornmeal, baked beans and potatoes, bread and butter, and plenty of milk, with popcorn, peanuts and fruit for dessert. The children are taught to set the table, wash and wipe the dishes and put the kitchen and dining-room in perfect order after the meal. Each child has his own particular piece of work to do every day. Considerable attention is given to table manners and to the general appearance of the room and table. The dishes are not the heavy white ware so often found in institutions, but are delicate and pretty and the children are taught to value them and care for them. The table is decorated with flowers and plants and with colored paper strips.

The city considers that this work is so important that it bears the entire expense.



READY TO SERVE RURAL SCHOOL LUNCH. MINNESOTA



COOKING CORPS IN MINNESOTA RURAL SCHOOL

WARM LUNCHES IN RURAL SCHOOLS

The lunch problem is an inevitable one in rural schools. Children do not live near enough to go home at noon. Unlike city children they do not have pennies to spend, because ready money is scarce even in well-to-do farmers' homes and even if they had there would be no place to spend them. The solution of this problem is largely left to the children themselves and takes the shape of lunches brought in baskets or pails and eaten cold.

Two solutions are coming into effect to ameliorate this condition. The first, which has been tried sporadically in various parts of the country, is to make provision for children to warm their home lunches. This involves little other equipment than putting a top for cooking on the ordinary heating stove. The second and better solution is to have in addition to this provision one common article of food such as a meat stew or warm drink of milk and cocoa. As a rule this latter provision is not made on a paying basis. The children bring the materials, each one according to his ability: a piece of meat, carrots, turnips, potatoes, milk, etc. The older girls, with

the help of the teacher, cook this material in which all equally share.

Plans similar to these are being promoted by the Agriculture Division of the University of Minnesota. Where schools are more highly developed the lunches take the desirable form of an extension of the domestic science work. One plan, described in Extension Bulletin No. 19, published in July, 1911, by the University of Minnesota, has already been adopted by many teachers.

EQUIPMENT

The equipment needed for this work is simple. First the stove, which is already there, a six or eight quart granite kettle, a long wooden or granite spoon for stirring and a granite ladle for serving, and dish pan and mop for washing up. Paper napkins should be provided. The children themselves can bring the cups and spoons from home and can make the dish cloths. They can also make fireless cookers, which are especially valuable for cooking cereals, boxes for keeping salt, pepper, flour and other staples, and cupboards in which to store them.



WARM LUNCH EQUIPMENT OF ONE-ROOM RURAL SCHOOL, MINNESOTA. NOTE
FIRELESS COOKER



TEACHING FOOD VALUES

The scheme forwarded in Minnesota includes the teaching of food values, and with each recipe distributed there is a statement of the special value and limitation of the main article used. This statement is non-technical, and forms a plan for the teacher's lesson, including a list of questions covering the main points.

ECONOMY OF TIME

If work of this sort is to become a practical daily routine, care must be taken not to encroach on the lesson hours. In one Maine school this was managed by detailing a force of four children each week, to be held responsible for having everything prepared before ten minutes to nine, putting the food on at the proper hour, serving and washing dishes and clearing up. None of the distinctly preparatory work such as peeling vegetables or cleaning rice was done in school hours.

PLACE OF SERVING

In the ordinary rural school the classroom is unhappily the only place where the meals may be

served. In warm weather the meals can be taken outdoors, and in any case the room should be thoroughly aired. In consolidated schools, which are more and more taking the place of the old district buildings, attic space that would otherwise go to waste may be used nicely, though the ideal is to have space for kitchen and dining-room set aside in the building plans.

SUMMARY

A summary of the advantages of these lunches in rural schools includes the obvious one of warm food, doing of the work with the responsibility of getting ready a strictly limited amount of material by a definite time, to meeting the practical test of daily eating, learning the food values and finally, the civilizing effect of leisureful eating together.

PRESENT EXTENT OF SCHOOL FEEDING IN AMERICA

Work in the other American cities which has been begun in most cases by women's clubs with the co-operation of teachers and medical inspectors is not essentially different from that already described.

LUNCHEES IN AMERICAN SCHOOLS 181

Within the past few years, lunches have been introduced in the following cities:

Colorado:

Denver.

District of Columbia:

Washington.

Illinois:

Chicago.

Indiana:

Indianapolis.

Massachusetts:

Amherst.

Boston.

Greenfield.

Westford.

Minnesota:

St. Paul.

(Also in rural districts.)

Missouri:

St. Louis.

New York:

Albany (in a vocational school).

Buffalo.

Mill Valley.

New York City.

Rochester.

Ohio:

Cincinnati.

Cleveland.

Louisiana:

New Orleans.

Pennsylvania :

Erie.

Logansville (consolidated schools).

Manayunk.

McKeesport.

Philadelphia.

Pittsburgh.

Wayne.

Tennessee :

Memphis (in a night school).

Texas :

Houston.

Wisconsin :

Eau Claire.

Milwaukee.

Muskegon.

This work has received much attention by the press throughout the country, and has been widely discussed at congresses of workers for child welfare, home economics, educational and medical progress. Among places where the introduction of school lunches is being seriously considered, in many cases by school boards, are the following: Baltimore, Md.; Huntington, Cambridge, Springfield and Methuen, Mass.; Concord, Newport, Columbus, Salt Lake City, Los Angeles, and Kansas City.

STATE LEGISLATION

While no State has as yet enacted legislation providing for the maintenance of school lunches, it is

significant that in Massachusetts the Education Committee of the lower house reported favorably a bill introduced early in 1912, authorizing cities and towns to provide meals for school children. The terms of this bill (No. 729) are as follows:

SECTION 1. The city council of a city and the selectmen of a town may provide meals free or at such price, not exceeding the cost, as they may fix, for children attending its public schools, and cities and towns may appropriate money for this purpose.

SECTION 2. This act shall be submitted to the voters of any city or town at the municipal election in any year: *provided*, that a petition to that effect, signed by not less than five per cent. of the voters, is filed with the city clerk or town clerk, as the case may be, not less than one month before the said election, and if accepted by a majority of the voters voting thereon it shall take effect in such city or town. Otherwise this act shall not take effect.

To prophesy is always dangerous, and doubly so in the realm of social movements. But should one judge the future of school feeding by comparing its history with the records of medical inspection, dental inspection and playgrounds, one might well hazard the prophecy that within two years school lunches will be established parts of the elementary school systems of at least one hundred American cities.

VIII

PROVISION OF MEALS IN OPEN AIR SCHOOLS

THERE are three prime requisites for the successful conduct of an open air school. These are fresh air, warm clothing, and an abundance of wholesome food. Open air schools are designed to provide for the education of physically debilitated children. Their purpose is to make it possible for such children to continue their education and at the same time regain their lost health and vitality.

Those who have the most extended experience with these new schools agree that proper feeding is at least as important a factor in the marvellous results obtained as is abundant fresh air.

GERMANY

In Germany, where the open air school originated, the best practice sanctions such frequent feeding that it may almost be termed "forced feeding." In the original school at Charlottenburg, the daily routine is as follows:

Children arrive at about a quarter of eight and receive a bowl of soup and a slice of bread and

butter. Classes commence at eight and there is an interval of five minutes after every half hour's instruction. At ten o'clock the children receive one or two glasses of milk and another slice of bread and butter. Dinner is served at half-past twelve and consists of about three ounces of meat with vegetables and soup. After dinner the children rest or sleep for two hours. At four o'clock milk, rye bread and jam are given. The last meal consists of soup and bread and butter and is given at a quarter to seven, after which the children return home.

In the Gladbach school the children are given breakfast, lunch and supper and half a pint of milk. Lunch consists of soup, meat and two vegetables. Food is supplied from a neighboring sanitarium which makes it cheaper than it would otherwise be. The same plan is followed in the school at Elberfeld where the food is supplied from a neighboring convalescent home.

ENGLAND

When the first English school was opened at Bostall Wood near London, it was decided that the children should be supplied with three good meals

a day. The food was prepared at a cookery centre about a quarter of a mile from the Wood. The children received breakfast at 9 A.M., immediately after arriving; dinner at 12.30; biscuits and fruit at 3.30 and tea at 5.30. The dietary was as follows:

Breakfast on arrival:

Oatmeal porridge (medium Scotch meal).

Syrup.

Milk, one-half pint.

Dinner at 12.30 P.M.:

Meat (4 ozs.); fish occasionally.

Potatoes (6 ozs.).

Green vegetables in quantity.

Pudding (6 ozs.) in rotation:

Suet pudding and treacle.

Milk pudding.

Stewed fruit, or fruit in batter, or boiled rice.

3.30 P.M.:

Fruit or biscuit.

Tea, 4.45 to 5.45 P.M.:

Weak tea (mostly milk).

Bread and butter.

Jam or syrup twice a week.

Cake, or currant bread and butter, twice a week.

The good conduct of the children at meal times was particularly noticeable. Before the close of the

term they acquired a taste for good food and such diet as oatmeal porridge and green vegetables, which they were not accustomed to and refused to eat during the opening days of the experiment.

At the Thackley School at Bradford only three meals a day were provided. The physician in charge did not approve of the German practice of supplying food more frequently. For breakfast at nine o'clock the children had porridge, syrup, half a pint of milk, brown or white bread and butter. The first morning many of the children refused to eat the porridge or would take only a mouthful or two. In a few mornings, however, it was enjoyed by practically all of them. Dinner came at 12.30 and was cooked on the premises. The menu varied from day to day, the first and second courses being chosen from among the following:

First Course.—Scotch barley broth; tomato soup; meat and potato hash; Shepherd's pie, gravy and green peas (or carrots and turnips); Yorkshire pudding, with gravy and green peas; stewed beef with onions, carrots and turnips; stewed fish, parsley sauce, mashed potatoes and green peas.

Second Course.—Sultana or jam roly poly pudding; fruit tart; baked currant pudding and sweet sauce; baked jam roll; boiled fruit pudding (plum or apple); milk pudding in variety with stewed fruit; boiled rice and sultanas; corn-flour blancmange.

Tea at 5 P.M. consisted of milk ($\frac{1}{2}$ pint); bread (brown or white); butter or jam; wholemeal cake occasionally.

The dietary now followed at the Sheffield School is typical of present English practice. Breakfasts consist of porridge and milk, with treacle or sugar. The dinner consists of two dishes daily, the following routine being observed:

Monday: 1. Lentil soup and bread. 2. Rice and stewed fruit.

Tuesday: 1. Cold rolled boiled beef, cabbage and potatoes. 2. Boiled suet puddings with currants.

Wednesday: 1. Mutton broth and bread. 2. Mutton (boiled in soup), potatoes, carrots, and turnips.

Thursday: 1. Irish stew and carrots. 2. Suet dumplings.

Friday: 1. Boiled fish, parsley sauce, potatoes. 2. Boiled jam puddings.

Tea consists of milk, bread and jam or margarine, with scones, parkin, or plain cake once a week.

UNITED STATES

In the American schools the meals have less of the character of forced feeding than that in vogue in Germany and England. The following are the menus for two days in the first Boston school and

may be regarded as typical of American practice with children who are distinctly tuberculous.

Breakfast:

Cocoa, Graham gems, butter, stewed prunes.

Cocoa, bread and butter, sliced bananas.

Luncheon:

Creamed codfish, mashed potato, bread, milk, dates and nuts.

Stew of rice and mutton, bread and butter, milk, dessert and figs.

Supper:

Milk, crackers, and cream cheese.

In addition to the meals supplied by the school the children had breakfast before leaving home in the morning consisting of bread and milk or cereal and milk, with sometimes an egg. Moreover they received a light meal on their return home at night. The children were allowed full helpings, especially of milk and cocoa, so that the fuel value of the meals actually consumed frequently amounted to over 2,500 Calories, with ample tissue-building stuff. It must be remembered that these children were tuberculous, which means that their bodies required an amount of energy and cell stuff to replace the waste of disease quite out of proportion to the usual demands of normal growth and activity.

In the pioneer American school at Providence, Rhode Island, no attempt at full feeding is made. The children arrive at 9 in the morning and the session closes at 2.30 in the afternoon. At about 10.30 in the forenoon they have a recess during which they are given hot soup. At noon they take seats about tables in the schoolroom and eat the lunch that they have brought with them from home, which is supplemented by hot food prepared at the school. This hot dish generally consists of a pudding such as tapioca or rice served with cream, or hot chocolate or cocoa made with milk. A sample menu for one week is as follows:

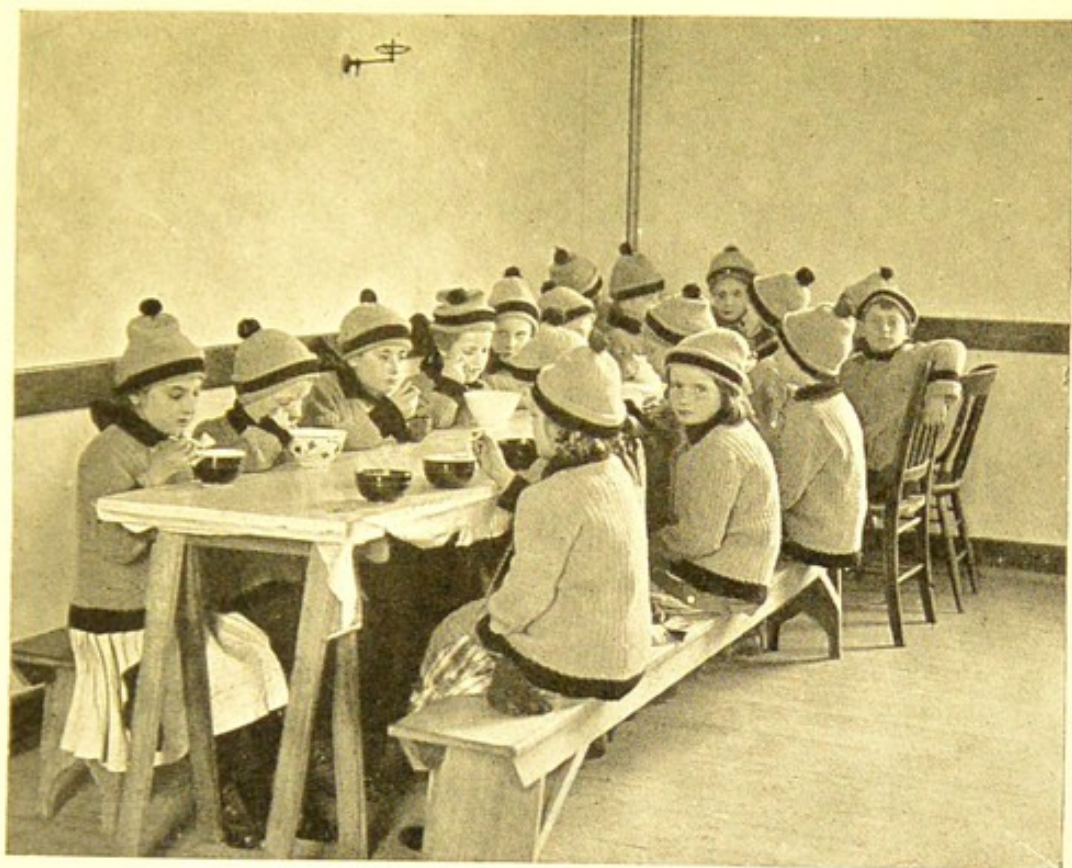
Monday.—10.30: beef soup with rice. 12.00: pudding made of cream of wheat with 3 quarts of milk and 6 eggs, served with cream; chocolate, all milk.

Tuesday.—10.30: beef soup with macaroni. 12.00: pudding, made of tapioca, 2 quarts of milk, 6 eggs, whipped cream; chocolate, all milk.

Wednesday.—10.30: tomato bisque soup. 12.00: rice pudding made with 3 quarts of milk, 6 eggs, served with cream; chocolate, all milk.

Thursday.—10.30: beef soup with vegetables. 12.00: baked farina pudding made with 3 quarts of milk, 6 eggs, and cream; chocolate, all milk.

Friday.—10.30: pea soup. 12.00: prune pudding made of 3 quarts of milk, 6 eggs and served with cream; cocoa, all milk.



CHILDREN AT LUNCH. OPEN-AIR SCHOOL, ORANGE, N. J.



OPEN-AIR SCHOOL, SYRACUSE, N. Y. DAINY TABLEWARE IS POSSIBLE WITH SMALL NUMBERS



In Syracuse, New York, a class was opened in September, 1911, for nervous, run-down and anæmic children. The teacher, acting with the co-operation and advice of the medical inspector, plans the one substantial meal that is served daily and keeps accurate records of the exact quantities used and of their food value. A cook, employed two hours a day, cooks the meal, and the children themselves do the serving, setting the table and clearing up afterward. A group of children for this work is chosen weekly, and they like to do it so well that boys and girls alike bargain ahead for a place on the corps.

Each day one warm dish with bread and butter, and cocoa or milk to drink are served, and occasionally fruit or cookies in addition. The warm dish is chosen from among the following, which have proved most popular after several months' trial:

Corned beef hash, baked beans, lamb stew made with potatoes, carrots and onions, tomato soup with vermicelli, hamburger steak with potatoes, scrambled eggs, macaroni with tomato sauce, vegetable soup, boiled rice, shredded wheat or cream of wheat served with milk and sugar.

The amount of food used during one school month

of twenty days for an average of twenty-five pupils, is shown in the accompanying table. In this are also given the cost and the food value of each article.

TABLE II. FOOD USED IN ONE SCHOOL MONTH—SYRACUSE
OPEN AIR SCHOOL—SHOWING MONEY-COST AND FOOD
VALUE. TWENTY MEALS, TWENTY-FIVE CHILDREN

Articles	Amount	Cost	Protein (lbs.)	Calories
1. Bananas	50	\$.60	....	6,350
2. Beans	6 lbs.	.48	.40	5,940
3. Bread and rolls	71 lbs.	7.10	6.50	86,975
4. Butter	16 lbs.	5.60	.16	57,680
5. Cocoa	3 lbs.	.75	.65	6,960
6. Crackers	5 lbs.	.40	.50	9,625
7. Cookies (molasses) .	3 lbs.	.45	.19	7,530
8. Cream of wheat	5.5 lbs.	.44	.70	9,267
9. Eggs	64	1.30	.65	3,955
10. Zweiback	5 lbs.	.50	.50	9,850
11. Macaroni	7.5 lbs.	.60	1.00	12,187
12. Meat and fish	23 lbs.	5.00	3.46	21,270
13. Milk	124 qts.	8.88	8.20	80,600
14. Oranges	6 lbs.	.60	....	1,440
15. Potatoes	47 lbs.	1.35	.80	23,420
16. Rice	4.5 lbs.	.27	.40	2,295
17. Shredded wheat	16 lbs.	1.60	1.60	27,200
18. Spinach	6 lbs.	.60	.70	1,560
19. Sugar	14.5 lbs.	1.16	....	29,970
20. Vegetable soup	5 lbs.	.25	.04	1,300
Grand total		\$37.93	26.26	403,544
Total average per child.		1.52	1.05	16,142
Food value and cost of average meal per child.		.076	24 grams.	807

COST

The cost of supplying the school meals varies from about 12 cents per capita per day to about 25 cents. In Germany and England the expense is distinctly less than the same meals would cost in this country. The five meals per day supplied to the children at Charlottenburg cost only 12 cents per child per day. At Elberfeld 5 daily meals which include one quart of milk per child are supplied for 16 cents per day. The same sum supplied 4 meals per day in the first English school at Bostall Wood.

In New York City, where eight public open air food was about 20 cents per child per day and the cost of preparing and serving it increased the expense to about 25 cents.

In New York City, where eight public open air schools are in operation, the committee in charge estimates that where the full lunch including milk both morning and afternoon is provided, the cost is 17 cents per child per day. The midday lunch alone costs about 10 cents per day per child and milk alone twice a day without any midday lunch costs about 5 cents per child per day.

In Syracuse the total cost of food, service and

gas for one school month, or twenty days, for twenty-five pupils was fifty-two dollars and ninety-three cents. This amount was distributed as follows:

Raw food for twenty days.....	\$37.93
Service (two hours daily).....	12.00
Gas	3.00
Cost per pupil per month.....	2.12
Cost per pupil per day.....	.11
Cost per day per pupil of food alone.....	.076

ADMINISTRATION

In nearly all cases American open air schools are administered by a partnership of responsibility. In a majority of the cities the cost for teachers' salaries, equipment and so forth is met by the Board of Education, while the expense for food as well as for clothing is defrayed by hospitals, charitable organizations and systems for the prevention and cure of tuberculosis. At the close of the school year 1911, data as to the administration of schools in 47 American cities were as follows:

Board of Education and tuberculosis association	20
Board of Education and private association	11
Board of Education only	7
Board of Education and other city departments.....	6
Tuberculosis association only	2
Board of Education and private fund.....	1

As a general summary of feeding in open air schools, it may be said that the meals are an essential feature of the treatment, that plentiful, wholesome food may be provided at relatively light cost and that in the majority of American cities the special cost of the food is shared by bodies outside the school boards.

