

Two winters' experience in giving lectures to my fellow townswomen on physiology and hygiene / by Catherine M. Buckton.

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TWO WINTERS' EXPERIENCE

IN GIVING

LECTURES

TO

MY FELLOW TOWNSWOMEN

ON

PHYSIOLOGY AND HYGIENE.

BY CATHERINE M. BUCKTON

LEEDS.

SECOND EDITION.

FOR GENERAL CIRCULATION.

PUBLISHED BY THE
LADIES' COUNCIL OF THE YORKSHIRE BOARD OF EDUCATION,
AT THEIR OFFICE, 16, ST. ANDREW'S CHAMBERS, LEEDS.

—
1873.



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PREFACE TO THE SECOND EDITION.

THE first Edition of the following Pamphlet has met with an unprecedented demand and is now exhausted. A desire has been repeatedly expressed that a cheaper issue should enable the information which it contains to be distributed broadcast, in quarters which it has hitherto been precluded from reaching; and the Ladies' Council of the Yorkshire Board of Education has pleasure in responding to this appeal, and (with the kind permission of Mrs. Buckton), offers a Popular Edition at a price (2d. per copy), which will, as the Council hopes, meet the wishes of the benevolent persons who are contemplating a wide distribution. The notice appended to the Pamphlet gives information as to the manner in which copies may be obtained.

16, ST. ANDREW'S CHAMBERS,

August 1st, 1873.

PREFACE.

THE following papers are published at the request of several friends who were desirous of obtaining all the particulars which I could furnish of the Sanitary work I have endeavoured to carry on in Leeds during the last two winters. I have thought it better to preserve the record of my first attempt in the form in which it was originally prepared a year ago for the Ladies' Council of the Yorkshire Board of Education, as it was written when my early experience was fresh in my memory. My later experiences cover much the same ground, and it has been impossible to relate them without, in some degree, repeating my previous statements. For these repetitions, I can only ask my readers' indulgence.

Other ladies have, I am happy to add, been working in the same field as myself. I have not presumed, however, to describe the methods and results of their labours, as I hope that they may be induced to tell their own story.

CATHERINE M. BUCKTON.

4, MOORLAND TERRACE,
May 22nd, 1873.

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I.

AN ACCOUNT OF SANITARY LECTURES GIVEN IN LEEDS DURING THE WINTER OF 1872.

It is with some reluctance that I comply with a request to write an account of the Sanitary Lectures I have given in Leeds during the last few months, as I feel that the experience of another winter might have enabled me more fully to carry out my ideas on this subject, and so have rendered any information I had to give better worth having. The life-long sufferings entailed on little children by the ignorance of mothers, incited me to try to overcome the many difficulties which beset me in undertaking to simplify Physiology for the million. I had had no professional training, but Dr. Dobson, of Holbeck, urged me not to let that deter me, saying that I should be sure to know more than my hearers. I therefore complied with the earnest appeal made me by the Ladies' Council of the Yorkshire Board of Education, to give some Sanitary instruction to the working women of Leeds. The Ladies' Sanitary Committee of this Association provided me with a room, diagrams, &c., and are most anxious and ready to promote further labours in this direction. Mrs. James Kitson, Mrs. Baily, and myself, members of the Ladies' Council, were introduced to our work by two of our leading medical men, Dr. Allbutt and Mr. Edward Atkinson.

My first attempt was made in the Holbeck Mechanics' Institute. This course only consisted of five addresses: these were chiefly written, interspersed with verbal explanations of the diagrams. The average attendance was about eighty. The audience consisted entirely of working-men's wives, mill-girls, dressmakers, &c. Opportunities of befriending little children occurred at each Lecture. On all sides it was said that every mother ought to know the information that was given. One woman told my daughter that she had lost eight children, and she believed they might all have been saved had she but known what she now did. Another mother remarked that though she reared a family of nine, she had been more enlightened in one hour at these Lectures than she had been in all her life, and was much troubled by the thought of her past ignorance. At the close of each Lecture, papers of questions were distributed to those who wished for them, and answers were received from fourteen. A Prize was given to the writer of the best papers, who in this case was one of Mr. Marshall's mill-girls.

The interest aroused by these addresses led to a request that I would deliver a second course in the adjoining locality, which I did to a very intelligent audience numbering about sixty. I began by telling my audience that I would show them how Scrofula, Fevers, Consumption, Rickets, Cholera, and other diseases were caused by breathing impure air, eating bad food, drinking unwholesome drinks, and from a want of knowledge of the laws of health. The necessity of cleanliness was enforced by a description of the functions of the skin. A section of the sweat gland was shown through a microscope. Next winter a magic lantern shall replace the microscope, which is not suited to a large

audience. Marshall's diagram of the skeleton enabled me to describe the human frame. My practice was to go to the place of meeting half-an-hour before the commencement of the address, and I remained at least half-an-hour after it. During this period many interesting stories were told me that corroborated my statements, and from these opportunities of friendly intercourse with my hearers I derived much valuable experience. I next traced the circulation of the blood, and explained how poisoned air or unwholesome food impeded it. My son made two experiments with Oxygen and Carbonic Acid Gas, which carried great conviction. One woman, celebrated for never opening her windows or cleaning her house, was found transformed. When asked the reason of the change she said she had found from Mrs. Buckton that there was "nought like a bit of fresh air." She had been made to see the "reason why" by which means alone reasonable beings can be induced to act wisely.