IX

INVESTIGATIONS OF UNDERFEEDING AMONG AMERICAN SCHOOL CHILDREN

THE NUMBER OF UNDERFED CHILDREN

GENERAL public interest in school feeding began with the publication, in 1904, of Robert Hunter's book, "Poverty." In trying to give some estimate of the amount of suffering that must exist as a result of poverty Mr. Hunter made the statement that there must be "very likely sixty or seventy thousand children in New York City alone who often arrive at school hungry and unfitted to do well the work assigned to them."¹ This statement has received more publicity than any other one sentence in the whole book and it was all too often translated by the newspapers into "70,000 starving children in New York City come breakfastless to school." As a result many so-called investigations were made and most conflicting reports published which alternately refuted, corroborated and outdid Hunter's original statement.

¹ Hunter, Robert, *Poverty*, The Macmillan Co., p. 216.

Shortly after the publication of this book, John Spargo undertook to find out by personal investigation the real facts about underfed children in New York City.² He first confined his attention to the subject of the usual breakfasts eaten by school children. He was able with the cordial co-operation of principals and teachers to gather fairly reliable information in regard to the breakfasts of 12,800 children, in sixteen different schools.

The method used was as follows: Each child was questioned privately by the class teacher as to what he had for breakfast that day. If he reported no breakfast, the fact was noted, and also if he reported an inadequate breakfast. For this investigation, an inadequate breakfast was defined as one not containing any of the following articles: Milk, eggs, meat, fish, cereal, butter, jam or fruit; it further meant one consisting of coffee or tea, either alone or with bread or cake or crackers. Each teacher reported to the principal the number of children with no breakfast, and those with inadequate breakfasts, omitting so far as possible children of fairly good circumstances whose lack of breakfast was accidental or unusual.

² Spargo, John: *The Bitter Cry of the Children*, New York, 1906, Macmillan Company, pp. 61-124.

The inquiry revealed the following facts: Of 12,800 children, 987 or nearly 8 per cent. had no breakfast; 1,963 others, or over 15 per cent., had inadequate breakfasts. This made a total of 23 per cent. of all the children in those schools who were badly fed, so far as this might be indicated by breakfasts alone.

Mr. Spargo then tried to find out what sort of lunches the children had. He was assured by teachers and principals and by his own observation that many children did not go home at noon, but remained playing about the school yard, with no lunch at all. No exact figures were gathered on this point. From questioning, by the teachers, it was found that anywhere from 10 to 20 per cent. of the children were given pennies to buy their own lunches. He watched what they bought and reports this special illustration as a fair example of their choice in winter. Fourteen children, eight boys and six girls, in one delicatessen store, bought, seven of them pickles and bread, four of them pickles alone, two of them bologna and rye bread, and one pickled fish and bread. On a summer day he saw a group of nineteen buy, six of them pickles, two of them pickles and bread, six ice cream, two

bananas, and three candy. Mr. Spargo found that another way the lunch pennies go is in gambling, especially among boys.

This investigation was followed by many others, both in New York, and in other cities, which may be grouped in two classes; the first being confined, as was Mr. Spargo's, to a study of the kind of breakfasts and lunches eaten by the children; and the second a survey of the children's nutrition, made by physicians.

1. Following is an account of various inquiries into the subject of the breakfast of school children:

In 1906 Dr. Lechstecker, acting for the New York State Board of Charities, examined 10,707 children in the 12 Industrial Schools of the Children's Aid Society. He found that of these, 439 had had no breakfast on the day of inquiry and 998 others had had breakfasts of coffee alone or with bread. These children, who formed 13 per cent. of all examined, showed marked anæmia. Dr. Lechstecker declared that he found that only 18 per cent. of all children had started the day with what he considered suitable and adequate meals.

In a similar examination made in 1905 in Chicago of 5,150 children in 5 schools, 1,586, or 31 per cent.,

reported an entirely inadequate breakfast or none at all. In Buffalo, of 7,500 children in 8 schools, 5,105 reported a breakfast of tea or coffee and bread. The principals in these schools asserted that there were 1,150, or 15 per cent. of all examined, who were obviously handicapped by poor nutrition. In Philadelphia 4,589 children were examined and 189 reported no breakfast, and 2,504, tea or coffee and bread, making a total of 59 per cent. coming to school inadequately fed.³

2. Beginning with the year 1906, Medical Inspectors in New York Public Elementary Schools have recorded cases of malnutrition. During these five years from 1906-1910 inclusive, in a total number of 860,728 examinations the average percentage of cases found was five. This means that in the proportion of one in twenty cases examined the condition of malnutrition was so marked that it was entered on the official records as one of the physical defects of the child.⁴

The condition revealed by these investigations

³ The Hunger Problem in the Public Schools—What the Canvass of Six Big Cities Reveals, Special Correspondence in the *Philadelphia North American*, May 31, 1905.

⁴ Reports of the New York Superintendent of Schools, years 1906 through 1910.



THE WAITING LINE, BUFFALO, N. Y.



A HAPPY BOY



A BIG MEAL

INDIANAPOLIS



have been repeatedly mentioned by Dr. Maxwell, who has year by year recommended earnestly the establishment of school lunches. His latest recommendation reads:

Provision should be made in all schools for supplying food at cost prices for the pupils in the middle of the day.

In 1907 the New York Committee on the Physical Welfare of School Children found on examination of 1400 typical New York school children that 145 or 10 per cent. showed marked symptoms of malnutrition, and visits to the homes showed that the daily food of many others was unsatisfactory. A few months after the first examination 990 of these children were re-examined more carefully and of these 128 or 13 per cent. were declared to be suffering from malnutrition.⁵

In 1909 Dr. E. Mather Sill, at his clinic on the lower east side of the city, made a very careful medical examination of 1000 children whose ages ranged from six to twelve years and found 400 children who were badly undernourished.⁶

⁵ The Physical Welfare of School Children, Quarterly Publication of American Statistical Association, Boston, 1907.

⁶ Sill, E. Mather, M.D.: A Study of Malnutrition in the School Child, Journal of the American Medical Association, vol. lli, No. 25, p. 1981.

Finally in the early part of 1910, the School Lunch Committee made a special examination of 2,150 children in the lower grades of two New York schools, and found 283 of these or 13 per cent. were marked cases of malnutrition. These children weighed on the average nine pounds less than the normal for their ages.

In Chicago, in 1908, of 10,090 children in 12 schools, 825 children were found by medical inspectors to be suffering seriously from malnutrition, due to deficient food. In addition, 353 others were found who were undernourished, but for whose conditions other causes than inadequate food might be responsible. This means that a total of 1,178 or 12 per cent. of those examined were badly nourished.

One striking fact shown by the Chicago investigation was that the number of acutely undernourished children decreased in the higher grades. An analysis of the distribution of the 1,178 children in the different grades follows:⁷

⁷ Reports on Underfed Children, Reprinted from Minutes of the Board of Education of the City of Chicago, Oct. 21, 1908.

TABLE 12. INVESTIGATION OF UNDERFEEDING IN CHICAGO.

Grade	Number underfed	Per cent.
Kindergarten	70	15.5
First grade	502	14
Second grade	235	11
Third grade	195	10
Fourth grade	91	9
Fifth and above	85	6
<hr/>		<hr/>
Total	1,178	12

In Philadelphia, a special investigation of 500 children in one school, in a poor district, including a medical examination and a visit to the home of each child, revealed serious underfeeding in 119 cases, forming 24 per cent. of the whole.

In Boston, the routine medical inspection of all children in 1909 revealed between 5,000 and 6,000 cases of underfeeding and anæmia among a total of 80,000 children.

In St. Paul, in 1910, Dr. Meyerding, the head of the Medical Inspection, made a special examination of 3,200 children in schools frankly chosen from the poorer district. He found that 644 or 20 per cent. of the whole showed marked underfeeding.

As a general conclusion from these investigations it seems fair to place the probable number of seriously underfed school children in New York and other American cities at 10 per cent. of the school population. This number doubtless includes many who might be able to pay for an adequate lunch at noon, if the opportunity were provided.

POVERTY, IGNORANCE AND MALNUTRITION

No one doubts that there is a close relation between poverty and underfeeding—the terms are practically synonymous. Many persons, however, insist that the immediate cause of most of the underfeeding among the school children in American cities is not poverty but ignorance—that if the majority of incomes, slender as these are, were expended wisely, the children might be properly fed.

Light on the general problem of the relation of income to nutrition was thrown by Dr. Chapin's study of the Standard of Living Among Workingmen's Families in New York City.⁸ His investigation involved keeping a detailed account during one week of the actual expenditures for and consump-

⁸ Chapin, Robert Coit: *The Standard of Living Among Workingmen's Families in New York City*, New York, 1907, pp. 123-161.

tion of food in 100 typical families of a dozen nationalities. So far as possible "normal" families consisting of a father, mother and three children were chosen. The material gathered in this investigation was submitted to dietetic experts, who estimated the actual food value consumed each day per family, and by each member of the family. These results were compared with the American standard ration of persons of different ages as computed by Atwater. In this computation the unit taken is the daily food need of the father of the family, a man at moderately active muscular work. The needs of the women and children are then calculated in progressive fractions of this unit, varying from three-tenths for the child under two to eight and nine-tenths for the women and adolescents in the family.⁹

When the expenditure for food was compared with the actual amount of food purchased, it was discovered that, in general, the families that spent on food less than 22 cents per man per day were underfed, that is were unable to buy enough to support life on a plane of physical efficiency.

⁹ United States Department S. Agricultural Farmers' Bulletin No. 142, p. 33. See also p. 240, this text.

The yearly expenditure for food in each of the 391 families was then determined, and it was found that applying the minimum standard of 22 cents per man per day, the families might be grouped as follows, according to the income and the percentage of necessary underfeeding, as estimated by the amount spent on food:

TABLE 13. RELATION BETWEEN INCOME AND UNDERFEEDING IN AMERICAN WORKINGMEN'S FAMILIES.

Annual income	Total No. of families	Underfed families	
		Number	Per cent.
\$400-\$599	25	19	76
600- 799	151	48	32
800- 899	73	16	22
900-1099	94	8	9
1100 and over	48	0	0
	<hr/>	<hr/>	<hr/>
Totals	391	91	23.2

The figures in this table indicate that with less than \$600 a year to spend, an adequate food supply is not provided in three families out of four. On incomes from \$600 to \$800, one family in three is underfed, while less than one-tenth of the families having \$900 to \$1000 to spend fall short of the minimum allowance for food. The income of \$1100 for a family of five is apparently a safeguard against underfeeding.



NOON LUNCH IN TWO BUFFALO SCHOOLS. TABLECLOTHS AND WHITE WARE
TEACH CLEANLINESS AND BEAUTY



INCOMES OF FAMILIES OF UNDERFED SCHOOL
CHILDREN

The study made by Dr. Chapin was not directly concerned with the problem of underfed school children. So far as specific investigations have been made of the family incomes of underfed school children Chapin's findings have been corroborated. The most careful study of the kind yet made was that conducted by the New York School Lunch Committee in 1909. This study covered 262 cases of undernourished children. Records were made of all the details in their home life which might bear on their condition. Some of the results were as follows:

Of the families of 106 children, it was found that in 69 per cent. of the cases the yearly income fell below \$825. The families were grouped according to incomes as shown in the accompanying table:

TABLE 14. INCOMES OF FAMILIES OF UNDERFED CHILDREN

Annual income	Number	Per cent.
\$825 and over	33	31
500-\$800	38	36
400-500	11	10
Less than \$400	24	23
Totals	106	100

HOME FEEDING

A study of the food given to 262 undernourished children at home showed that 93 per cent. had tea or coffee every day and of these nearly 40 per cent. had it twice a day.

Given a breakfast of tea or coffee and bread, a great many of these children had to wait till night time for a real meal. In nearly ten per cent. of the cases the mother worked away from home all day and could not prepare any lunch at noon. In 23 per cent. there was no prepared lunch at home and the children had to get it for themselves. In a still larger number of cases forming 38 per cent. of the whole there was no available lunch at home of any kind and if the children did not have pennies they had nothing at noon. This makes a total of 68 per cent. for whom there was no regular provision for a noon-day meal at home. From accounts given by the mothers, the evening meal was not of such character as to make up for the other poor and irregular meals. Detailed accounts of the actual food eaten at home by 141 children showed that 77 per cent. were receiving too little food of any kind, leaving suitability out of the question.

HOUSING

But poverty may affect nutrition in other ways besides mechanically limiting the food supply. Poverty means narrow living quarters and even a limit to the supply of air. This was well illustrated during the same investigation, when details were gathered of the housing of 217 families with undernourished children.

The following table shows the number of persons to a room:

TABLE 15. HOUSING OF UNDERFED SCHOOL CHILDREN

	No.	Per cent.
1 person or less per room.....	17	8
1-1.5 person per room	47	22
1.5-2 persons per room	63	28
2-2.5 persons per room	39	18
2.5-3 persons per room	38	18
Over 3 persons per room.....	13	6
	<hr/>	<hr/>
Total	217	100

In 42 per cent. of the families there were more than two persons to every room in the house. This means that the sleeping rooms were even more crowded because the kitchen is included in the number of rooms. In 17 families there was a

room for each member of the family. The number of rooms taken by itself is only a rough indication of the actual condition of crowding and bad air, because of the fact that many rooms are windowless. Further, in the old style "railroad" flat, which still outnumbers any other style in New York, the "rooms" are simply vaguely defined sections in a long corridor.

Similar investigations into the social and economic factors making for underfeeding in New York and other cities have given results like those just outlined. Among the conditions making for underfeeding in school children, especially in large cities, are overcrowding, irregular and bad food habits and actual lack of enough to eat. These are not the only ones, but they are the important ones, and in a majority of cases are directly traceable to poverty.

X

MALNUTRITION IN CHILDHOOD

ITS SYMPTOMS, CAUSES, RESULTS AND CLASSIFICATION

MALNUTRITION is the name given to the bodily condition arising when, for any reason, the tissues of the body do not receive enough of the food necessary to build them up and to furnish energy and vitality for functioning.

In England and Germany, where the classification of school children according to their nutritive condition has been a matter of discussion for more than ten years past, it has been found that five grades of nutrition may be distinguished, varying through excellent, good, fair, poor and bad.

Some idea of what these various grades mean may be had from the following plan which has been elaborated by Dr. Hogarth¹ for the use of medical inspectors in English schools.

This indicates what are the main points by which nutrition is judged; growth as shown by height

¹ Hogarth: Medical Inspection of Schools, p. 158.

and weight; bulk as shown by musculature and the character of the external tissues; and circulation as shown by complexion.

Grade	Stature and growth	Nutrition	Circulation and complexion
1. Excellent	A healthy giant	Excellent muscular development	Ruddy and bronzed
2. Good	Well-grown	Well-nourished, healthy	Healthy pink
3. Fair or average	Average	Medium	Average
4. Poor	Stunted	Thin, or fat and flabby tissue	Anæmic, sallow
5. Bad	Miserable, deformed	Very thin	Pallid

If a child fails consistently to measure up to his racial standard of height and weight for his age, the chances are that the cause is chronic malnutrition.

If a child's superficial circulation is bad, as shown by his general lack of color, by the loose feeling and flabby look of his skin, and especially by the pale color of the mucous membranes about and in the mouth and about the eyes—the cause is probably malnutrition. Rough hair, not necessarily untidy, a furred tongue and a bad breath are other signs.

Right here may be mentioned a symptom which, while as yet little known, is coming to be accepted as a most certain indication of acute malnutrition.

This is the appearance of small reddish spots under the skin, known as purpuric petechiæ. They are really capillary hemorrhages and though sometimes confused with flea bites are the result of insufficient or unsuitable feeding and disappear in a short time with proper feeding.

Even more prominent are the mental symptoms of malnutrition. The animal spirits and vitality of normal children are lacking in those who are underfed, who are easily fatigued and listless in play and work and show this even to a casual observer by the expression of their eyes and entire face.

This characteristic lack of vitality means, too, that the children succumb easily to infectious diseases of all sorts. Similarly, the undernourished body cannot repair quickly the minor injuries, cuts and bruises of childhood.

CAUSES

In general, the body fails to grow properly or to function harmoniously—that is it is malnourished—if as a whole it is not supplied with enough of the right kind of food.

The food provided may be lacking in quantity or

it may be of bad quality, adulterated, badly prepared, etc. In any case the body is not getting what it needs.

Because of the conversion of food into tissues and life energy requires the co-operation of many different organs involving many chemical and physical forces, there may be a truly formidable number of hindrances and perversions in the process.

The causes of malnutrition may in general be grouped according as it results in one of two ways: one, the insufficient building up of tissue; two, the excessive breaking down of tissue. A more obscure problem of malnutrition lies in hereditary and congenital conditions which may cause arrested or delayed development.

I. 1. The main cause of an insufficient building up of tissues is *deficiency of food in quantity or quality*.

2. The second cause is *faulty assimilation*, that is digestion and absorption. This may result mechanically from insufficient mastication because of hurried meals, or *bad teeth*, or because of an excess of liquids. Bad teeth is the most frequent of these.

Strong tea and coffee, alcoholic drinks and smoking may interfere chemically with assimilation.

3. After the food leaves the alimentary canal,

ready for carriage to the other parts of the body, defects in the lymphatic system, particularly those caused by subacute or chronic tubercular conditions, may hinder it from arriving at its destination. This constitutes a third possible cause.

4. The fourth cause of an insufficient building up of tissues is a deficiency of oxidization resulting from (*a*) the quality of air breathed; (*b*) a deficiency of air entering the lungs because of nasal obstructions such as catarrh, adenoids, etc., or defects of the chest from rickets, bad posture, tight clothing; (*c*) circulatory defects in tubes or capillaries, mechanical defects of the heart, anæmia, lymph stagnation from want of exercise.

II. Excessive breaking down of tissues may accompany:

1. A nervous condition arising from insufficient sleep, late hours, irritation from vermin.
2. Overwork and chronic fatigue.
3. Recovery from fevers.

These causes are not of equal value, many may exist at once and all are interrelated. Bad and insufficient food results in badly formed and weakened teeth and other defective structures, whose impaired powers of functioning make it difficult for

them to receive the full benefit of good food. It is a vicious circle. However, it is an important fact to remember that malnutrition, whatever the cause, cannot be cured without good food and enough of it.

The most frequent results and accompaniments of malnutrition are anæmia, stunted growth, diminished energy and lowered vitality as shown by weakened resistance to diseases. All these things have been studied with considerable care in different countries by experts interested in the development of children. The following are the results of some of this study.

ANÆMIA

Anæmia, which is the term used for deficiency of blood, particularly of the red corpuscles in the blood, is the frequent accompaniment of malnutrition. It is seldom or never found in the well-nourished body, but it may occur in a body that is fairly nourished. Its most common indication is pallor, which may be general or, in the case of dark complexioned children, it may be seen only in the mucous membranes about the eyes, the gums, the inside of the cheeks, etc. Frequently a blood test is necessary to detect its presence.

Anæmia is extremely common among school children, especially in towns. How it varies with the state of nutrition of the children is illustrated by the results of the investigation of 716 cases among school children in the poorer districts of London.² These children were classified in five groups on the basis of nutrition. Those rated as "excellent" and "very good" were found to include practically no cases of anæmia. Among those rated "good" the percentage suffering from anæmia was 59; among the "fair," 89; and among the "bad," 93.

Dr. Gastpar³ of Stuttgart reports a more extensive investigation of anæmia covering over 8000 cases. These children were classified as to nutrition into "good," "fair" and "bad" groups. In round numbers there were 2000 in the first group; 4000 in the second; and 2000 in the third. Among the children classified as "good" there were no cases of anæmia; among those classified as "fair" the percentage was 34; among the "bad" it was 49.

To summarize, anæmia, as the word is commonly understood, means an impoverished blood supply.

² Report Educational Commission, London County Council, 1909, p. 19.

³ Gastpar, Dr.: Die Beurteilung des Ernährungszustandes der Schulkinder.

It is a symptom, but not an invariable one, of chronic under-nourishment. Among its causes which are like those of malnutrition are insufficient or improper feeding, hereditary disease, frequent hemorrhages, general debility following acute diseases, rickets, insufficient sleep, and want of fresh air.

When found among the children of the well-to-do it simply gives the effect of pallor and the skin is often of fine texture. When it is found among children who are underfed and come from crowded homes, the prominent symptom is the earthy tinge of the skin together with other characteristic signs mentioned as "symptoms of malnutrition."

HEIGHT AND WEIGHT MEASUREMENTS

In general cases of malnutrition may be divided into two types. The first is the result of chronic underfeeding or incorrect feeding, and its results are shown in the child by constant failure to come up to the average of weight and height, lung capacity, grip, etc. The second type of malnutrition is temporary in character and its results are shown, not by a deficit in both weight and height, but by a deficit in weight alone as compared with height. In the first place the child will be diminutive, in the second, starved—both problems of nutrition.

The standard of absolute height and weight at different ages differs according to race and climate in countries. In spite of these differences, height and weight still remain the surest single indication of nutrition. They may also be recorded more easily than any other. The direct and definite way with which they do vary with nutrition is shown in the investigation into the physical condition of school children conducted in 1907 by Dr. Leslie Mackenzie and Captain Foster of Glasgow. This is the biggest, most extensive and careful investigation of the kind ever conducted. It includes 72,800 cases varying from five to fifteen years, and covering all of the children in the public schools of the city. The fact which is significant in this connection is that the children are divided into four groups, in accordance with the number of rooms in their houses—whether one room, two rooms, three or four rooms and more.

In a crowded city like Glasgow, the size of the house is a fair index of the degree of comfort or poverty of the family. There are exceptions, in cases of especially small families, but when tens of thousands of cases figure in the data, the number of rooms is a trustworthy index of the economic status. The one-room child is the poverty stricken

child, and hence the underfed child. The four-room child on the other hand belongs to a family much better situated economically. The truth of these principles is forcibly illustrated by the results obtained in the investigation under consideration.

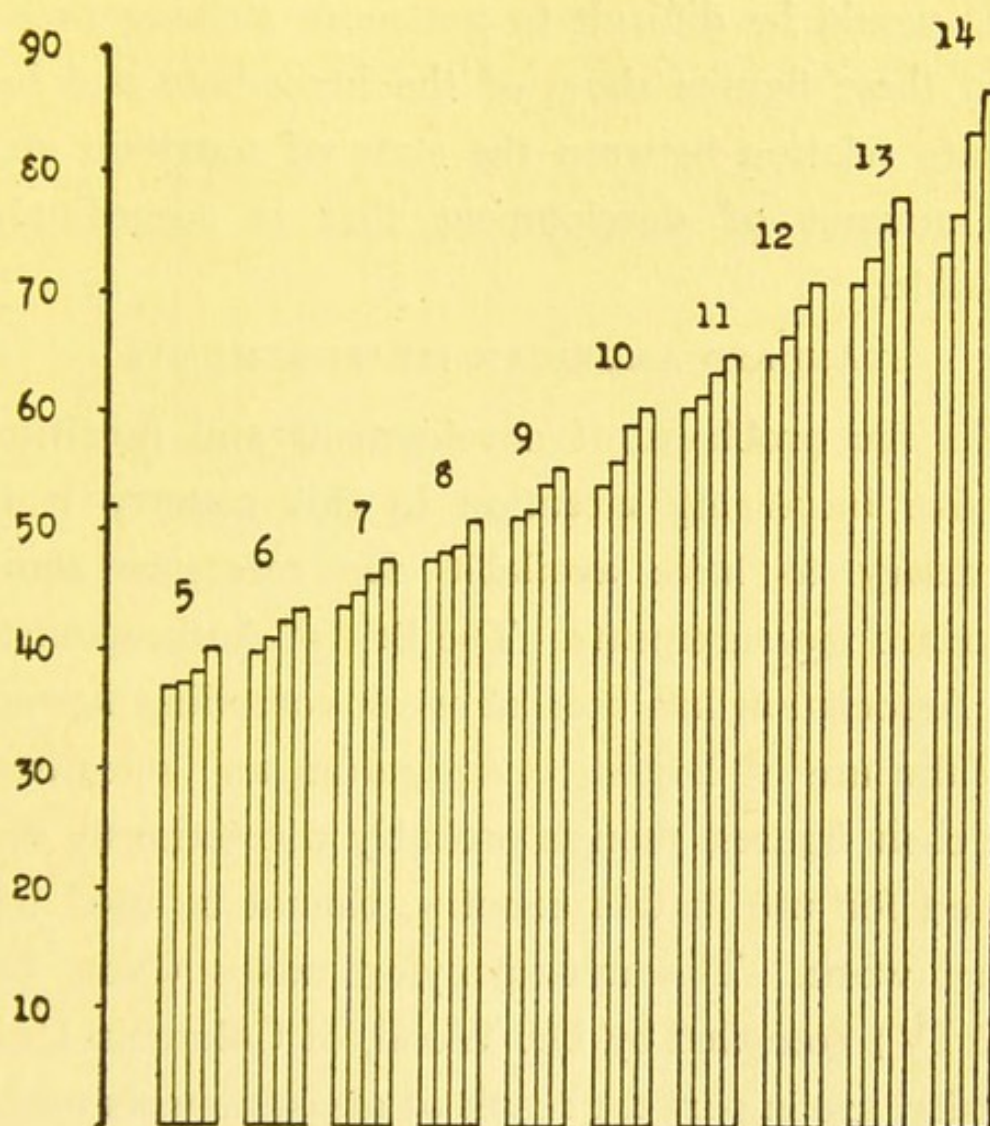
When the average height and weight of the children of the different groups are taken, it appears that the child from the one-room house is always lighter and shorter than the child from the two-room. He in turn is shorter and does not weigh so much as the child in the three-room house—who in turn is the physical inferior of the child living in a house of four rooms or more. These results are shown in the following table:

TABLE 16. AVERAGE HEIGHT AND WEIGHT OF ALL CHILDREN FROM 5-18 YEARS, ACCORDING TO HOUSING

Housing	Average weight in pounds	Average height in inches
1 room	52.0	46.5
2 rooms	55.5	48.9
3 rooms	60.0	50.4
4 rooms	64.9	51.5

In the following chart the average weights for the one-, two-, three- and four-room children, from 5 to 14 years old, are represented by the upright columns in black. It will be seen that for each age the first column represents the average weight of

the one-room child and that these are consistently less than the weight of the two-room child in the next column. This is true of every age—up to 18,



II. Average weights of one-room, two-room, three-room and four-room children at each age from five to fourteen.

but the number examined of children older than 15 was too small to be of statistical value. A similar diagram constructed to show the heights at

each age would be almost identical and show with equal clearness the relation of housing to nutrition and nutrition to development.

It would be difficult to get more striking proof than these figures show of the immediate and intimate relation between the state of nutrition and the amount of development that is accordingly possible.

STANDARD AMERICAN MEASUREMENTS

As the problems of development and nutrition receive increasing attention in this country it is necessary to have available for reference some standard measurements. The British Anthropometric Association has been at work compiling figures for the use of British investigators and scientists, but their figures, though probably not seriously unsuited for use in this country, cannot be used for exact work. The accompanying tables (Nos. III and IV) compiled by Dr. Wood, of Columbia University, are in part the result of measurements made periodically during ten years on thousands of boys and girls attending the Horace Mann School. The figures gotten in this way were compared and checked up with those of Drs. Bowditch and Hastings, and with the standard adopted by the British

Anthropometric Association. The tables show the standard mean variations in weight as related to

III. RELATIVE WEIGHT AND HEIGHT TABLE—BOYS.

The figures under the age column represent weight in pounds.

Height in inches	Years.															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
39	35															
40	38	36														
41	39	39														
42	41	41														
43	42	42	42													
44	46	44	43													
45		46	46	45												
46		48	48	48												
47					50											
48			54	53	53	53										
49				54	55	55										
50				57	58	58										
51				59	60	60	61									
52					62	62	61	63								
53					62	65	65	67	67							
54					65	68	68	70	71	71						
55						69	71	75	75	76						
56						71	77	76	78	79	79					
57							77	79	80	82	82					
58							78	84	85	86	87					
59								84	86	90	91					
60								85	91	94	95	90				
61									98	97	99	96				
62									99	103	106	104	104			
63									100	107	112	112	110	118		
64										114	118	120	117	120	120	
65										122	119	122	122	120	126	125
66											121	125	125	126	129	130
67											128	129	128	131	134	132
68											133	133	130	136	136	136
69												134	136	139	139	139
70												136	140	143	144	145
71													140	146	146	146
72															149	154
73																165

height, at different ages, from five to twenty years. A perfectly well child of ten years may be anywhere from 48 to 56 inches in height and weigh anywhere

from 53 to 71 pounds, but if his weight does not correspond with his height, or if he is less than 48 inches tall, there is something wrong with his development and probably with his nutrition.

IV. RELATIVE WEIGHT AND HEIGHT TABLE—GIRLS.

The figures under the age column represent weight in pounds.

Height in inches	Years.															
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
39	34															
40	37	35														
41	38	37														
42	41	39	39													
43	41	41	42													
44	45	43	44	42												
45		45	45	45												
46		48	47	47												
47			50	49	49											
48				51	51											
49				53	53	54										
50				56	56	57										
51					59	58	60									
52					63	62	62	63								
53						64	63	66	65							
54						69	68	69	68							
55							70	71	73							
56							75	75	76	78						
57								78	80	83						
58								83	86	88	89					
59								88	89	93	97	100				
60								94	94	96	100	104	109	103	99	99
61									99	100	102	109	109	106	105	111
62									104	104	106	111	110	107	111	114
63										107	109	116	110	112	113	114
64										112	118	116	117	114	119	115
65										114	118	121	125	120	123	125

This method of calculation is much more exact, especially in a heterogeneous group, such as may be found in any American city, than the easy and crude method of measuring development at each age by a single figure for weight or height.

RESULTS

MALNUTRITION AND MENTAL DEFECTS

The relation of malnutrition to mental defectiveness has long been given substantial recognition both here and abroad in the provision of lunches in special schools for subnormal children. Dr. Collie, Medical Inspector of the London School Committee, declared in this connection before the Committee on Physical Deterioration, that "mental disability is not only preventable but, in many cases, curable. In a large number of instances, after the careful individual attention and midday dinner of the special schools, children are returned to the regular elementary schools after from sixteen to eighteen months with a new lease of mental vigour."

Dr. Brown Ritchie, reporting for Manchester, stated that of the 641 mentally defective children in that city, 325 could be classed as having poor nutrition, while 111 were marked cases, making a total of 68 per cent. showing malnutrition.

Similarly, of 1012 children in classes for mental defectives in New York in 1908, 60 per cent. were found to be suffering from malnutrition. Similar data come from Plauen in Germany, where it is

stated that underfeeding is the main cause for children being in the special schools for mental defectives.

The only case on record where the relation between malnutrition and simple retardation has been quantitatively estimated, occurs in one district of Manchester, Conn. All the children in eight grades were specially examined, in order to determine what features of their physical condition or of their home environment might be responsible for non-promotion. Of 1396 children examined, 174, or 12 per cent., were malnutrition cases. But the percentage of malnutrition in the promoted group was 9, as opposed to 25 in the left back group. Malnutrition was found to be second only to poor mentality in its retarding influence.⁴

In many of these cases the explanation seems to be that these children are functionally mentally defective; in other words, their brains are starved and naturally fail to react to the ordinary methods of elementary teaching.

⁴ Ayres, Leonard P.: A Simple System of Discovering Some Factors Influencing Non-promotion, *Psychological Clinic*, vol. iv, No. 7, Dec. 15, 1910.

MALNUTRITION AND PHYSICAL DEFECTS

Emmet Holt, an American authority on children's diseases, says that "one of the most striking things about children suffering from malnutrition is their vulnerability. They 'take' everything. There is but little resistance to any infectious disease which the child may contract."

A most careful investigation, bearing on the correlation between malnutrition and physical defects, was conducted by Dr. Gastpar, of Stuttgart.⁵ He examined some 8000 children in all classes of the public schools who were suffering from one or more of thirteen diseases. These children he divided into five classes, according to the state of their nutrition, by the method already described. He found that with one exception the largest percentage of disease was present among the badly nourished, anæmic children.

Some of the differences were striking. Diseased glands occurred in 12 per cent. of the worst nourished and in only 5 per cent. of the best nourished. Adenoids, perhaps the most familiar disease of the school child, occurred in 26 per cent. of the worst

⁵ Gastpar: *Op. cit.*

nourished cases, as compared with 17 per cent. of the well nourished. Unhealthy heart murmurs occurred in 26 per cent. of the badly nourished, and only in 3 per cent. of the well nourished.

There was no tuberculosis in the class marked good. Tuberculosis of the lungs varied from .07 per cent. in the fairly nourished to 3 per cent. in the worst nourished.

Other diseases, such as rickets, vermin and ear troubles, showed similar variations in their occurrence. Albuminuria alone of the thirteen diseases involved seems to have no special correlation with malnutrition, the largest percentage (3) occurring in the class marked "fair, with anæmia," while the two last groups showed only 2 per cent. apiece of this trouble.

TABLE 17. RELATION OF NUTRITION AND VULNERABILITY TO DISEASE

Class of Nutrition	Skin Diseases	Scoliosis	Eye Trouble	Non-tubercular Respirational Diseases	Total Defects	Total Examined	Defects Among Each 100 Children
1. Good	8	20	260	77	365	1984	18
2. Fair	49	82	529	379	1039	2625	39
3. Fair and anæmia	15	70	253	289	627	1385	45
4. Poor	25	96	209	314	644	1045	62
5. Poor and anæmia	31	103	210	441	785	998	79
	128	371	1461	1500	3460	8037	43

The following table shows the results of the study in the cases of the four most important diseases:

The important feature of the table is the column of percentages at the right hand. It will be noted from this that of the children classed as "good" with respect to their nutrition, only 18 per cent. are found to have these physical defects. This percentage steadily and rapidly advances as we pass to the "fair" children and those who are "fair with anæmia," and so on to the last group classed as "poor with anæmia," where the percentage has reached 79. In other words, among children classed as "good" only one in five was defective; among those classed as "poor with anæmia" four out of five were defective.

CLASSIFICATION AND RECORDING OF NUTRITION OF
SCHOOL CHILDREN: PROFESSIONAL AND
LAY DIAGNOSIS

After reading the necessarily vague and general instructions for passing judgment on the fact and degree of malnutrition, it is not surprising to learn that there is great variability in the recorded results of such examinations. This is true when the examining is being done by medical men, and the differ-

ences are even greater when children are first examined and reported on by their teachers and these results are checked up by the school doctors.

A pertinent example is found in the examinations recently conducted in German cities.⁶ A large number of such examinations, some of them covering nearly 170,000 cases in 68 cities, showed that where the teachers reported the nutrition of 73 per cent. of the children as good; that of 22 per cent. as fair; and that of the remaining 5 per cent. as bad; the school physicians, examining the same children, reported the good cases as being 42 per cent. of all; the fair ones 50 per cent.; and the bad 8 per cent. It will be noted that the doctors found a much smaller percentage of children whom they could put in the first class, and a larger percentage of those fairly and badly nourished.

Because of results like these and because the subject of the nutrition of school children is so important, and at the same time so complex, its proper classification and recording has recently been studied with great care by scientists in Germany and England.

The most practical scheme yet devised for work-

⁶ Kaup: *Die Ernähr. der Volks.*, pp. 95-100.

ing with great numbers of children is that of Dr. Gastpar, Director of Medical Inspection in Stuttgart.⁷ This plan, which represents the accumulated experience of many years and has been endorsed by English workers, is as follows:

1. There is first an individual examination of each child, in which measurements of height and weight are taken, and the state of nutrition determined by these and other factors such as the state of the superficial circulation, the musculature, skin tonicity, the condition of the mucous membrane, the expression of the eyes and the entire face, the roughness or smoothness of the hair, etc. At the same time, other physical defects are noted that may bear upon nutrition, as the condition of the teeth, presence or absence of adenoids, and particularly the presence or absence of anæmia.

2. After these records have been made for each individual child, the children are then divided according to their ages. Then the children of each group are divided into those having anæmia and those without it. These two groups are further subdivided until, in order of nutritional excellence, children in each age group stand thus: (1) good;

⁷ Gastpar, *Op. cit.*

(2) fair; (3) fair with anæmia; (4) poor; (5) poor with anæmia.

Experience in the application of this plan of classification has developed three general rules that are valid for application in any country. Briefly these rules are as follows:

(a) Every child is examined separately in a room specially provided, where the light and temperature may be regulated.

(b) One physician should make all the examinations for any given group of children.

(c) The examining physician should be familiar with the racial peculiarities of growth, complexion, and coloring.

This system involves time and care, but it insures a fair degree of accuracy in a subject not easy to define rigidly. Some such scheme is absolutely necessary if experience is to be shared. This has been found specially valuable in record keeping and in finding the correlation between the state of nutrition and other physical conditions.

XI

FOOD NEEDS OF GROWING CHILDREN.

Old men bear the want of food best; then those that are full-grown; youths bear it least, most especially children, and of them the most lively are the least capable of enduring it.—

HIPPOCRATES.

GROWTH and play are the great needs of the child. Growth means the development of new body cells, and play requires energy, which is simply another name for heat. The only source of material for the new body cells and of fuel for the heat and energy is food, and the question to decide is how much and what kinds of food best meet the two great needs.

If the child were simply a little man, and like the man in everything except size, it would be an easy matter to give him a fraction of the man's food in proportion to his size. But this is not the case, first, because the child is growing and therefore, unlike the man whose growth is past, has a constant need of new material in large quantities. Then, because the child is more active, physically and nervously, he needs more heat and energy in proportion to his size than the man.

To plan rightly for the child's particular needs, we must first know what foods will best form tissue, and which ones will best supply heat and energy. As foods perform these two functions they are classified in two great groups, corresponding to the kind of contribution that they predominantly make. These two groups are the Proteins, or structural foods, and the fuel or energy suppliers, which include Carbohydrates and Fats.

PROTEIN: THE TISSUE BUILDER

The word "Protein" comes from the Greek "protos," meaning "first," and it is used to designate the tissue-building elements in food, because these are the first and basal elements in all life, whether animal or vegetable. The reason they are so important is because they contain, among other things, the chemical element Nitrogen, which is absolutely necessary for cell growth. Though proteins are found in varying proportions in nearly all animal or plant tissues, they are found chiefly in the parts which are centres of growth and vital activity such as the muscles, milk and eggs of animals and the seeds of plants. Thus they are found in large quantities in such foods as the lean of meats

and fish, eggs, milk, peas, beans, lentils, nuts and the grains like rice, oats, and wheat.

When proteins are digested and assimilated, they form the vital or living part of the cells, and compose from one-sixth to one-tenth of the body weight.

During adult life, the breaking down and building up of cells is a slow process, and comparatively little new material is needed each day. The daily need of the cells for protein has been estimated at anywhere from 0.85 gram per kilo of body weight¹ (the lowest possible amount) to 1.6 grams (the highest American standard).² This means for an average man weighing about 70 kilos, or 150 pounds, a daily ration including enough meats, milk, eggs, cheese, bread, peas or beans, etc., to give from 60 to 115 grams of protein elements. A gram is approximately 1/454 of a pound, or 1/30 of an ounce.

During childhood, the period of greater cell activity, the daily standard of protein need has been established by custom³ and experiment⁴ at an amount ranging from 2.5 to 1.4 grams per kilo of body weight. That is, according to different authorities, a child weighing anywhere from 20 to 35 kilos will

¹ Chittenden.

² Atwater.

³ Camerer.

⁴ Siegert and Lungwitz.

require an average daily amount of from 39 to 70 grams of protein.

To summarize: the amount of tissue-building food required by the child during the growing period is five-fourths of what is required by a man, comparing weight with weight.

CARBOHYDRATES AND FATS: THE ENERGY SUPPLIERS

Carbohydrates is the name given to the two foods, sugar and starch, which have about the same chemical composition, both containing approximately 44 per cent. carbon, 6 per cent. hydrogen, and 49 per cent. oxygen. Sugars and starches are found in substantial vegetables like potatoes, corn and grains, sugar cane, beets and bananas—that is, in the parts of plants that are used for storing the plant's own food materials.

The function of carbohydrates is to supply heat and energy which enable the body to do its muscular and nervous work. Once digested, they are either burned immediately and reduced to gas and water, setting free heat and energy in the process, or they are stored for future use. Before being stored carbohydrates are almost entirely converted into fat, and in their original form constitute only about one per cent. of the weight of the body.

Fats, which perform the same function as the carbohydrates, are found most abundantly in butter, cream, cheese, meat, fish, nuts and vegetable oils. Their chief value is that they supply bulk for bulk over twice as much fuel as the sugars or starches, because they contain a far larger amount of carbon. But oxygen is present in far less quantities, and this means that the fuel is not so easily available as in the carbohydrates.

In the human body the fats constitute the great storehouse of reserve material from which energy and heat may be taken when the supply from food temporarily becomes short. Fat occurs in minute particles scattered throughout the various tissues and in masses under the skin, where it helps to conserve the bodily heat from too rapid irradiation. Because the proportion of skin surface to bulk is greater in children's bodies than in adults, their bodily heat is lost more quickly, and this makes the fats of special value in this period.

Although the special function of protein is to build tissue, it does contain elements similar to those found in carbohydrates, and these may serve as fuel. However, the presence of nitrogen hinders their being completely burned, so that protein is not as economical a form of fuel as carbohydrates and fats.

As a summary of experience with children's fuel needs it may be said that in proportion to their weights they require on an average from one-quarter to one-half more foods yielding heat and energy than do adults.

INORGANIC SUBSTANCES IN FOOD

In addition to the need of material and energy that are supplied by the organic food compounds, the child must have lime in large quantities for tooth and bone building. This is found in its most available form in milk, but also occurs in meats and in association with protein generally. Other mineral needs are common salt, potassium, phosphorus, sulphur and iron. These are found mostly in compound with organic foods, the chief value of watery vegetables, like celery, cabbage and spinach, being in the salts that they hold in solution. These inorganic substances, where they do not help to form cells, are used as aids in secretion and digestion, and their value in the child's bodily economy is being more and more recognized.

The materials so far described, protein, sugars, starches, fats and mineral substances, together make up about one-third of the weight of the body. The rest is water, which, though it furnishes neither liv-

ing tissue nor fuel, is absolutely necessary for the carrying on of vital processes, such as circulation, secretion and maintaining a constant body temperature. The minimum allowance of water, in addition to what is furnished in food, has been placed at about a quart a day for all ages beyond infancy.