Having no models, I had to describe the Lungs as graphically as I could, and how heat was engendered. I doubted being able to make this Lecture clear; but from the answers sent in I found some had perfectly understood what I had said, and others had carried away enough to give them a general idea. The sad mortality among your children, caused by unsuitable clothing, gave me a great deal to say. I only regretted I could not tell my story to the rich and titled, for their children suffer equally with the poor.

Digestion and food proved among the most interesting subjects. The properties of the blood were explained, and the different kinds of food that would create them. I showed the injurious effects of alcohol, and how the albumen, which is the part of the blood which nourishes the nerves, is killed by spirits. Speaking about albumen led me to tell how the best beef tea should be made, and meat cooked, so that the albumen in the meat might be preserved. A mutton chop fares badly in the hands of the poor.

The nervous system and a description of the five senses brought out remarks of approval. One of my hearers said she could have sat all night to hear about them. The evils of soothing syrups were pointed out, and attention was directed to the greater efficacy of fresh air in tranquilizing a baby's nerves.

I gave my experience of children, and tried to prove that harshness and fear weakened the nerves, destroyed the health, and took away a child's best safeguard through life—the love for its mother.

Ventilation was shown by placing a glass vessel with water in it over a Bunsen burner. When the water began to boil, bran was thrown into it, the movement of the bran made it easy to trace the circulation of the water, and so explain now cold air is always taking the place of hot air.

A small tea-kettle with the steam coming out of the spout gave me an opportunity of proving that hot air ascended, and how, therefore, on a washing day, the steam could only be got rid of by opening the top, not the bottom of the window, about an inch. A young mother told me that after every washing day her little boy used to be attacked by bronchitis, but since she had let the steam escape as I had directed he had not been subject to this complaint.

The last Lecture treated of light, heat, ventilation, and water. By the aid of an orrery, which moved by clockwork, kindly lend me by Mr. J. Jackson, I was able to explain the movements of our globe, causing day and night, light and heat. This led to my telling much that was interesting on the vegetable and animal kingdom, the circulation of the atmosphere, and lastly, the circulation of water. I described how rain descended, rivers were formed, and wells created. The danger of drinking well water I illustrated by cases of Cholera that had been caused by drinking this water when organic matter had entered it.

The prize was awarded to a young girl of sixteen. The answers sent in by her two elder sisters, both of whom were employed in Messrs. Marshall's flax mill, were better done in some respects, but not equal in originality. The thanks of the

meeting were tendered to me by a great many of the women, several of whom spoke with an eloquence and good feeling that refined ladies can rarely command at a moment's notice.

My experience this winter has been both a delightful and a painful one. I have felt overwhelmed by the conviction that the sin, sorrow, and suffering that exist might be immensely reduced if women would only do the work I have attempted to do. With a determination to gain the confidence as well as the attention of a meeting, a little learning can be made to go a long way, and a great amount of good can be effected.

Several Leeds medical men, with whom I have spoken, have expressed their readiness to give any assistance in their power.

To Messrs. Harvey and Reynolds I am especially indebted for the kindness with which they lent me any apparatus I required.

I gave a third course to a collection of mothers' meetings, of different denominations I am pleased to say, in a large room in Crossland Street, Holbeck. Mr. Kenworthy was the means of bringing together this assemblage, which numbered upwards of two hundred. Here I delivered seven addresses, and for this audience I found it necessary still further to simplify my materials. Considerable anxiety was shown to answer the questions put to them, but the difficulties were great from want of time and education. Upwards of twenty made the attempt, and it was very interesting to see that where there was an inability to write, which was the case, I fear, with the greater part of my audience, the answers were dictated to the husband or son.

As I am desirous of making this paper as short as possible, I have only been able to sketch out the principal points of my lectures. A perusal of the answers that have gained the prizes, may give a further insight to any one wishing to hear more.

I gave no medical advice except about the management of burns and scalds, as I saw how ignorantly they were treated. A mother, on showing me a scalded arm, said, "It should be better, as I have washed it twice a day." I also begged that no medicine should be administered by a mother on her own account, or at the instigation of her neighbours.

In conclusion, I must express a hope that what I have written may suggest some brighter ideas than have occurred to me, and that in Leeds and elsewhere, more workers will join our little band. Voluntary effort, such as Leeds has attempted, is a slender reed to lean upon where so much is at stake. Our work is to prove that sanitary science can be taught and made interesting to the most ordinary capacity. Government, I trust, on seeing such a result, may be induced to further a scheme by which the laws of health shall be taught in all State aided Schools.

CATHERINE M. BUCKTON.

May, 1872.

II.

AN ACCOUNT OF SANITARY LECTURES GIVEN IN LEEDS DURING
THE WINTER OF 1873.