MEASUREMENT OF FOOD VALUES BY CALORIES

The fact that all organic foodstuffs yield heat or energy when burnt in the body makes it possible to measure and compare them by a single unit of measurement. This unit is the Calorie, which is the amount of heat necessary to raise one kilogram of water one degree Centigrade, or one pint of water four degrees Fahrenheit.

In applying this unit it is assumed that, for example, if a certain quantity of white of egg or cane sugar, on being burned outside the body, yields enough heat to raise a kilogram of water one degree Centigrade, it will produce the same amount of heat when burned inside the body.

As a matter of fact, certain foodstuffs are never completely oxidized within the body, and the estimate of the real fuel value of any food takes account only of the material finally available to the body. Once the component parts of any food are known,

its caloric value may be determined by the use of the following scheme of fuel values:

Protein: Fuel value, 4 Calories per gram; 1,816 Calories per lb.

Carbohydrates: Fuel value, 4 Calories per gram; 1,816 Calories per lb.

Fats: Fuel value, 9 Calories per gram; 4,086 Calories per lb.

A list of common foods, showing the amount of protein, starch, carbohydrates, mineral matter and water each contains, is published by the United States Department of Agriculture, and forms the standard reference list for this country.⁵

DIETARIES FOR DIFFERENT AGES

In general we have seen that the food needs of children are relatively greater than those of adults, but this broad statement fails to distinguish between the needs of children at different ages. Dr. Langworthy has indicated these differences by a formula like the following:

Taking the standard requirement to be that of a man at moderately active work

The child under 2 years requires $\frac{3}{10}$ of this.

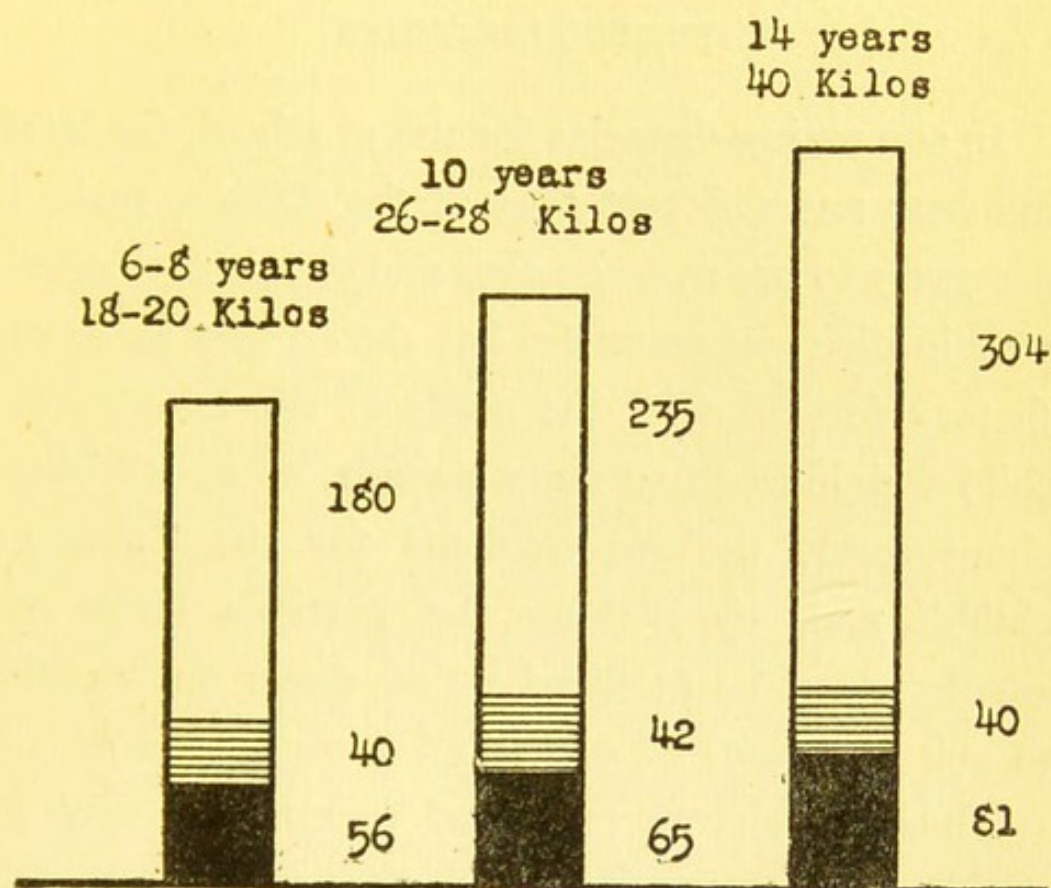
The child from 2 to 5 years requires $\frac{4}{10}$ of this.

The child from 6 to 9 years requires $\frac{5}{10}$ of this.

The child after 10 years requires from $\frac{6}{10}$ to $\frac{9}{10}$ of this.

⁵ U. S. Dept. of Agriculture, Washington, Office of Experiment Stations. Bulletin 28 (Revised Edition).

This formula has the disadvantage of not indicating the relative proportions of the different kinds of foodstuffs needed, and it further takes no account of weights. The following chart represents the food



V. Daily food needs in grams of school children of varying ages and weights. Carbohydrates in outline; fats in horizontal lining; protein in solid black.

needs of children at three different school periods, at six, at ten and at fourteen. The figures upon which it is based are taken from a French dietitian, Dr. A. Gautier.⁶ They do not exactly correspond

⁶ Gautier, Armand: Diet and Dietetics. Edited and translated from the French by A. J. Rice Oreley.

to figures in American standards, but they are sufficiently near the average to show how food needs progress with advancing years.

SCHOOL DIETARIES

In computing dietaries for use at school, the large numbers and different ages of the children make it necessary to use average ages and weights. Experience in different countries has shown that an ample dietary formed with the needs of the ten-year-old child weighing about sixty pounds, or 27-28 kilos, about meets the requirements for the "average child," and, by making the portions larger or smaller, may be modified up or down quite easily to suit the needs of older and younger children.

Those in charge of school meals have first to decide how much the total daily ration of the average child should be and then what proportion of this shall be provided in the school meal or meals.

The following table shows in summary form the child's daily requirements for food as these have been worked out, first by three men in the school feeding movement of three different countries, Italy, Switzerland and England, and then the average

requirements computed by fifteen different experts in children's food needs:

TABLE 18. DAILY FOOD NEEDS OF THE AVERAGE CHILD, AGE 10.
WEIGHT 27-28 KILOS

	Tonsig	Erisman	Crowley	Average of 15 experts
Fat	23	41	57	40
Protein	48	60	68	60
Carbohydrates.....	282	225	288	250
Calories	1531	1540	1937	1600
Calories per kilo...	56	55	72	58
Protein per kilo ...	1.7	2.1	2.4	2

The first three estimates represent very fairly a low, a middle, and a high standard of food needs, and these grades are indicated particularly in the figures for protein and fat. These differences are dependent upon local variations in national, racial and local customs, as well as the demands of climate, the muscular and nervous activity and so forth.

For practical general reference it may be stated that those who have studied the diets of school children are in fair agreement that the daily ration of a child of ten, weighing 60 pounds, should be composed as follows:

Protein	60 grams
Fats	40 grams
Carbohydrates	250 grams

Total 350 grams yielding 1600 Calories.

PROPORTION OF DAILY RATION TO BE MET BY SCHOOL
MEAL

The fraction of the daily ration that is to be supplied by the school meal will of course depend in large measure upon whether it is breakfast, dinner, or a light lunch. In any case school workers are agreed that if the school meal is to be of significant value it must supply deficits in the usual home diets of the children, and in its general make-up help to raise the home standards.

Practically this means first that the meal shall be a substantial one, and, more important, that the elements of fat and protein have to be emphasized. This is because fats and protein, being largely animal foods, are the most expensive kinds, and are therefore bought sparingly by the vast majority of families. It is possible to so arrange a dietary that enough protein and fat will be supplied for comparatively little outlay, but this requires a more accurate knowledge of food values than is common among housewives.

The following table shows how the problem of the distribution of foodstuffs in the different meals has been worked out by experts in connection with

the school feeding movement in three different countries, Switzerland, Germany, and England:

TABLE 19. SHOWING AMOUNTS OF VARIOUS FOODSTUFFS CONSIDERED NECESSARY AT DIFFERENT MEALS FOR THE AVERAGE SCHOOL CHILD WEIGHING 27-28 KILOS

Authority	Meal	Protein Grams	Fat Grams	Carbohydrates Grams	Calories
Erisman:	Breakfast ...	13	10	37	285
	Dinner	40	26	100	794
	Supper	7	5	98	465
		—	—	—	—
	Total	60	41	235	1544
Rubner:	Breakfast ...	13	12	37	308
	Dinner	36	26	104	794
	Supper	15	12	45	348
		—	—	—	—
	Total	64	50	186	1450
Crowley:	Breakfast ...	19	20	86	600
	Dinner	29	18	154	894
	Supper	20	19	48	443
		—	—	—	—
	Total	68	57	288	1937

In this table the breakfasts are suitable for a light lunch, and on the average are designed to furnish about one-quarter of the day's fuel needs, about one-quarter of the protein and a little less than one-third of the fat.

The dinners furnish on an average over half the day's fuel requirements, or 827 out of a total of 1643 Calories. Over half of the total protein is

supplied in the dinners, on an average, and a little less than one-half of the fat.

Ideally, the food of each child should be so arranged as to give the right proportion at the proper intervals according to age, degree of activity, etc. But for the practical purpose of meeting actual needs, modified from the normal by poverty and ignorance, the one meal at school must be planned to supply the deficit in the day's total.

The difference in distribution of foodstuffs in these two arrangements is illustrated in the following table:

TABLE 20. COMPARISON OF DISTRIBUTION OF FOOD CONSTITUENTS AND VALUES IN THE THREE DAILY MEALS UNDER CONDITIONS OF GOOD HOME FEEDING WITH DISTRIBUTION WHEN SCHOOL MEALS SUPPLEMENT POOR HOME FEEDING. ALL FIGURES ARE PERCENTAGES.

	Protein		Fat		Carbohydrates		Calories	
	H	S	H	S	H	S	H	S
Breakfast ..	10	23	10	29	20	23	20	25
Lunch	40	55	50	48	40	50	46	50
Supper	50	22	40	23	40	27	34	25
<hr/>								
Total	100	100	100	100	100	100	100	100

The actual amount of food is the same, but the proportions are different. In this table H indicates well balanced home meals⁷ and S the school break-

⁷Kaup, Dr. J.: Die Ernährungsverhältnisse der Volksschulkinder, p. 53.

fast and school lunch supplementing the actual inadequate home meal at night. The figures refer to percentages of the day's total requirements.

The salient points with respect to the food needs of growing children and their relation to the problem of school feeding may be summarized as follows:

1. Food elements are of two kinds, tissue builders and energy suppliers.
2. Tissue building food elements are known as proteins and energy supplying elements as carbohydrates and fats.
3. Food values are measured by the heat unit called the Calorie.
4. The consensus of opinion of authorities on children's dietaries is that the ten-year-old child weighing 60 pounds should receive each day food containing 60 grams of protein, 250 grams of carbohydrates and 40 grams of fat, and having a fuel value of 1600 Calories.
5. Students of the problems of school feeding are agreed that where school meals are provided they should be so arranged as to supply deficiencies found in the home meals.
6. This generally means that the school meal, if a mid-day dinner, shall supply at least one-half of the daily requirements in heat units, and more than half of the daily requirements in fats and proteins.

The way in which these principles are applied in the actual construction of menus for the school meal will be discussed in the chapter following.

XII

SCHOOL MENUS

One day in December, 1910, the writer went at noon to the school yard of a large public school in New York City and made notes on the lunches the children were eating. With the help of a teacher four lunches were selected as typical of the kind of lunches bought by the children in stores and pushcarts near the school, and the children were given pennies and asked to buy duplicates of what they had eaten. The lunches bought in this way were as follows: a tiny frankfurter and roll, costing one cent; a Swiss cheese sandwich, costing two cents; two small bananas and two long licorice "shoestrings," costing two cents; two frosted cup cakes, costing three cents.

In order to find out the real amount of food the children were getting for their pennies, the material in these lunches was weighed and analyzed in the Nutrition Laboratory at Teachers College.

Some interesting things were disclosed by this experiment. The frankfurter, which was a sort of

cerise in color, was found to be heavily dyed, and the frosted cakes were dyed with a bright yellow substance. Dyeing, in itself a form of adulteration, is usually a cloak to some other adulteration—in sausages, to conceal “filling,” or the use of bad meat. In the lunch of bananas and licorice, that bulked quite large and was probably fairly satisfying at the time, the only nourishment was in the bananas, for the licorice had neither sugar nor glucose, nor any trace of a real food substance.

The exact composition of the food in the lunches as revealed by analysis is shown in the following table, in which is given the number of grams of protein, fat and carbohydrates in each case:

TABLE 21. COMPARATIVE FOOD VALUE OF LUNCHES PURCHASED BY CHILDREN

	A	B	C	D
	Frankfurters and roll	Banana & licorice	Swiss cheese bread	Frosted cakes
Protein	5	.6	12	8
Fat	6	....	7	19
Carbohydrates	9	24.4	46	76
Total grams	20	25	65	103
Total Calories	110	108	295	507
Cost	1 c.	1 c.	2 c.	3 c.

The real question is how much food value these lunches yielded for each cent expended upon them,

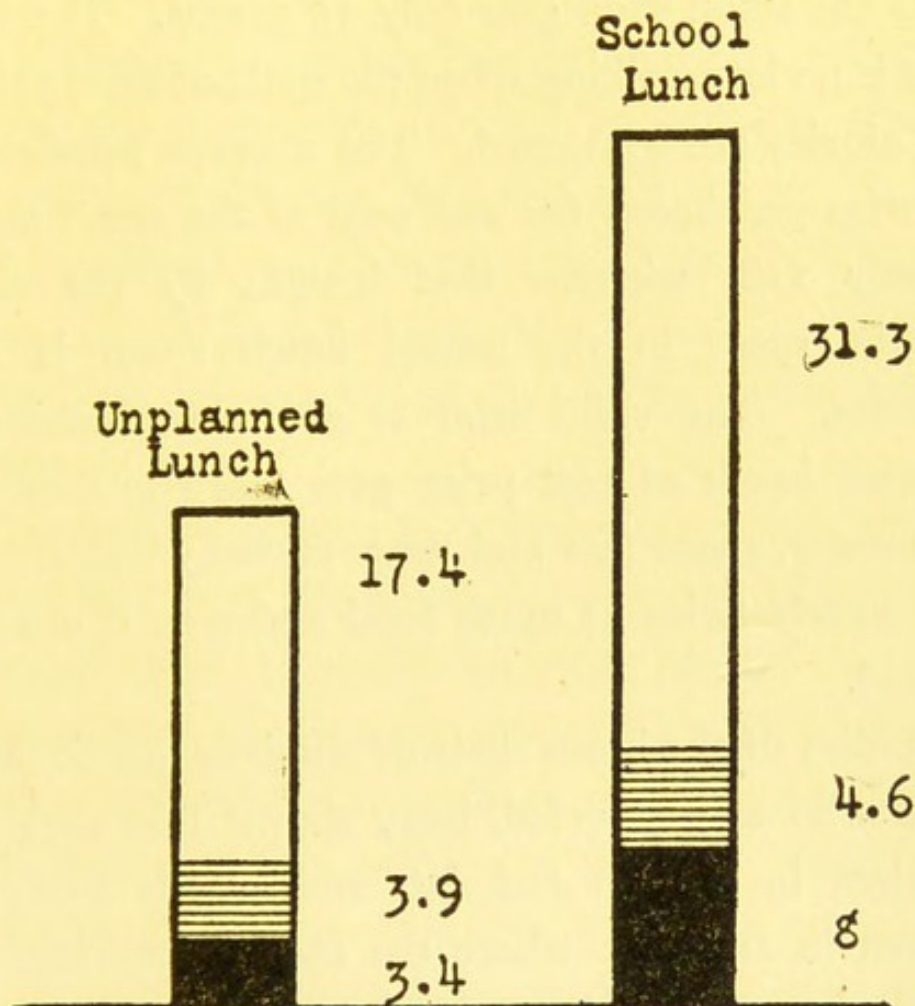
and this is shown in the following table in which are given the number of Calories and the total number of grams of food material, of protein, and of fat purchased for one cent in each case:

TABLE 22. FOOD VALUES PURCHASED BY ONE CENT

	A	B	C	D	Average
Calories	110	54	147	169	120
Grams of food	20	12.5	32.5	34.3	25
Grams of protein	5	.3	6.	2.6	3.5
Grams of fat	6	....	3.5	6.3	3.95

This table shows in different units just how much the children received for each cent that they spent. The next question is how much they might have received had they spent the same amounts in purchasing carefully planned school lunches instead of buying from the small shops in the neighborhood. The tables presented show the food values of four lunches bought by the children in the small shops. These consisted of one 1-cent lunch, two costing 2 cents, and one costing 3 cents. A similar analysis has been made of the food constituents of four planned lunches such as are daily being served in the schools of New York and Philadelphia. These likewise consisted of one 1-cent lunch, two costing 2 cents each, and one costing 3 cents.

The contrast between the values of the two sets of lunches is shown in the following diagram in which the first upright column shows the average



VI. Average purchasing power of one cent spent for unplanned lunch, contrasted with purchasing power if spent for school lunch. Carbohydrates in outline; fats in horizontal lining; protein in solid black.

purchasing power of one cent when the food is bought at the small shops, and the second column what one cent purchases on the average when the food is furnished with planned lunches.

The diagram shows that the child who patronizes the school lunch buys on the average 44 grams of food material for each cent, whereas the one who visits the small shop gets only 25 grams. The contrast is no less striking when the units of food values in Calories are computed. The average number of Calories purchased for one cent at the small shops is only 118, whereas that bought by the same amount spent in the school lunch room is 200 Calories. The child who is able to purchase a planned lunch at cost price gets more protein for his money, more fats and more carbohydrates. He gets nearly twice as much food and gets it unadulterated.

Studies of the home diets of children, particularly those who are underfed, have shown that they are deficient in protein and fat, and this is likely to happen in any case where the food is provided by people ignorant and careless of the right food for children. The reason is that meat, fish, milk, eggs, oils, etc., are everywhere more expensive than bread, coffee, and canned foods, and that naturally these are either supplied in small quantities or not at all, and no attempt is made to make up the deficit by the use of less expensive sources of protein and fat.

THE NEED: WELL CONSTRUCTED AND ECONOMICAL
MENUS

The two main problems of constructing menus for a school meal are, first, how to assure the children a lunch that shall be satisfying to the appetite, yield a fair proportion of the day's whole ration, and make up for the probable deficiencies in the children's home diets; and second, how all this is to be done, while keeping the whole cost of food, preparation and service within the ability of the school children to pay.

These two problems have been solved so successfully in Bradford, England, that the experience there may well stand as model for other places.

When the school authorities in Bradford began to provide meals in accordance with the provisions in the National Education Act of 1906¹ the Director of Medical Inspection, Dr. Ralph Crowley, and the Superintendent of Domestic Science, Miss Cuff, with infinite care and study made out a set of menus to meet the special needs of the children in their schools.

The following specimen menus, with the exception of the supper, are examples of the sort of food

¹ See p. 43ff., this text.

Dr. Crowley considered necessary for the children of Bradford if they were to grow and play and work in the best way:

BREAKFAST

Oatmeal Porridge, Treacle, Milk and Bread and Butter

Material	Quantity	Protein (grains)	Fat (grains)
Oatmeal	..... 1 oz.	72	31
Treacle	..... 1 oz.	...	...
Milk	..... ½ oz.	140	176
Bread	..... 2 oz.	80	12
Margarine	.... ¼ oz.	...	92
Total Calories, 600.		292 (18.9 grams)	311 (20.1 grams)
Wholesale cost, 2.204 cents.			
Retail cost, 2.5 cents.			

DINNER NO. XI

Cottage Pie (Meat with Crust), Green Peas and Gravy;
Stewed Fruit

Material	Quantity	Protein (grains)	Fat (grains)
Beef	..... 2 oz.	162	17
Potato	..... 3 oz.	24	1
Onion	..... 1 oz.	6	1
Flour	..... 1¾ oz.	87	7
Margarine	.. ¾ oz.	3	279
Peas	..... 1½ oz.	162	6
Bread	..... 1½ oz.	60	9
Fruit	..... 3 oz.	4	
Sugar	..... ½ oz.		
Total Calories, 894.		508 (33 grams)	320 (21 grams)
Wholesale cost, 3.0 cents.			
Retail cost, 4.27 cents.			

TEA

Bread and Margarine, Tea with Milk

Material	Quantity	Protein (grains)	Fat (grains)
Bread	6 oz.	240	36
Margarine ..	½ oz.	2	184
Milk	4 oz.	56	70
Tea.....	1/10 oz.	—	—
		298 (19.3 grams)	290 (18.8 grams)

Total Calories, 443.

Wholesale cost, 2.07 cents.

Retail cost, 2.17 cents.

(In Appendix E will be found the menus of all the seventeen dinners.)

Breakfast.—The breakfast menu was never varied in practice after it proved on trial to be more satisfactory than any other combination. The oatmeal, milk and bread furnish 19 grams of protein, and the oatmeal, milk, bread and margarine furnish 20 grams of fat, while the starch and sugar in the treacle and bread form the carbohydrates. The breakfast yielding a total of 600 Calories is designed to furnish between one-quarter and one-third of the day's ration.

Supper.—The supper is made out, not like the others on the basis of the child's real needs to be

met in a school meal, but on the basis of what investigation showed was the children's most usual home supper. Dr. Crowley says that the protein and fat estimates are probably a trifle higher than is actually the case, while the carbohydrates may be too low.

Dinners.—There are in all 17 dinner menus, which are served in rotation, providing considerable variety. There are among them four different kinds of soup and boiled puddings. Six are “vegetarian” dinners consisting mostly of savory vegetable stews with milk pudding or wholemeal cake. The most elaborate dinner is fish and potato pie, green peas and lemon sauce, blancmange and jam. This is an example of the meals served on Fridays.

The protein in the dinners is provided in meat, milk or beans and peas. The greater part of the fat is from meat or margarine, though in a few cases a vegetable fat, called “nutter,” is used.

In the menu given above, there are 33 grams of protein and 21 grams of fat, and both these are slightly higher than the average in all the dinners, which are: 29 grams protein and 18 grams fat. The large amount of protein is due to the use of peas and meat together.

The dinner menus are arranged so that the protein never falls below 24 grams and is more often 29 grams or a little over. The other component parts vary greatly in amount in the different menus, but this is less important than a variation in the amount of protein daily, for the reason that both fat and carbohydrates may be stored in the body for future use, whereas any excess of protein over what is needed at the time for tissue building is eliminated as soon as possible. This means that the supply has to be kept up, though it need not be large.

The Bradford kitchens are equipped to serve ten thousand meals a day and it is probable that no such careful plan has ever been made for the feeding of large numbers of children that has worked out so practically. There are several important principles illustrated by the Bradford regimen that must be taken into account in any similar undertaking. They are as follows:

1. The proper amount and proportion of foodstuffs are provided each day. The protein and fat elements are emphasized.

2. There is great variety in the kind of foods in the dinners, where variety is more essential than at other meals.

3. The foods are simple, easily digested, are prepared palatably, and served daintily² and are valuable in cultivating the taste for the right sorts of food.

4. Finally there is the question of economy,—the meals are very cheap. The wholesale rate per child never exceeds three cents, for a dinner, while the breakfast costs in all two cents.

*Menus in Paris Cantines.*³—In the Paris cantines, though there is no plan like Bradford's, the meals are hearty, well prepared and well served, and afford considerable variety. In schools where there are very small children they are given different food from the rest and have, as a rule, milk in some form, and their meat is cut into small pieces.

The menus in each district³ are made out once a month and a printed copy hung up on the kitchen wall at each cantine. Following is a specimen of a two weeks' plan for one school:

1. Monday: Beef broth and bread. Vermicelli, cooked in milk, with hashed beef.

Tuesday: Macaroni and veal.

Wednesday: Beef stew, potatoes.

Thursday: Macaroni, sardines.

Friday: Veal, white beans.

Saturday: Cabbage soup, sausages.

² See p. 48ff., this text.

³ See p. 77ff., this text.

2. Monday: Vegetable soup, red beans, roast beef. Milk porridge, bread, red beans, roast beef.

Tuesday: Beef stew, potatoes.

Wednesday: Veal stew, lentils. Vermicelli in milk, veal stew, lentils.

Thursday: Rice cooked in oil and cheese.

Friday: Beef stew, white beans.

Saturday: Potato purée, sausages.

Some of the Paris schools serve more elaborate meals, giving soup, meat and vegetables and a little dessert. It is quite customary, however, for children to bring their own desserts, as well as their own bread.

Local Menus in New York.—In Bradford or Paris there is no special difficulty in getting dishes that all the children will eat, as they are almost all of the same nationality and are used to the same general foods. In a city like New York, with its heterogeneous population, it would be impossible to give the same food to the children of different sections. There are religious as well as national customs that must not be violated. In a school where there are large numbers of Catholics, meat must not be served on Fridays and other fast days. In Jewish districts the laws of Kosher must be observed. At the same time, a taste for new kinds

of food must be cultivated, and elements wanting in the home meals must be supplied.

Following are specimen menus made out for an Italian and an Irish-American district:

Rice and beans with tomato.	Clam chowder.
Polenta—cornmeal with cheese, tomato, oil.	Samp.
Menestra—vegetables stewed in oil.	Macaroni soup.
Lima beans and postum.	Baked beans.
Macaroni, cheese, tomato.	Boiled rice.
Rice, tomato and cheese.	Noodle soup.
Potato soup and fish.	Vegetable soup.
Cheese sandwich and cocoa.	Rice pudding and cocoa.
Pea soup.	Cocoa and prunes.
	Apple sauce and crackers.
	Barley soup.

These menus which are always served with bread contain on an average 30 grams of protein, 13 grams of fat, and 130 grams of carbohydrates, and yield about 750 Calories. This equals one-third to one-half of what Dr. Wile, who superintends the dietary end of the lunches, considers necessary for the day's food supply of the children in the schools.

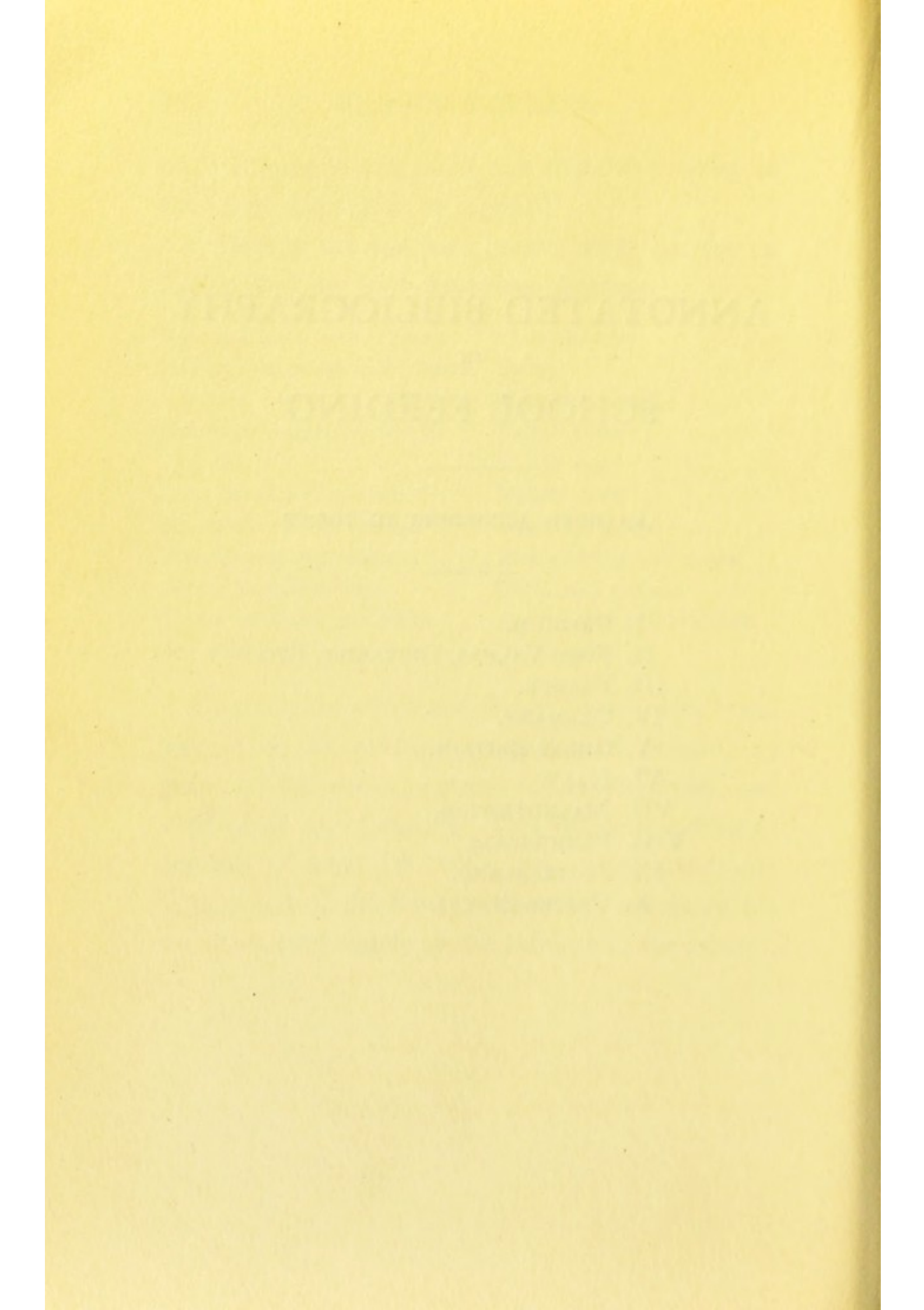
ANNOTATED BIBLIOGRAPHY

ON

SCHOOL FEEDING

ARRANGED ACCORDING TO TOPICS

- I. BELGIUM.
- II. FOOD VALUES, DIETARIES, ETC.
- III. FRANCE.
- IV. GERMANY.
- V. GREAT BRITAIN.
- VI. ITALY.
- VII. MALNUTRITION.
- VIII. PERIODICALS.
- IX. SWITZERLAND.
- X. UNITED STATES.



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- (e) Die Ernährungsverhältnisse der Volksschulkinder. (Report of address at Congress on School Feeding in Darmstadt, May, 1909.) Pub. in Schriften der Zentralstelle für Volkswohlfahrt. Heft 4 der neuen Folge der Schriften der Zentralstelle für Arbeiter-Wohlfahrteinrichtungen. Berlin. Carl Heymanns. 1909. p. 132 ff.

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STEWART, GWENDOLYN: Diet in Relation to Growth. Jour. Home Economics, Feb., 1911, pp. 81-86.

SUTHERLAND, G. A.: A System of Diet and Dietaries, London, 1908.

(Summary and discussion of recent clinical and other work on dietaries; all ages, from infancy to end of school life.)

VOELCKER, A. F.: Some Common Errors in the Diet and General Hygiene of Children. (Brit. Med. Jour., 1907, No. 2404, pp. 181-185.

WATSON, C.: A Plea for the Use of Oatmeal in the Dietary of Children. Brit. Med. Jour., 1907, No. 2417, pp. 985, 986, Figs. 2.

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III. FRANCE

BUTTE, L.: (a) Les cantines scolaires. L'hygiène scolaire, 189, 1910. (b) L'éducation physique. La médecine scolaire, 4, 51 (1911).

COURGEY, DR.: Cantines Scolaires. La Médecine Scolaire. June 10, 1908, pp. 85-92, Paris. Librairie Ch. Delagrave. 15 Rue Soufflot.

(Short history of the Paris cantines, and an estimate of their value by a medical inspector.)

ELLIOTT, CHARLES ALFRED: Cantines Scolaires of Paris. Nineteenth century, 59:834-41, May, 1906.

(Case against them. Their expense used as argument against their adoption by England.)

KLEINE, MARCEL: The Cantines Scolaires of Paris. (International Congress for the Welfare and Protection of Children. Special conference, 1906.) Report of the proceedings. Westminster. Published for the Committee by P. S. King & Son, pp. 65-70. Discussion, pp. 70-82.

(History and description.)

LANCET REPORTS: The Free Feeding of School Children. A reprint of the reports by the Special Sanitary Commissioner of the Lancet on the action taken by the municipalities with regard to the provision of meals for the children attending the elementary schools of Paris, Brussels, Milan, Vercelli, San Remo, Mentone, Nice, Cannes, Toulon, and Marseilles. Second edition, 1907. The Offices of The Lancet, 423, 424 Strand, London, W. C. Price 3d.

(Those interested in the important questions of the popular and political reactions to the introduction of meals into the schools will find these reports most valuable. The political and financial dangers and complications as well as their final solution are given in detail for each place.)

LAURENTIE, FRANÇOIS: La Protection de l'Enfance. Rheims. (L'Action Populaire.)

(Summary of French movements toward child welfare.)

LAVERGNE, F.: (a) (Chef du Secretariat de la Direction de l'Enseignement.) Les Écoles et les Œuvres Municipales D'Enseignement. 1871-1900. (Ville de Paris.) 447 pp. Paris Societe Anonyme de Publications Periodiques. P. Mouillot, Imprimeur. 13 Quai Voltaire.

(Complete, non-official discussion of the entire public educational system of Paris, from the maternal schools to the higher, professional colleges, including night schools, art and industrial work, and central administration, and finally the extra-academic activities, such as the cantines, medical inspection, excursions, vacation colonies, military classes, student insurance. The book is of particular value because of the general difficulty of obtaining first-hand information about French institutions. The administration of the cantines is treated at some length.)

- (b) *Organisation des Cantines Scolaires à Paris.* A report in manuscript manifold issued by the "Direction de l'Enseignement primaire 3me Bureau. Prefecture du departement de la Seine."

(An account of the origin and history of the cantines in Paris from 1879 to 1903, with a detailed description of their conduct in the 18th district, regarded as the model in this respect.)

IV. GERMANY

ALBU, A.: *Der Anteil der Schule an den Störungen der Entwicklung und Ernährung der Kinder.* Reprinted from *Zeitschr. f. päd. Psych., Path. u. Hygiene.*

FISCHER: *Einrichtungen für die Speisung armer Volksschulkinder in den Städten Dresden, Prag, Wien, Nürnberg, usw.* Berlin, 1908.

KAUP, DR., MED. I.: (a) (Zentralstelle für Volkswohlfahrt, Berlin.) *Schulspeisung armer Kinder.* (Referat auf der Konferenz der Deutschen Zentrale für Jugendfürsorge in Berlin. Am. 31 Mai 1907.) 25 pp. Sonderabdruck

aus der Zeitschrift der Zentralstelle "Concordia," No. 24, vom 15 Dec., 1907. Carl Heymanns, Berlin W. 8, Mauerstrasse 43/44.

(This was the first time the school feeding problem in Germany had been considered from the point of view of the trained dietitian. The first part of the book considers the food needs of the school child and includes comparative tables of growth. The second part deals with organizations for school feeding in Germany, but this material is superseded and included in Kaup's later book. See below.)

- (b) Die Ernährungsverhältnisse der Volksschulkinder. (Vorbericht und Verhandlungen der 3 Konferenz der Zentralstelle für Volkswohlfahrt. 1909. Darmstadt.) Berlin. Carl Heymanns Verlag. 1909. 170 pp. 22 tables.

(This is an account of the most extensive investigation of School Feeding that has ever been made in any country. It covers the reports of school feeding organizations in all towns of 10,000 and over in the German Empire; these are analyzed and the results tabulated; an account of the daily food of about 500,000 school children; the report of a special examination of the nutritional conditions of 170,000 children. The causes and effects of malnutrition are discussed at length. Plans and outlines for future work, the correlated social reforms, etc., are given. Critical analysis of the food values in the meals of some 25 towns.)

- (c) Ernährung und Lebenskraft der ländlichen Bevölkerung. Schr. d. Z. f. V. Heft 6 N. F.

LEMBERG, HEDWIG: Schulspeisung in Wien. Reprinted from Nos. 5 and 6, II Jahr. der Zeitschr. für Kinderschutz und Jugendfürsorge. Vienna, 1910.

MÜNSTERBERG: Schulspeisung. Handbuch d. St. Art. Kinderfürsorge. Berlin.

RIEGEL, MARIA: Schulspeisung in Mannheim, 1909.

RUBNER, DR. MAX: Leitsätze betreffend die Ernährungsverhältnisse der Volksschulkinder. In Internationales Archiv für Schulhygiene. Vol. VI, No. 3, Mai 1910, pp. 357-364.

(Proposals in regard to permanently bettering the nutrition of school children, by meals in school, but more especially by the installation of Day Homes, for children below as well as of school age, with working mothers; by widespread provision for sick and unemployed, such as insurance, pensions, etc. These proposals are summarized in French and English as well as German.)

SEYDEL: (Stadtrat, Charlottenburg): Die Mittagsspeisung von Schulkindern in Charlottenburg in Archiv für Volkswohlfahrt, II, 4, Jan., 1909, pp. 227-231.

(Charlottenburg has one of the best systems in Germany. It corresponds in some respects to Bradford, England. The educational and æsthetic possibilities of the school meal are recognized.)

SIMON, HELENE: (a) Schulspeisung: Armenpflege oder Schulpflege? Gesetzliche Regelung. In Soziale Praxis. XVIII, No. 1, Oct., 1908, p. i. Duncker & Humbolt, Leipsig.

(Is school feeding the affair of charity or school? Legislative measures necessary if it is to be effective.)

(b) Schule und Brot. 1908, Leipsig, Leopold Voss. 112 pp. 1st edition, 1907.

(General treatment of the whole problem from the social, economic and legal points of view. Propagandist rather than statistical. Historical and descriptive account of English, French and German systems to date.)

- (c) *Die Schulspeisung*. 1909, Leipzig. (Oct.) Duncker und Humbolt. 93 pp. Appendices.

(General treatment of whole subject, taking into account the latest German reports (see Kaup, No. 2), social, economic and legal aspects and implications. Other countries.)

- (d) *Schulspeisung*. 1911. Enzyklop. Handbuch des Kinderschutzes, usw., pp. 206-213.

(Material in *Die Schulspeisung*, 1909, brought up to date and condensed for encyclopedia. Bibliography.)

- ZIEGLER, G.: Eine Erhebung über die Ernährungsverhältnisse der Volksschüler. *Die Deutsche Schule*. June, 1910. XIV Jahrgang, 6 Heft, pp. 374-378.

V. GREAT BRITAIN

- ALDEN, PERCY: English Child Life. *Outlook*, 89:759-763, Aug. 1, 1908.

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- BARNETT, SAMUEL A.: Free Meals for Underfed Children. *Independent Review*, 6:154-172, June, 1905.

- BRADFORD EDUCATION COMMITTEE: (a) Return as to the Pecuniary Circumstances of 966 Families whose Children have been Provided with Meals under the Education Act (Provision of Meals Act, 1906). 1908. Education Offices, Manor Row, Bradford, Eng. Tables.

- (b) Report for 1909. Education Office, Manor Row, Bradford, Eng.

(Statistics of school feeding in B., 1908-1909. Descriptive account of plant.)

- (c) Recipes, compiled by Marian E. Cuff (Superintendent of Domestic Subjects) and used in the preparation of the Seventeen Dinners served in the School Dining Rooms. Pub. at Education Offices, Manor Row, Bradford, Eng., Feb., 1908.

BRISTOL EDUCATION COMMITTEE: Report for year ended March 31, 1909. Bristol, Times and Mirror, St. Stephen Street, Bristol, Eng.

CLAY, ARTHUR TEMPLE FELIX: (a) Free Meals for Underfed Children. Monthly Review, 20:94-104, July, 1905.

- (b) School Feeding Question in England. Charities and Commons, New York. 17:699-707, Jan. 19, 1907.

CROWLEY, R. H.: The Provision of Meals for School Children. Pub. Health (London), 20 (1908), No. 5, pp. 325-335, chart.

DAVIES, MARY A.: The Feeding of School Children and the Cookery Classes. Contemporary Review, 87:564-569. April, 1905.

DENYER, C. H.: Feeding of School Children at Public Expense. Summary of official reports. Economic Journal, 16:617-622, Dec., 1906.

EDWARDS, A. D.: Evolution, Economy, and the Child. Westminster Review, 171:78-85, Jan., 1909.

(A defence of school meals from the points of view of national and racial evolution upwards, and national economy.)

ELLIOTT, SIR CHARLES: Children's Relief Committees in Elementary Schools. In Report of the Proceedings of International Congress for Welfare and Protection of Children. Special Conference, 1906. Westminster, published for the committee by P. S. King & Son, pp. 50-58.

FABIAN SOCIETY: After Bread, Education. A plan for the state feeding of school children. London, 1905. 15 pp. (Fabian Tract No. 120.)

The Feeding of School Children. (Pub. Health, London, 22 (1908), No. 3, pp. 97, 98.)

Free Meals for School Children. In the Reformer's Year Book for 1908, 4 Clement's Inn, London, W. C., p. 94 ff. (Short Summary of English Provision of Meals Act, 1906, with report of English Investigation of Continental Systems of School Feeding.)

FRERE, MARGARET (Member of the Education Committee, London County Council): A Scheme for Dealing with Underfed Children. In International Congress for the Welfare and Protection of Children. Special conference, 1906.) Report of the proceedings, Westminster, Published for the Committee by P. S. King & Son, pp. 58-65.

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(Official Handbook for members of "care committees" having charge of social and charitable work in schools. Ch. II on "How to Feed Necessitous School Children." Appendix giving typical menus.)

GORST, SIR JOHN ELDON: *The Children of the Nation: How their Health and Vigour should be Promoted by the State.* London, Methuen & Co., 1907, 207 pp.

HUGHES, ROBERT EDWARD: *Feeding the School Children*, in his, *The Making of Citizens*, 2d ed., London (etc.), The Walter Scott Publishing Co., 1906, pp. 19-24.

(Table of sums distributed in various European cities, p. 22.)

HUNTER, ROBERT: *Social Significance of Underfed Children.* *International Quarterly*, 12: 330-349, Jan., 1906.

LOCH, C. S.: *The Feeding of School Children.* *Yale Review*, 12: 230-250, Nov., 1906.

(A study of the English voluntary system of school feeding, and an argument against any form of school meals.)

LONDON SCHOOL BOARD: *Underfed Children Attending School, 1898-1899. Report.* London, Alexander & Shephard, printers, 1899, xv, 272 pp.

Parliamentary Reports of Great Britain.

(These all to be obtained from Wyman & Sons, Fetter Lane, E. C., or Eyre and Spottiswoode, East Harding Street, Fleet Street, E. C.)

1903 (Cd. 1507) Price 1s. 1d.: *Report of the Royal Commission of Physical Training (Scotland).* Vol. 1, report and appendix.

(Containing findings of committee in regard to nutritional condition of school children, and proposals in regard to school feeding.)

1904 (Cd. 2175) Price 1s. 1d.: Report of the Inter-Departmental Committee on Physical Deterioration. Vol. I, report and appendix.

(Proposals of this committee in regard to feeding of school children, pp. 65-71.)

1905 (Cd. 2779 and Cd. 2784): Report of the Inter-Departmental Committee on Medical Inspection and Feeding of Children Attending Public Elementary Schools. Vol. I. (Cd. 2779) Price 1s. 3d. Vol. II. (Cd. 2784) Price 3s.

(Includes statistical account of the *voluntary systems* of feeding children in Great Britain in 1905.)

1906 (Cd. 2926): Statement of Information collected by the Board of Education and the Foreign Office regarding methods adopted in Great Continental and American Cities for dealing with Underfed Children.

(Statistical and classified report of systems in 38 foreign cities.)

1906 (288): Special Report and Report from the Select Committee on the Education (Provision of Meals) Bill, 1906; and the Education (Provision of Meals) (Scotland) Bill, 1906; together with the Proceedings of the Committee, Minutes of Evidence, and Appendix. Price 2s. 4d. with Index and Digest of Evidence.

(Methods and administration in England, particularly in voluntary systems of feeding, reported on by 28 witnesses, all with practical experience. Valuable and suggestive for practical workers.)

1907 (Cd. 3637), MACKENZIE, W. LESLIE, M.D., AND CAPTAIN FOSTER: Report on a collection of statistics as to the Physical Condition of Children Attending the Public Schools of the School Board for Glasgow.

(Most extensive investigation of the kind ever made, including 72,800 cases. The heights and weights of the children classified according to housing and nutrition.)

- 1910 (Cd. 5131) Price 3d.: Report on the Working of the Education (Provision of Meals) Act, 1906, up to the 31st of March, 1909.

(Includes a classified report of information received from over one hundred towns having adopted the act. Administrative, financial and educational issues.)

- 1910 (Cd. 5724) Price 3d.: Report on Working of Provision of Meals Act.

(Continues Cd. 5131 through Dec., 1909.)

- 1911 (Cd. 5925), NEWMAN, GEORGE: Annual Report for 1910 of the Chief Medical Officer of the Board of Education.

(Complete account of the workings of the Education Act, 1906 up to March, 1910. Administration of Act now in hands of Medical Division of Board of Education. Section of Malnutrition, Statistics, and Classification, pp. 26-32.)

London County Council

- (Publications relative to School Feeding. To be obtained from P. S. King & Son, 2-4 Great Smith Street, Victoria Street, Westminster, S. W.)

- No. 922. 1904-1905: Report of the Education Committee of the London County Council Submitting the Report of the Medical Officer (Education) for the Year ended March, 1905.

(Short statement of the London problem, given by medical officer. Stigmata of malnutrition, hereditary and social factors. What can be done: in general, immediately.)

Nos. 962 and 1074. 1907: Reports of the Joint Committee on Underfed Children. For the years 1905-1906, 1906-1907. Price 6d., post free 7d.

(These reports give the list of schools having meals, the numbers fed, and a general account of the work of school feeding in London for the year.)

No. 1203. 1908: Home Circumstances of "Necessitous" Children in Twelve Selected Schools. Reports by the chairman of the Sub-Committee on Underfed Children and the Education officer, submitting report by the organizers.

(This is a careful inquiry embracing about 1200 children, reported to be underfed, giving tabulated results.)

No. 1251. 1909: Report of the Education Committee of the London County Council Submitting the Report of the Medical Officer (Education) for the Twenty-one months ended 31st Dec., 1908. Presented to the Council, 11th May, 1909, pp. 16-20. Price 2s., post free 2s. 3d.

(School Feeding. Stigmata of malnutrition from the point of view of the medical inspector; report of examination of over 10,000 children in regard to their nutrition, and classified according to nature of the district; heights and weights of children in badly fed and well fed sections. Review of Dr. Gastpar's work. See Bibliography.)

No. 1318. 1908-1909: Report of the Education Committee Submitting the Report of the Education Officer for the Educational Year 1908-1909. Part II. The Provision of Meals for Necessitous Children and the Work of Children's Care Committees. Presented to the Council 1st March, 1910.

(This gives complete statistical account of the work in London for 1907-1908 and 1908-1909.)

EDUCATION COMMITTEE (Children's Care, Central, Sub-committee): Handbook containing general information with reference to the work in connection with the Children's Care (Central) Sub-committee. Price 1s.; post free 1s. 3d.

(Official handbook for members, giving technical and legal information about all points covered in care committee work in London. Appendix J gives 14 typical menus for 100 children.)

McMILLAN, MARGARET, AND COBDEN-SANDERSON, A.: London's Children, How to Feed Them and How Not to Feed Them. Published by the Independent Labour Party, 23 Bride Lane, Fleet Street, London, E. C., 1909. Price 1d.

(A criticism of present methods of work in London, with constructive suggestions for bettering them.)

MACNAMARA, DR. THOMAS JAMES: (a) Physical Condition of Working-class Children, Nineteenth Century, 56: 307-311, Aug., 1904.

(b) In Corpore Sano. Contemporary Review, 87: 238-248, Jan., 1905.

O'BRIEN, M. D.: Child and the Home. Westminster Review, 165: 668-675, June, 1906.

OXFORD HOUSE MAGAZINE: January, 1909. Bethnal Green, London. Price 6d. Symposium on the Feeding of Necessitous Children, pp. 33-54.

(Written before London adopted 1906 act. Gives short history of movement in England, and then arguments from the "Socialist" and "Individualist" standpoint.)

- PALIN, COUNCILLOR J. H.: *Bradford and its Children: How They are Fed.* Published by the Independent Labour Party, 23 Bride Lane, Fleet Street, London, E. C., 1908.
(History of movement in Bradford, written by an active worker. Interesting.)
- PHILPOTT, HUGH B.: *School as a Social Force.* In his "London at School." London, T. Fisher Unwin, 1904, pp. 290-314. (The East Lambeth Teachers' Association; the penny meal; the scholars' free meal fund can feed 5000 children a day.)
- ROYAL COMMISSION ON THE POOR LAWS AND THE RELIEF OF DISTRESS (Minority Report): Report 1238 pp. (Cd. 4499) 5s. 6d. See p. 195. Relief School Children's Order, 1905; pp. 197-198. Education (Provision of Meals) Act, 1906; pp. 834-840. School Feeding.
- SMYTH, A. WATT: *Physical Deterioration: Its Causes and the Remedy.* New York. E. P. Dutton & Co., 1904.
(The findings of the Parliamentary Commissions on National Deterioration in England, brought together in readable form, together with suggested remedies. See Bibliog. Great Britain Parliamentary Reports. Cd. 1507 and Cd. 2175.)
- STEWART, GWENDOLYN: *School Dinners in London Schools.* In *The Journal of Home Economics*, Vol. II, No. 2.
(Account of personal observation of the service and organization of meals in the one meal centre in London.)
- WEBB, SIDNEY AND BEATRICE: *The Prevention of Destitution.* Longmans, Green & Co., 39 Paternoster Row, London, 1911.
(Sections showing result of various acts of legislation on social progress.)

VI. ITALY

BOSELLI, A.: La refeziona scolastica a Bologna. Boll. delle sz. med. Ser VIII 5 (1905).

LANCET REPORTS: See Bibliog. Sec. III.

(Description at first hand of systems in Milan, Vercelli, and San Remo.)

SCHIAVI, ALESSANDRO (Director of the Labor Bureau of the "Societa Umanitaria," Milan, and Municipal Councillor of Milan): Les Cantines Scolaires Municipales de Milan. In "Les Annales de la Regie Directe," 1909, June-July, Geneva, p. 152 ff.

(An account of the development of school meals in Milan, giving menus, statistical tables of numbers fed, finances, etc.)

SPARGO, JOHN: How Foreign Municipalities Feed Their School Children. In his "The Bitter Cry of the Children," New York, Macmillan Co., 1906.

(An account of the free and compulsory system of feeding at Vercelli in existence from 1900-1906, now succeeded by a privately directed, publicly subsidized organization.)

TONSIG, DR. C. (Director of Medical Inspection in Padua): Über das Schülerfrühstück, mit besonderer Berücksichtigung der in der Stadt Padua bestehenden Einrichtungen. In Zeit. f. Schulges., vol. 17, 1902, p. 605 ff. See Bibliog. Sec. VIII.

(Account of the first critical analysis ever made of the food values of the meals served at school. Marks the beginning of an important kind of inquiry.)

VII. MALNUTRITION

ITS CAUSES, SYMPTOMS, RESULTS AND CLASSIFICATION

BADGER, GEORGE, S.C., M.D.: Malnutrition in School Children.

Proceedings of the Sixth Congress of the American School Hygiene Association, Springfield, Mass., 1912.

(Recommended for the conducting of special classes for acute cases of malnutrition, the enumeration of causes, with stress on lack of sleep and bad food habits.)

BRAY, REGINALD: Malnutrition and the School Meal. In his "The Town Child," London, T. Fisher Unwin, 1907, pp. 106-117.

BEAN, HOMER C.: Starvation and Mental Development. In The Psychological Clinic, May, 1910, p. 78.

(The study of the results, psychological and physical, of starvation, during the first six years of life. The boy, sixteen years old at the time, had not acquired some of the most fundamental neuro-muscular co-ordinations.)

BEELEY, DR.: Report of the School Medical Officer of East Sussex (England), 1910.

(Relation of enlarged glands to enlarged tonsils, dental caries and defective nutrition.)

DR. BURGERSTEIN, LEO, AND NETOLITZKY, DR. AUGUST: Handbuch der Schulhygiene, pp. 207-210. Section on Abspeisung.

(Account of School Lunch Movement in different countries, with stress on administrative requirements.)

CAMERER, WILHELM: Ernährung des Kindes. In Das Buch vom Kinde., pp. 48-50, Leipzig, 1907.

CHATE, DR.: Report of School Medical Officer of Middlesex (England), 1910.

(Special investigation of the causes of defective nutrition.)

CORNELL, WALTER S., M.D.: Health and Medical Inspection of School Children. F. S. Davis Co., Philadelphia, 1912.

(Chapter on Nutrition, pp. 479-498, and section on School Feeding, pp. 100-114.)

CROWLEY, RALPH E. (Medical Dept. of Board of Education, Great Britain): (a) The Hygiene of School Life. London. Methuen & Co., 36 Essex Street, W. C. 1910.

(General treatment of nutrition of child, p. 12 ff. Chapter on the Provision of School Meals. This chapter represents the author's conclusions in regard to the subject, reached after several years of practical experience in organizing meals in Bradford.)

(b) Report by the Medical Superintendent. (In conjunction with Superintendent of Domestic Subjects, Marian E. Cuff.) On a course of meals given to Necessitous Children from April to July, 1907. Published by city of Bradford Education Committee, Bradford, England, Sept., 1907. (Out of print.)

(This is an account of an experiment to determine the effect of food alone on the health and growth of school children. It is notable in being the first experiment where proper precautions were taken to isolate the factor of food, and to have control records kept. The original report is out of print, but a summary of its conclusions and the chart in the original are given in "Progress," April, 1908. See Bibliog. sec. VIII.

GASTPAR, DR. (of Stuttgart): Die Beurteilung des Ernährungszustandes der Schulkinder. Zeit. of Schulges., xxi. Jahr. 1908. 689-702.

(The correlation of thirteen diseases found in 8000 school children, with their nutritional condition. Four times as many cases of disease are found among the badly nourished as among the well nourished. 6 tables. Practical method of classifying nutrition. A remarkable and highly significant piece of work, and the first of its kind.)

HASTINGS, DR. W. W.: Manual of Physical Measurements. Springfield, Mass., 1902.

(Gives standard tables of weights and measurements for different ages, with methods of registering same.)

HOAG, E. B.: The Health Index of Children. San Francisco, Whitaker & Ray-Wiggin Co., 1910.

HOGARTH, A. H., M.D.: Medical Inspection of Schools. London. Henry Fronde. Oxford University Press. 1909.

(Short statement of Koppe's scheme of classifying nutrition, pp. 157-158.)

HOLT, EMMET L., M.D.: 1. The Diseases of Infancy and Childhood. 2. The Care and Feeding of Children. A catechism for the use of mothers and children's nurses. Fourth edition revised and enlarged. New York and London, D. Appleton & Co., 1907. 192 pages.

KELYNACK, T. N., M.D.: Medical Examination of Schools and Scholars. London. Published by P. S. King & Son, Orchard House, Westminster, S. W., 1910.

KNOPF, S. A., M.D.: The Duties of the School Teacher in the Combat of Tuberculosis as a Disease of the Masses. Pp. 21-22. A special study of the dietaries of thirty-four families, all having undernourished children.

MACKENZIE, W. LESLIE, M.D.: The Medical Inspection of School Children. Edinburgh and Glasgow. William Hodge & Co., 1904.

(Excellent summary of the effects of food in racial selection and the relation of nutrition to growth. Pp. 196-231 include tables of height and weight. Subject treated practically as aid to medical inspection.)

MENDEL, LAFAYETTE BENEDICT: (a) Some Features of Nutrition During Growth. Jour. of Home Economics, Vol. III, June, 1911.

(A helpful discussion of the peculiar needs of the growing body.)

(b) Childhood and Growth: a paper read Oct. 6, 1905, before the New Haven Mothers' Club, with an introduction by Horace Fletcher. New York, the F. A. Stokes Company, 1906, 54 pages.

OPPENHEIM, NATHAN: The Care of the Child in Health. New York and London, The Macmillan Company, 1900, vii, 308 pages.

SILL, DR. E. MATHER: (a) A Study of Malnutrition in the School Child. In the Jour. Amer. Med. Assoc., vol. lii, No. 25.

(A study of causes. The home conditions, meals, etc., of 310 New York children suffering from malnutrition.)

(b) Dietary Studies of Undernourished School Children in New York City. Jour. Amer. Med. Assoc., Nov. 26, 1910, p. 1886.

TAYLOR, CHARLES KEEN: The Psychological Clinic, April, 1912.

(Describes the result of comparing the school progress and conduct marks of children drinking coffee and those not drinking coffee. Two tables.)

WOOD, THOMAS DENISON: Health and Education. The Ninth Yearbook of the National Society for the Study of Education, Part I. Published by the University of Chicago Press, Chicago, Ill., 1910. Net \$0.75, postpaid \$0.80.

(Gives tables of standard weights and heights of American children at different ages and based on measurements during ten years, of boys and girls in Horace Mann School, New York. These compared with and checked up by work of Hastings and Bowditch.)

VIII. PERIODICALS

Archiv für Volkswohlfahrt: Deutscher Verlag für Volkswohlfahrt. G. m. b. h., Berlin, W. Nollensdorfstrasse, 30.

The British Medical Journal, London: (The management of this journal has taken an active interest in School Feeding since it started in Great Britain, and has published frequent articles on the subject.)

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Concordia: Zeitschrift der Zentralstelle für Volkswohlfahrt. Berlin, S. W., 11 Dessauerstrasse.

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APPENDICES

APPENDIX A

EDUCATION (PROVISION OF MEALS) ACT, 1906

CHAPTER 57

An Act to make provision for Meals for Children attending
Public Elementary Schools in England and Wales.

[21st December, 1906.]

Be it enacted by the King's Most Excellent Majesty, by
and with the advice and consent of the Lords Spiritual and
Temporal, and Commons, in this present Parliament
assembled, and by the authority of the same, as follows:—

*Power of Local Education Authority to Aid School Canteen
Committees in the Provision of Meals for Children*

1. A Local Education Authority under Part III of the
Education Act, 1902, may take such steps as they think fit for
the provision of meals for children in attendance at any
public elementary school in their area, and for that purpose—

- (a) may associate with themselves any committee on
which the authority are represented, who will
undertake to provide food for those children (in
this Act called a "school canteen committee"); and
- (b) may aid that committee by furnishing such land,
buildings, furniture, and apparatus, and such
officers and servants as may be necessary for the
organisation, preparation, and service of such
meals;

but, save as hereinafter provided, the authority shall not incur any expense in respect of the purchase of food to be supplied at such meals.

Recovery of the Cost of Meals

2.—(1) There shall be charged to the parent of every child in respect of every meal furnished to that child under this Act such an amount as may be determined by the local education authority, and, in the event of payment not being made by the parent, it shall be the duty of the Authority, unless they are satisfied that the parent is unable by reason of circumstances other than his own default to pay the amount, to require the payment of that amount from that parent, and any such amount may be recovered summarily as a civil debt.

(2) The Local Education Authority shall pay over to the school canteen committee so much of any money paid to them by, or recovered from, any parent as may be determined by the authority to represent the cost of the food furnished by the committee to the child of that parent, less a reasonable deduction in respect of the expenses of recovering the same.

Power of Local Education Authority to Defray the Cost of Food in Certain Cases

3. Where the Local Education Authority resolve that any of the children attending an elementary school within their area are unable by reason of lack of food to take full advantage of the education provided for them, and have ascertained that funds other than public funds are not available or are insufficient in amount to defray the cost of food furnished in meals under this Act, they may apply to the Board

of Education, and that Board may authorise them to spend out of the rates such sum as will meet the cost of the provision of such food, provided that the total amount expended by a Local Education Authority for the purposes of this section in any local financial year shall not exceed the amount which would be produced by a rate of one halfpenny in the pound over the area of the authority, or, where the Authority is a County Council (other than the London County Council), over the area of the parish or parishes which in the opinion of the council are served by the school.

Provisions as to Disfranchisement

4. The provision of any meal under this Act to a child and the failure on the part of the parent to pay any amount demanded under this Act in respect of a meal shall not deprive the parent of any franchise, right, or privilege, or subject him to any disability.

Application of Education Acts

5.—(1) The powers of a Local Education Authority under this Act shall be deemed to be powers of that Authority under the Education Acts, 1870 to 1903, and the provisions of those Acts as to the manner in which the expenses of a Local Education Authority are to be charged and defrayed, and as to borrowing, and as to the manner in which the amount which would be produced by any rate in the pound is to be estimated, shall apply to expenses incurred and money borrowed under this Act, and to the estimate of the produce of any rate in the pound for the purposes of this Act.

(2) Any expression to which a special meaning is attached in the Education Acts, 1870 to 1903, shall have the same

meaning in this Act, except that for the purposes of this Act the expression "child" shall, notwithstanding anything in section forty-eight of the Elementary Education Act, 1876, include any child in attendance at a public elementary school.

Provision as to Teachers

6. No teacher seeking employment or employed in a public elementary school shall be required as part of his duties to supervise or assist, or to abstain from supervising or assisting, in the provision of meals, or in the collection of the cost thereof.

Extent of Act

7. This Act shall not apply to Scotland.

Short Title

8. This Act may be cited as the Education (Provision of Meals) Act, 1906.

APPENDIX B

CIRCULARS ISSUED BY THE BOARD OF EDUCATION

I.

Circular 552.

Board of Education,
Whitehall, London, S. W.,

SIR,

January 1st, 1907.

The Education (Provision of Meals) Act, 1906, which came into operation on the 21st day of December, 1906, gives to Local Education Authorities, for the first time, statutory powers in regard to the important matter of the provision of meals for children attending our public elementary schools.

It brings those Authorities into recognised relation with the voluntary agencies which already exist in many localities for providing meals for school children, and gives them power to aid such agencies by provision of kitchens, dining-rooms and plant, as well as of cooks, servers and other necessary officers. It further empowers the Authorities, where sufficient funds for the purchase of food from voluntary contributions and parents' payments are not forthcoming, to spend money from the rates for the provision of food for such meals within the limit of a halfpenny rate.

The Act, which is purely permissive and imposes no duty where a Local Education Authority think it unnecessary to bring it into operation, is primarily of an educational character. Its object is to ensure that children attending public elementary schools shall, so far as possible, be no longer prevented by insufficiency of suitable food from profiting by the education offered in our schools, and it aims at securing that for this purpose suitable meals shall be available just as much for those whose parents are in a position to pay as for those to whom food must be given free of cost. It is obvious that the passing of this Act opens up possibilities of a most beneficial nature, if its operation is handled with full circumspection and on carefully thought-out lines by the local authorities and voluntary agencies to whom these great responsibilities are entrusted by Parliament; since it furnishes unrivalled opportunities to the earnest, yet wise, social reformer for mitigating some of the deepest physical injuries that beset the children of the rising generation, particularly in "slum areas," without necessarily involving (if care and thought be exercised in its administration) undue intervention by the State in the sphere of parental respon-

sibilities or in the duties and influences of any properly-ordered home. For those who desire information as to the various ways in which this most important and difficult problem has in recent years been handled, the Reports of the Departmental Committee and the Select Committee lately issued as Blue Books, Cd. 2779, price 1s. 3d. (by post 1s. 6d.) [Evidence, Cd. 2784, price 3s. (by post 3s. 5d)] and H.C. 288, price 4½d. (by post 6d.) [or, including Evidence, price 2s. 4d. (by post 2s. 8d.)] will be found extremely useful; and the Board of Education hope that some preliminary help may, perhaps, be afforded by their issue of the following summary of the contents of the Act, together with the further observations upon a few matters appearing to require special notice, which are given below.

1. The Act is applicable to every County and Borough and Urban District Council in England and Wales which is an Education Authority under Part III. of the Education Act, 1902.

2.—(a) It is probable that in most places where a Local Education Authority decide to make use of some of the new powers given them by the statute they will find it expedient to act through the agency of one of the voluntary Associations or Committees which, in so many localities are already in existence, have amassed much valuable experience, and are doing admirable work in the provision of meals for school children. In order that the Authority may in these cases supplement the work of such a Committee, or grant to it any of the forms of aid referred to in the first paragraph of this letter, arrange-

ments must be made for securing adequate representation of the Authority upon it in accordance with the Act (unless that is already provided for by the constitution of the Committee or Association). This may be done either directly by appointing one or more members of the Authority to serve on the Committee, or indirectly by nominating as representatives of the Authority outside persons, some of whom might, if desired, be selected from among existing members of the Committee.

- (b) In those cases, on the other hand, where there is no sufficient agency already in existence, the Local Education Authority may themselves establish a Committee or obtain the establishment of one in any manner which may commend itself, subject to the requirement as to representation of the Authority.

3. These Committees for the supply of food are henceforth to be known as "School Canteen Committees" (Section 1 (a)); and with a School Canteen Committee thus in existence, whether directly established by the Local Education Authority or having representatives of the Local Education Authority upon it, three valuable consequences will follow from the adoption of the Act:—

- (i) The Authority will have power to make such provision or such supplementary provision as may be found necessary, of kitchens, dining-rooms, furniture, and other plant, and also to pay persons to organise, cook and serve the meals. No doubt, as heretofore, much of this work will be done

by unpaid helpers—an arrangement which, in the case of those who assist in organisation, or management, or visiting parents, has many advantages if such helpers are of the right type and can bring to the work the benefits of regular opportunities for keeping in useful touch with the children out of school hours, and at their homes.

(ii) Hitherto the Board of Education have not been able to permit inclusion of kitchens and dining-rooms in public elementary schools to be built with loans charged upon the rates. Henceforth, when desired by the Authority, the reasonable provision of such adjuncts will be passed by the Board in school plans. (Section 1 (b)).

(iii) One grave difficulty in the way of the proper organisation of school meals has been noticed by the Select and Inter-Departmental Committees which have dealt with the question of such meals. There has been no method by which it could be ensured that a parent whose child has had food should pay the cost of the meal, when he is well able to bear the expense. This difficulty is now removed. By Section 2 (1) the Authority are directed to make a charge to the parent for every meal supplied to his child, and in the event of non-payment it becomes their statutory duty, unless they are satisfied that the parent is unable to pay by reason of circumstances other than his own default, to recover the sum so charged from him by summary procedure before the magistrates.

4. The amount of the charge for a meal is not prescribed by the statute, nor is anything laid down as to the mode of

payment; these matters are left to the discretion of those responsible for the working of the Act. It is desirable that, when parents are in a position to pay it, the Authority should fix such a charge as will normally cover, not only the cost of the actual food, but also the cost of cooking and serving. They will also, probably, do well, wherever possible, to insist upon prepayment. Where parents cannot pay the full cost, they will often be able to pay part cost. For reasons which need not be here stated, it is better that they should pay whatever their means permit, rather than that meals should be given free of cost.

5. So far these observations have been confined to the ordinary case of a locality where—with or without assistance from the Local Education Authority in providing rooms, plant and service—the expenses of the School Canteen Committee as regards the actual provision of food are defrayed, without any recourse to the rates, from such sources as parents' payments, voluntary contributions and endowments. Under this system there will generally be no difficulty in providing, where it is so desired, a school dinner at a fixed price in the middle of the day, attended by children for whom, by reason of distance from the school or because the mother's absence makes a home meal difficult, the parent prefers to take advantage of an arrangement similar to that now in operation in most secondary day schools. It will also, as a rule, be possible to provide a meal free, or at a nominal cost, for poorer children during periods of severe weather or industrial distress, or to meet individual cases of temporary want of employment.

6. There will remain, however, a few exceptional cases where the money available from the sources alluded to above

is insufficient to meet the cost of the necessary food. For these, provision is made in Section 3 of the Act which empowers a Local Education Authority to apply to the Board of Education for sanction to spend money to a limited amount out of the rates in the purchase of food. When an Authority desire to make use of this power they must first pass a resolution that some of the children attending an elementary school within their area are unable by reason of lack of food to take full advantage of the education provided for them, and they must further ascertain that funds other than public funds are not available, or are insufficient in amount, to defray the cost of food furnished in meals provided under the Act. Armed with this resolution and information, they must apply to the Board of Education for the requisite sanction. Before exercising their power under this section, the Board will consider the circumstances of the case and the extent of the emergency which has to be met, and will also require to know what sum the Authority consider to be necessary to meet so much of the cost of the provision of food for a stated period, as cannot be paid for in any other manner, together with the grounds for that view. The Board do not propose to give any permanent sanction or even one extending over a period of years. They will deal in each case with the particular emergency, and their sanction will, as a rule, be limited to the raising of a definite sum from the rates. Should such sum prove to be insufficient, it will be open to the Authority to apply for, and to the Board to sanction, the raising of an additional sum, and so on from time to time as occasion may require, subject always to the condition that the amounts raised from the rates for this purpose in the area of the Authority in

any single year shall never exceed the produce of a halfpenny rate.

7. In London and in the areas under Local Education Authorities for County Boroughs, Boroughs and Urban Districts the limit will be found by ascertaining the produce of a halfpenny rate for the whole area, but for areas under County Councils the mode of calculation will be different; here the halfpenny rate will be calculated over the area of the parish or parishes which, in the opinion of the Council, are served by the school (Section 3). It should be noted, however, that, though this calculation will give the limit of the money which may be raised, the money will not be actually raised over the area mentioned. Thus, where a halfpenny rate over the parish or parishes served by the school in connection with which a meal is to be provided produces, say, 20*l.*, that amount will be actually raised on the whole elementary education area of the County Council and not solely from the particular parish or parishes (Section 5 (1)).

8. For the general working of the provisions of the Act by the Local Authorities and the School Canteen Committees, the Board of Education do not propose to issue any Regulations, but to leave them full discretion, within the statutory conditions, for dealing with the necessarily varied circumstances of the different areas, or of different schools within any one area, in the manner best suited thereto. There remain, however, a few points, in addition to those named above, to which the Board think it right to call attention in this Circular.

9. First, it has been found that there has been a tendency in some of the places where the work of providing school meals has already been in operation, to require teachers to

take part in the management and supervision of school meals as part of their ordinary duties. The Board, like the Committees which have reported on this matter, recognise fully the admirable work which has been done in this direction by teachers all through the country. They consider, however, that there is a danger that too much of the teacher's time and energy may be taken up in this serving of tables, and they hold that, while teachers should not be forbidden to take part in work which is to them of absorbing interest, their help should be used as sparingly as possible and that in no case should they be *required* to take any part at all. The Act accordingly contains the following special provision on this matter:—

“No teacher seeking employment or employed in a public elementary school shall be required as part of his duties to supervise or assist, or to abstain from supervising or assisting, in the provision of meals, or in the collection of the cost thereof (Section 6).”

10. Next, the Board concur also with the various Committees in holding that it is undesirable that meals should be served in rooms habitually used for teaching purposes. The first use for school-rooms and class-rooms is for teaching. Nothing, therefore, should be done in them to interfere with their proper ventilation before and after school meetings, or to cause disorder and uncleanness. At the same time, the Board recognise that in some cases meals can be served in rooms used for teaching without detriment to such use, and that circumstances may arise where these are the only rooms available.

11. It will be observed that the Act does not in any way prescribe the time at which the meal should be served. Evidence is in the possession of the Board showing that

while, perhaps, a midday dinner is the meal which usually meets with most favour from the existing voluntary agencies, there are many which for good reasons consider that breakfast is preferable. Again, there is an opinion prevalent in many quarters that a school meal may in certain schools advantageously take the form of milk, which may be served either at the opening of morning school or in the course of the morning at the recreation interval.

12. The Act contains no specific reference to the Boards of Guardians, but in a well-organised system which attempts to provide free or cheap meals for destitute children, it is obvious that touch must be kept with the Guardians, and information in their possession or at their disposal must be used. As a rule it would be desirable that there should be one or more Guardians on the School Canteen Committee. Where there is in the locality a branch of the Society for the Prevention of Cruelty to Children, the help of that Society may also be enlisted with great advantage, and the same remark applies to other persons and agencies whose work brings them into intimate relation with the life and needs of the children at our elementary schools and their parents, such as district visitors, health visitors, and the like.

13. Lastly, when a system of medical inspection of school children such as already exists under several Local Education Authorities has been established, the School Canteen Committee, so far as its operations are concerned with under-fed, ill-nourished or destitute children, should work in intimate connection with the school medical officer.

I have the honour to be,

SIR,

Your obedient Servant,

ROBERT L. MORANT.

To the Local Education Authority.

APPENDIX C

FORM USED BY THE CITY OF BRADFORD EDUCATION COMMITTEE
IN ORDER TO ASCERTAIN THE CIRCUMSTANCES OF THE
FAMILIES OF THE CHILDREN FOR WHOM APPLICATION IS
MADE FOR THE PROVISION OF MEALS.

CITY OF BRADFORD EDUCATION COMMITTEE

Provision of Meals Act, 1906

Name of Child or Children.....

.....

.....

School

.....

.....

.....

.....

Address:

.....

Name of Father.....Age....Occupation.....

Employer

Name of Mother.....Age....Occupation.....

Employer

Name of each other member of family, age and occupation:

.....

.....

.....

Weekly wages when full time.....£....s....d.....

Average income for last four weeks.....£....s....d.....

Total income

Deduct rent

Net income

If Father out of work, how long so?.....

If Father sick, how long so, and by whom attended?.....

.....

If in receipt of Relief, state amount.....

Character of Parent

.....

Remarks, especially as to any other sources of income or
expenditure, *e.g.*, Doctor's Bills, Insurance, etc.....

.....

.....

Date..... Visitor

At the expiration of each month an entry as to change of
circumstances should be made below:

.....

Date..... Date..... Date..... Date..... Date.....

.....

Date..... Date..... Date..... Date..... Date.....

.....

Submitted to Committee on RESULT

.....

.....

APPENDIX D

REGULATIONS FOR THE SCHOOL BREAKFASTS IN STUTTGART

1. In accordance with an order of the City Council a warm breakfast is provided for school children at one centre in every public school district, which shall be served either free or at cost, as follows:

2. Only those children may participate in the breakfasts who are designated after application to the special commission. Only those can receive a meal free whose necessity is assured.

3. The application must be made by the parents or guardians of the child through a teacher and must include answers to certain questions, such as whether the meal is desired at cost or free; what the daily income of the family is and how great the number of children under 16. If the information given is satisfactory a further investigation is not necessary. For this purpose the class teacher will give to each child a questionnaire in a closed envelope which will include a return slip. The teacher must add to this information a statement as to the physical condition of the children and any points omitted by the parents. This card is then forwarded to the commission after passing through the hands of the school superintendent. In so far as the information given is unsatisfactory or insufficient the commission may supplement it by an investigation by charity officers, who in these instances are not to be regarded as acting under the Poor Law, but as special school officers. These inquiry officers are held responsible for the most careful investigations possible and must report these to the commission. A record of each case, including its final disposition, must be kept.

4. The permits for free or paid meals are valid for any length of time which the City Council may decide. During this time new permits are issued only to those paying and to children who may have newly entered the school. Only in very special cases may free permits be given to other chil-

dren during this time. Permits given in these latter cases begin with the first school day of the next week.

5. Little booklets containing coupons are issued to the children. Each coupon entitles a child to a breakfast. The coupons are to be given every Saturday morning for the coming week. The class teacher is to have charge of both the free permits and the coupons that are paid for. 45 pf. (11 cents) is charged for the book of 6 coupons. This coupon is good only in the feeding centre in the district where the child belongs and is not to be transferred to another child. It is not permitted to offer more than one coupon in one day.

6. The coupons must be gotten by the class teacher or principal every month according to the apparent number who will need them. An account is to be kept by the teacher or principal of every child receiving these coupons with the date. The amounts received for the bought coupons are to be reckoned up the first of every month. The free coupons are to have as a distinguishing mark a heavy line under the first few words, but this mark is to remain absolutely unknown to the children.

7. In case a child is removed from one school district to another the head teacher will transfer his name to the new school lists, indicating whether or not he is to have coupons and of what sort. If he moves out of Greater Stuttgart the coupons that have not been used shall be returned to the class teacher. The money shall be refunded on the coupons that have been paid for. These returned coupons are to be delivered to the central school authority every month.

8. Every Saturday the daily amount of milk and bread for

the various feeding centres shall be made out for the coming week according to the number of children who are enrolled to receive them. In the event of the school being closed for extraordinary reasons such as vacations given on account of conferences, etc., or epidemics of sickness, the principal of each school shall notify the central school authorities so that the day's supply of rations may be changed in accordance.

9. The director in each feeding centre must be responsible for having the milk and bread ready to be served, at the earliest one hour, at the latest three-quarters of an hour before the beginning of school. The director of the feeding centre must twice each month, on the 15th, and on the last day, forward to the school authorities an account of the amount of food that he receives each day. He must also give a daily receipt to the contractor who delivers the goods.

10. The cans and baskets in which the milk and bread are delivered must remain at the feeding centre during breakfast. The milk must be kept so that it does not get cold before serving. Any bread and milk that may remain is to be given back to the contractors. An account is to be kept of this and the cost deducted and placed on credit.

11. Any delay in the delivery of the food must be reported at once to the school authorities. Likewise any other failure to carry out orders, such as food being delivered too early or too late, not enough being delivered, milk not being sufficiently warm, and so forth, is to be reported to the contractor at once, by telephone if possible, so that no delay shall be caused. Any broken contracts are to be reported at once to the school authorities.

12. The person in charge of each feeding centre is held

responsible for having the proper utensils and furniture ready each morning and for removing and cleaning them after breakfast.

13. The breakfast is to be served during the half hour before the beginning of the morning session, the hour of which varies as follows: The spring and the summer vacation at 7 o'clock; after the vacation till the 15th of November at 8 o'clock; from November 16th to February 14th at 8.30; from February 15 to the end of the school year at 8 o'clock.

Each child shall receive on presenting its coupon one-quarter of a liter of milk and a roll. The milk must be kept in the warm cans until immediately before serving and put into serving pitchers only at the last minute. The coupons received must be placed each day in special numbered and dated envelopes ready to forward twice a month to the school authorities.

14. Immediately after breakfast all the dishes and other utensils used at breakfast are to be washed in hot water and rinsed with cold, and the furniture in the room cleaned. The manager will be held responsible for the utmost cleanliness in all details of service.

15. A special place must be provided for the storage of utensils.

16. The children must not remain in the centre any longer than is necessary to eat their breakfast. They must maintain order, be quiet and follow the directions of the person in charge. Children who do not obey may have their privilege withheld by the commission for a longer or a shorter time.

17. If teachers are present at the breakfast they shall have the supervision, otherwise the house master of the school, or in case he is not present the manager shall be held responsible for keeping order during breakfast. It is preferable to have the supervision done by a teacher. Where there are several centres for one district the house master, if he himself is not in charge of one centre shall go about and inspect each centre in turn.

APPENDIX E

Menus of seventeen dinners served on alternate days in the schools of the city of Bradford, England. The materials, the amount, the number of Protein and Fat grams and the cost, wholesale and retail, is given in each case.

DINNER NO. I.

Green Pea and Vegetable Soup (clear); Boiled Jam Roly-Poly.

Material	Quantity	Protein (grains)	Fat (grains)
Peas.....	3 oz.	324	12
Carrot.....	1½ oz.	3	2
Turnip.....	1½ oz.	6	1
Onion.....	1½ oz.	6	1
 Bread.....	 1½ oz.	 60	 9
 Flour.....	 1½ oz.	 75	 6
Nutter Suet.....	¾ oz.	49	196
Jam.....	¼ oz.	1	...
Wholesale Price—2 cts.		524	227
Retail " —2.5 cts.		(34 grams)	(15 grams)

DINNER No. II.

Brown Haricot Soup, Dumplings; Baked Jam Roll.

Material	Quantity	Protein (grains)	Fat (grains)
Beans.....	1 $\frac{1}{3}$ oz.	133	13
Carrot.....	$\frac{2}{3}$ oz.	1	1
Onion.....	1 oz.	9	2
Flour.....	1 $\frac{1}{16}$ oz.	36	3
Nutter Suet.....	$\frac{1}{3}$ oz.	22	88
Milk Powder.....	$\frac{1}{2}$ oz.	81	2
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Flour.....	1 $\frac{1}{2}$ oz.	75	6
Margarine.....	$\frac{3}{4}$ oz.	4	279
Jam.....	$\frac{1}{4}$ oz.	1	...
Wholesale Price—2 cts.		422	403
Retail " —2.3 cts.		(27 grams)	(26 grams)

DINNER No. III.

Lentil Soup; Ginger Pudding and Sweet Sauce.

Material	Quantity	Protein	Fat
Lentils.....	3 oz.	305	26
Carrot.....	1 oz.	2	1
Turnip.....	1 oz.	4	1
Onion.....	1 oz.	6	1
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Flour.....	1 $\frac{1}{16}$ oz.	59	5
Bread Crumbs.....	$\frac{1}{2}$ oz.	20	3
Nutter Suet.....	$\frac{3}{4}$ oz.	49	196
Golden Syrup.....	1 oz.		
Ginger.....	$\frac{1}{16}$ oz.		
Baking Powder.....	$\frac{1}{16}$ oz.		
Milk.....	$\frac{1}{12}$ oz.	24	30
Margarine.....	$\frac{1}{6}$ oz.	..	62
Sugar.....	1 $\frac{1}{12}$ oz.		
Wholesale Price—2.45 cts.		529	334
Retail " —3.27 cts.		(34 grams)	(22 grams)

DINNER No. IV.

Savory Batter, Gravy and Beans; Rice and Currants.

Material	Quantity	Protein	Fat
Meat.....	1 oz.	81	89
Milk.....	$\frac{1}{8}$ oz.	35	44
Flour.....	1 oz.	50	4
Egg.....	$\frac{1}{4}$ oz.	23	18
Beans.....	1 $\frac{1}{2}$ oz.	150	15
Butter.....	$\frac{1}{8}$ oz.	...	46
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Milk.....	$\frac{1}{8}$ pint.	35	44
Rice.....	$\frac{1}{2}$ oz.	17	..
Sugar.....	$\frac{1}{4}$ oz.		
Currants and Sultanas.....	$\frac{1}{4}$ oz.	2	2
Wholesale Price—2.5 cts.		453	191
Retail " —3.1 cts.		(29 grams)	(12 grams)

DINNER No. V.

Baked Lentil Savory, Green Peas and Bean Gravy; Milk Pudding and Stewed Fruit.

Material	Quantity	Protein	Fat
Lentils.....	$\frac{2}{3}$ oz.	74	6
Rice.....	$\frac{1}{4}$ oz.	8	..
Potato.....	$\frac{1}{2}$ oz.	4	..
Bread Crumbs.....	$\frac{1}{2}$ oz.	20	3
Onion.....	$\frac{2}{3}$ oz.	4	..
Egg.....	$\frac{1}{12}$ oz.	8	4
Margarine.....	$\frac{1}{8}$ oz.	...	62
Peas.....	1 $\frac{1}{2}$ oz.	162	6
Beans.....	$\frac{1}{2}$ oz.	50	5
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Milk.....	$\frac{1}{4}$ pint.	70	88
Rice.....	$\frac{1}{2}$ oz.	17	..
Fruit.....	3 oz.	4	..
Sugar.....	$\frac{3}{4}$ oz.		
Wholesale Price—2.5 cts.		481	185
Retail " —3.4 cts.		(31 grams)	(12 grams)

DINNER NO. VI.

Yorkshire Cheese Pudding, Peas and Bean Gravy; Buttered Rice and Sugar.

Material	Quantity	Protein	Fat
Milk.....	$\frac{1}{8}$ pint.	35	44
Flour.....	1 oz.	50	4
Egg.....	$\frac{1}{4}$ oz.	23	18
Cheese.....	1 oz.	122	162
Peas.....	$1\frac{1}{2}$ oz.	162	6
Beans.....	$\frac{1}{2}$ oz.	50	5
Bread.....	$1\frac{1}{2}$ oz.	60	9
Rice.....	$\frac{3}{4}$ oz.	25	
Sugar.....	$\frac{1}{4}$ oz.		
Margarine.....	$\frac{1}{4}$ oz.	1	93
Wholesale Price—2.54 cts.		528	341
Retail " —3 cts.		(34 grams)	(22 grams)

DINNER NO. VII.

Cornish Pie (vegetarian), Green Peas and Bean Gravy; Blanc-mange and Jam.

Material	Quantity	Protein	Fat
Potato.....	$2\frac{1}{2}$ oz.	20	1
Apple.....	1 oz.	1	1
Onion.....	2 oz.	12	2
Lentils.....	$\frac{2}{3}$ oz.	74	6
Flour.....	$1\frac{3}{4}$ oz.	87	7
Margarine.....	$\frac{3}{4}$ oz.	3	279
Peas.....	$1\frac{1}{2}$ oz.	162	6
Beans.....	$\frac{1}{2}$ oz.	50	5
Bread.....	$1\frac{1}{2}$ oz.	60	9
Milk.....	$\frac{1}{6}$ pint.	46	58
Cornflour.....	$\frac{1}{4}$ oz.	8	1
Sugar.....	$\frac{1}{6}$ oz.		
Jam.....	$\frac{1}{2}$ oz.	1	
Wholesale Price—2.62 cts.		524	375
Retail " —3.29 cts.		(34 grams)	(24 grams)

DINNER NO. VIII.

Cheese and Lentil Savory, Bean Gravy; Milk Pudding and Fruit.

Material	Quantity	Protein	Fat
Cheese.....	1 oz.	122	162
Lentils.....	$\frac{2}{3}$ oz.	68	6
Onion.....	$\frac{1}{2}$ oz.	3	1
Bread Crumbs.....	$\frac{1}{3}$ oz.	13	2
Margarine.....	$\frac{1}{6}$ oz.		62
Beans.....	$\frac{1}{2}$ oz.	50	4
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Milk.....	$\frac{1}{4}$ pint.	70	88
Rice.....	$\frac{1}{2}$ oz.	17	
Sugar.....	$\frac{3}{4}$ oz.		
Fruit.....	3 oz.	4	
Wholesale Price—2.71 cts.		407	334
Retail " —3.58 cts.		(26 grams) (22 grams)	

DINNER NO. IX.

Baked Cheese and Potato Pie, Peas and Bean Gravy; Bread and Fruit Pudding.

Material	Quantity	Protein	Fat
Cheese.....	1 oz.	122	162
Potato.....	3 oz.	24	1
Bread Crumbs.....	$\frac{1}{2}$ oz.	20	3
Egg.....	$\frac{1}{6}$ oz.	15	12
Rice.....	$\frac{1}{4}$ oz.	9	
Margarine.....	$\frac{1}{3}$ oz.		124
Peas.....	1 $\frac{1}{2}$ oz.	162	6
Beans.....	$\frac{1}{2}$ oz.	50	4
Bread.....	1 $\frac{1}{2}$ oz.	60	9
Bread.....	1 oz.	40	6
Fruit.....	3 oz.	4	
Sugar.....	$\frac{1}{2}$ oz.		
Wholesale Price—2.77 cts.		506	327
Retail " —3.59 cts.		(33 grams) (21 grams)	

DINNER NO. X.

Meat Hash, Savory Balls and Rice; Stewed Fruit.

Material	Quantity	Protein	Fat
Beef.....	3 oz.	243	26
Onion.....	1½ oz.	9	2
Carrot.....	1 oz.	2	1
Turnip.....	1 oz.	4	1
Flour and Bread Crumbs.....	¾ oz.	41	5
Nutter Suet.....	¼ oz.	16	66
Rice.....	¾ oz.	26	1
Bread.....	1½ oz.	60	9
Fruit.....	3 oz.	4	
Sugar.....	½ oz.		
Wholesale Price—	2.9 cts.	405	111
Retail “ —	4.5 cts.	(26 grams)	(7 grams)

DINNER NO. XI.

Cottage Pie (Meat with Crust), Green Peas and Gravy; Stewed Fruit.

Material	Quantity	Protein	Fat
Beef.....	2 oz.	162	17
Potato.....	3 oz.	24	1
Onion.....	1 oz.	6	1
Flour.....	1¾ oz.	87	7
Margarine.....	¾ oz.	3	279
Peas.....	1½ oz.	162	6
Bread.....	1½ oz.	60	9
Fruit.....	3 oz.	4	
Sugar.....	½ oz.		
Wholesale Price—	3 cts.	508	320
Retail “ —	4.27 cts.	(33 grams)	(21 grams)

DINNER NO. XII.

Scotch Barley Broth; Rhubarb Tart.

Material	Quantity	Protein	Fat
Beef	2½ oz.	202	22
Carrot	1 oz.	2	1
Turnip	1 oz.	4	1
Onion	1½ oz.	6	1
Barley	¾ oz.	14	3
Bread	1½ oz.	60	9
Flour	1½ oz.	75	6
Margarine	¾ oz.	4	279
Fruit	3 oz.	4	
Sugar	½ oz.		
Wholesale Price—2.9 cts.		371	322
Retail “ —4.2 cts.		(24 grams)	(21 grams)

DINNER NO. XIII.

Fish and Potato Pie, Green Peas, Lemon Sauce; Blancmange and Jam.

Material	Quantity	Protein	Fat
Fish	4 oz.	66	5
Potato	5 oz.	48	2
Margarine	⅙ oz.		74
Flour	⅙ oz.	10	1
Milk	⅙ pint.	14	18
Lemon	¼ oz.		
Peas	1½ oz.	162	6
Bread	1½ oz.	60	9
Cornflour	¼ oz.	8	1
Milk	⅙ pint.	46	58
Sugar	⅙ oz.		
Jam	½ oz.		
Wholesale Price—3 cts.		414	174
Retail “ —4.46 cts.		(27 grams)	(11 grams)

DINNER No. XIV.

Meat and Potato Hash, Beans and Gravy; Milk Pudding and Fruit.

Material	Quantity	Protein	Fat
Beef.....	1½ oz.	122	13
Potato.....	4 oz.	32	1
Carrot.....	½ oz.		
Onions.....	1½ oz.	9	1
Beans.....	1½ oz.	147	12
Margarine.....	⅛ oz.		46
Bread.....	1½ oz.	60	9
Milk.....	¼ pint.	70	88
Rice.....	½ oz.	17	
Sugar.....	¾ oz.		
Fruit.....	3 oz.	4	
Wholesale Price—3 cts.		461	170
Retail “ —4.35 cts.		(30 grams) (11 grams)	

DINNER No. XV.

Meat Pudding, Cabbage and Gravy; Boiled Rice and Currants.

Material	Quantity	Protein	Fat
Meat.....	2 oz.	162	17
Carrot.....	1 oz.	2	1
Turnip.....	1 oz.	4	1
Onion.....	1½ oz.	9	2
Flour.....	1½ oz.	75	6
Nutter Suet.....	¾ oz.	49	196
Cabbage.....	⅛ oz.		
Bread.....	1½ oz.	60	9
Rice.....	½ oz.	17	1
Currants and Sultanas.....	¼ oz.	2	2
Sugar.....	¼ oz.		
Milk.....	⅛ pint.	35	44
Wholesale Price—3.13 cts.		415	285
Retail “ —4.30 cts.		(27 grams) (19 grams)	

DINNER No. XVI.

Rice and Cheese Savory, Cabbage and Bean Gravy; Wholemeal Cake.

Material	Quantity	Protein	Fat
Milk.....	$\frac{1}{4}$ pint.	70	88
Rice.....	$1\frac{1}{2}$ oz.	52	1
Cheese.....	1 oz.	122	162
Margarine.....	$\frac{1}{2}$ oz.	2	186
Beans.....	$\frac{1}{2}$ oz.	50	5
Cabbage.....	$\frac{1}{8}$ oz.		
Bread.....	$1\frac{1}{2}$ oz.	60	9
Wholemeal.....	$1\frac{1}{2}$ oz.	60	9
Currants and Sultanas.....	$\frac{3}{4}$ oz.	8	7
Sugar.....	$\frac{3}{8}$ oz.		
Margarine.....	$\frac{3}{16}$ oz.		69
Wholesale Price—	3.42 cts.	424	536
Retail “ —	4.10 cts.	(28 grams)	(35 grams)

DINNER No. XVII.

Shepherd's Pie (Meat and Potato), Gravy; Milk Pudding, Stewed Fruit.

Material	Quantity	Protein	Fat
Beef	3 oz.	243	26
Potato.....	6 oz.	48	3
Onion.....	1 oz.	6	1
Bread.....	$1\frac{1}{2}$ oz.	60	9
Rice.....	$\frac{1}{2}$ oz.	17	
Sugar.....	$\frac{3}{4}$ oz.		
Milk.....	$\frac{1}{4}$ pint.	70	88
Fruit.....	3 oz.	4	
Wholesale Price—	3.49 cts.	448	127
Retail “ —	5.12 cts.	(29 grams)	(8 grams)

APPENDIX F

SPECIMEN RECIPES OF HOT DISHES SERVED IN PHILADELPHIA SCHOOLS. THESE RECIPES ARE KEPT ON FILE AT EACH KITCHEN.

Cream of Pea Soup

Four and one-half pounds dried peas; ten tablespoonfuls, or one-quarter pound butter; seven quarts milk; one quart water (rinse bottles); twenty tablespoonfuls or one and one-quarter cups flour; salt. (Serves 60. Portion, two-thirds of a cup.)

Soak peas day before. Drain and wash. Put on to cook in large quantity of water. Cook until tender, adding salt when nearly done. Make white sauce in agate sauce-pan (care or will burn). Do not allow to cook directly over fire long enough to boil after each addition; but prepare long enough ahead to cook in double boiler about three-quarters of an hour before adding peas. Drain peas and add to white sauce about one-half hour before serving.

Rice Pudding

One quart rice; one quart sugar; four quarts water; eight quarts milk; four teaspoonfuls salt. (To serve 48. Portion, two-thirds of a cup.)

Wash and drain the rice, add with sugar and salt to the boiling salted water. Cook directly over the heat ten minutes. Heat milk in the double boiler and cook with the rice, etc., at least one hour—better two.

To vary monotony, sprinkle cinnamon or nutmeg over the pudding or use one-half pound seedless raisins or one dozen dates cut in small pieces.

Corn Chowder

Eight cans corn; eight quarts diced potatoes; one-half pound salt pork; salt; eight onions; eight quarts milk; sixteen crackers; pepper. (To serve 95. Portion, two-thirds of a cup.)

Put milk and corn on in large double boiler to heat. Put water on in which to boil potatoes. They must be cooked in relays in order to get ready in time. Try out pork, add onions, and brown. Parboil potatoes five minutes. Then add to fat and onions with enough boiling water to prevent burning. Cook until tender and add the whole to the milk and corn. Season. About five minutes before serving, add the broken crackers.

Cocoa

Three cups cocoa; three cups sugar; four quarts boiling water; twelve quarts milk. (To serve 96. Portion, two-thirds of a cup.)

Mix the cocoa and water together and cook directly over the heat ten minutes, stirring constantly to prevent scorching. Add it to the heated milk in which the sugar has been dissolved and cook one-half hour in the double boiler. Beat well before serving.

Bean Soup

Four quarts or five and five-eighths pounds beans; one pound salt pork (cut in pieces) or three pounds shin bone; two small onions; two bunches potherbs; twelve to sixteen quarts boiling water; three tablespoonfuls salt; pepper; two stalks celery, if cheap. (To serve 72. Portion, three-quarters of a cup.)

Pick over and thoroughly wash the beans. Soak them in cold water over night. Drain and rinse them, then add the boiling water, part of which is stock from the meat. Add the seasoning and cook until the beans are thoroughly soft.

First day, soak beans; second day, start cooking; third day, finish cooking and serve. In schools where the Jewish children are very orthodox, substitute butter for meat.

APPENDIX G

DIETARIES FOR CHILDREN OF SCHOOL AGE SHOW-
ING SCHOOL MEALS AS SUPPLEMENTS TO
OTHER MEALS, AND DAILY COST
AND FOOD VALUE*

1. Dietary for Child 6 Years of Age

Assumed weight, 44 lb. Protein, 50-60 grams ; 1650 Calories

BREAKFAST

Oatmeal, Top Milk and Two Teaspoonfuls of Sugar

Poached Egg-on Toast

Toast and Butter

Glass of Milk

PENNY LUNCH

Cup of Milk and Cracker

DINNER

Cream of Pea Soup

Baked Potato

Bread and Butter

Creamed Carrots

SUPPER

Glass of Milk

Steamed Rice and Prunes

Zweibach

Food	Amount	Protein, grams	Calories	Cost
Oatmeal	$\frac{3}{4}$ cup	4.20	100	\$0.030
Bread	4 slices	9.40	300	0.017
Butter	1 tablespoon	0.13	100	0.010
Egg	1	8.15	90	0.030
Milk	$\frac{3}{4}$ qt.	24.36	510	0.060
Sugar	2 tablespoons	0.00	100	0.000
Pea Soup	$\frac{3}{4}$ cup	3.86	100	0.020
Potato	1 medium	1.32	75	0.005
Carrots, Creamed	$\frac{1}{2}$ cup	2.57	100	0.010
Rice	2 tablespoons	2.28	100	0.005
Prunes	5	0.70	100	0.010
Totals		56.97	1675	\$0.173

Nutritive ratio 1:6

* Prepared by Normal Domestic Science Department, Drexel Institute, Philadelphia.

2. Dietary for Child 8 to 10 Years of Age

Assumed weight, 60 lb.

Protein, 60 grams ; 1760 Calories

BREAKFAST

Cream of Wheat with Dates

Top Milk

Glass of Milk

Bread and Butter

PENNY LUNCH

Cocoa and Cracker

DINNER

Hamburg Steak

Mashed Potato

Bread and Butter

Creamed Onions

Cup Custard

SUPPER

Milk Toast

Gingerbread

Baked Apple

Food	Amount	Protein. grams	Calories	Cost
Cream of Wheat	$\frac{1}{3}$ cup	3.04	100.0	\$0.008
Dates	5	0.60	100.0	0.008
Bread	5 slices	13.20	377.0	0.020
Milk	1 pint	16.09	337.5	0.040
Cocoa	$\frac{1}{8}$ qt.	4.55	124.0	0.010
Butter	2 tablesps.	0.26	200.0	0.020
Steak	2 oz.	12.50	65.0	0.025
Creamed Onions	4	3.20	100.0	0.005
Potato	$\frac{1}{2}$ cup	0.65	25.0	0.005
Cup Custard	$\frac{3}{8}$ cup	4.40	100.0	0.040
Apple	1	0.25	75.0	0.010
Gingerbread	$\frac{1}{2}$ oz.	3.00	50.0	0.010
Totals		61.74	1653.5	\$0.201

Nutritive ratio, 1:5:7

3. Dietary for Child 10 to 12 Years of Age

Supplementary to Penny and Three-cent Lunches

Assumed weight, 80 lb.

Protein, 70 grams ; 1800 Calories

BREAKFAST

Corn Meal Mush

Milk and Sugar

Glass of Milk

Bread and Syrup

PENNY LUNCH

Cocoa and Cracker

THREE-CENT LUNCH

Bean Soup

Peaches

Bread

DINNER

Mutton Stew with Vegetables

Rice Pudding

Bread

Glass of Milk

Food	Amount	Protein	Calories	Cost
Corn Meal	3 tablesps.	7.26	200.0	\$0.005
Bread	5 slices	13.20	377.0	0.025
Milk	1 pint	16.09	337.5	0.040
Cocoa	$\frac{1}{8}$ quart	4.55	124.0	0.010
Bean Soup	$\frac{1}{8}$ quart	9.91	194.0	0.010
Peaches	2 halves	2.45	145.0	0.010
Mutton Stew	1 cup	15.00	200.0	0.060
Rice Pudding	$\frac{2}{3}$ cup	3.16	164.0	0.010
Sugar	3 tablesps.	0.00	200.0	0.010
Totals		68.62	1941.5	\$0.170

Nutritive ratio 1:6

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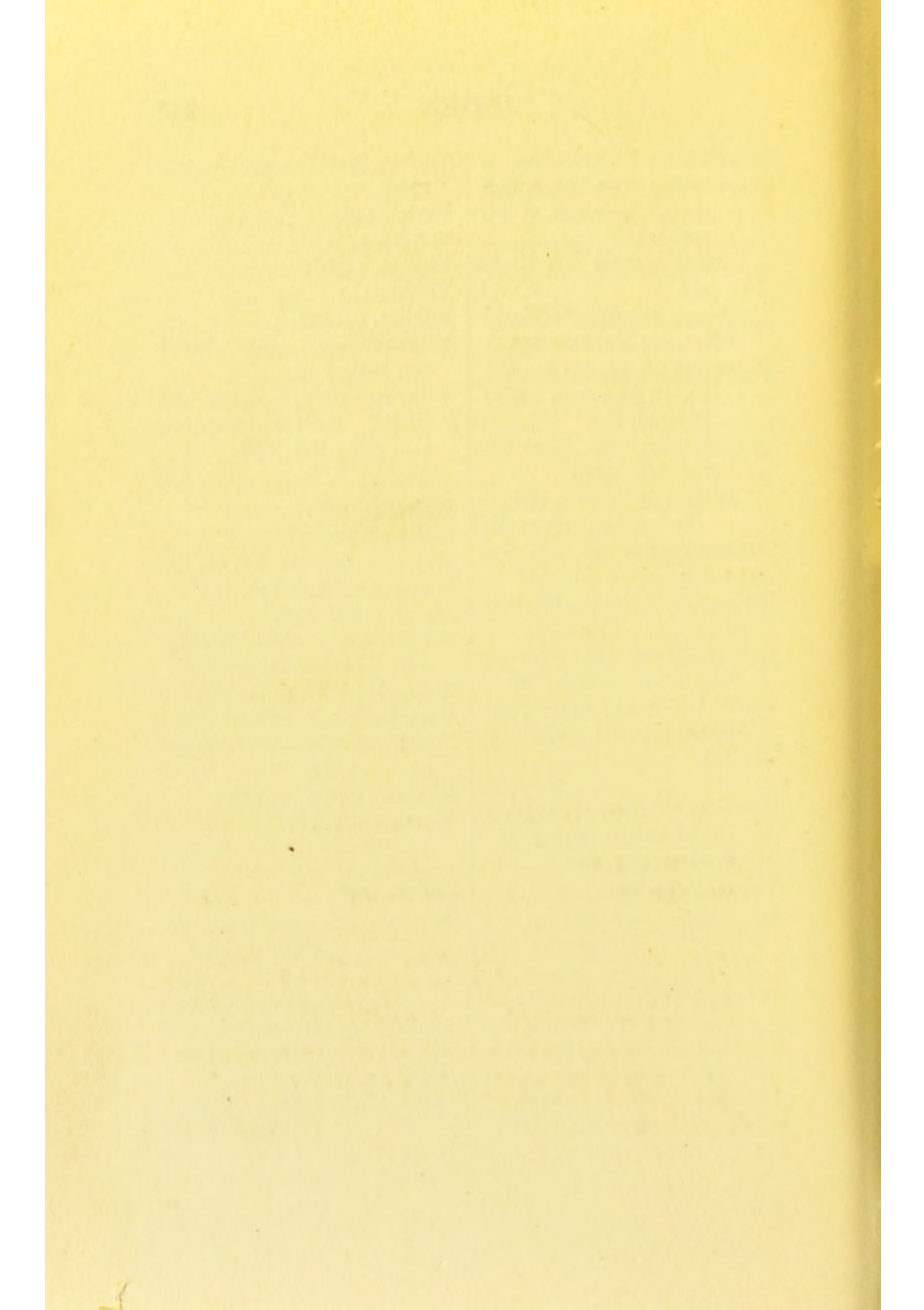
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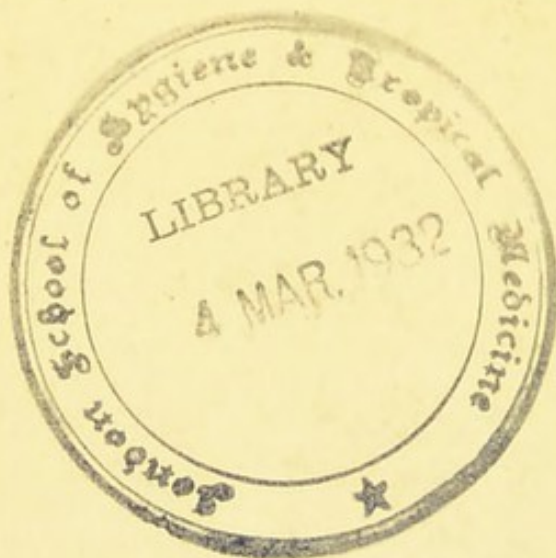
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