THIS winter I began my first course of public lectures to my fellow-townswomen, by relating facts which showed the sanitary state of Leeds (p. 17). These facts were printed in large type and suspended so that all might see them. I showed that 1,538 people had lost their lives last year from preventible causes. Two-thirds of that number were children who had been sacrificed to ignorance and the want of a mother's care.

The three districts in which I decided to give my lectures were parts of the town rarely free from fever and other epidemics. Great interest was therefore aroused by an account of the diseases engendered by bad air and neglect of the skin. A woman told me she had often tried to make water do without soap, but the dirt did not come off. "I was fair capped to know why," she said, "now we shall understand the reason."

In addition to the constant aid rendered me by Messrs. Harvey and Reynolds, they showed three beautiful illustrations by means of the oxyhydrogen light, having kindly provided fresh preparations of a section of the sweat gland, a piece of skin with its pores, and some impure water.

Having carefully studied Dr. Angus Smith's book on "Air and Rain," Mr. Huxley's lecture on "Yeast," and Tyndall on "Dust and Disease," I endeavoured to explain in a simple manner the "Germ" theory, and in this way pictured the dangers which may lurk in cobwebs, dust, and liquids (particularly milk), the necessity for ventilation, and the reason why infection can be carried and remain dormant for a long time. Directions for nursing a fever patient, and the power of the best and cheapest disinfectants, fresh air, boiling water, and permanganate of potash, were also made intelligible by means of this theory. I showed some experiments with oxygen and carbonic acid gas, and explained ventilation by two simple experiments. Thanks to Dr. Guy's most interesting "Lectures on Public Health," I was provided with thrilling stories of the dreadful diseases which took root in England for several centuries owing to the dirty habits of the people. Dr. Robinson, the Medical Officer of Health, kindly furnished me with an account of the public baths that exist in Leeds, as I purposed recommending their frequent use; the number, however, proved so inadequate to the wants of our dense population, that I decided not to refer to them. It is

impossible for members of working men's families to indulge in thorough ablutions in their small homes. Surely Free Baths might be instituted on the same principle as our Free Library. If our death rate could be reduced from 27 to that of London, which is $21\frac{1}{2}$, or of Birmingham, which is 24, the saving of life would soon bring about a saving of money by reducing the rates. I gave a slight sketch of the sanitary reforms we owe to Howard the great philanthropist. Several of my hearers had lost members of their families by fever. One poor woman confided to me that she was childless, the scarlet fever had taken her three children.

Some startling facts incidentally reached me about the way in which new born infants are often treated among the poor. The custom is to press the child's head so that the bones may be brought together; castor oil or sugar and butter is administered, the body is bound as tight as possible, and the breasts are squeezed when the baby is a girl, "to break the strings." To dispel the ignorance which leads to these cruelties, I provided myself with a skull and an enlarged drawing of Madame Bodichon's cartoon, showing the organs in a natural and unnatural position. Several of my audience collected round me to verify my statements by facts which had come under their own experience. I learnt also from a written answer to one of my printed questions that water on the brain is attributed to the practice of washing the heads of babies. The following is the curious account which was given: "It is owing to the cruel and murderous treatment of the mothers and nurses washing their females heads; for nearly 9 out of 10 die from the water in head by washing their heads. The testimony of one of the best medical men, Dr. Fleming, males being a little stronger some escapes this butchering practice." This, I found, is a very common belief, and, no doubt, accounts for a large number of the dirty and sore heads we continually see. In corroboration of this another of my hearers writes: "I have seen people myself try to comb'd off dirt and make it quite sore." I met this statement the following week by giving a description of the wonderful way in which the brain is protected, and described the dreadful Russian hair disease, which is caused by dirt. I explained that as the scalp is more closely provided with oil glands than any other part of the body, soap as well as water should be used from the very first. I felt on this occasion, as on many others, the great advantages I derived from placing myself in friendly communication with my hearers. By this means my knowledge increased every week, so that, instead of keeping to my syllabus, I had continually to quit its order and to extend my course from eight to ten lectures.

When I described the circulation, I should have liked to have assembled my friends round the case, now placed in the Bethnal Green Museum, containing the Food collection which shows the component parts of the human body and the constituents of the blood. Not having this advantage, I obtained bottles containing some of the principal substances most essential to the healthy growth of children.

of these I tried to explain familiarly how necessary these constituents are in the food of children. I particularly pointed out that phosphorus, lime, and gelatine are the three materials from which bone is formed, and that the want of these materials in the diet of infants causes rickets and other malformations of the bone. This fact I illustrated by showing two shoulder blade bones, one in a healthy state, the other as it becomes when deprived of its earthy matter by improper food.

A glass-blower, Mr. Macaulay, Great George Street, Leeds, made me two tubes, one smaller than the other, which were united by a tiny vessel; these represented an artery, vein, and capillary. At the suggestion of the glass-blower I dropped a piece of bismuth into the tube which represented the vein, then poured a red preparation into the tube which represented the artery. As this red fluid passed through the tiny vessel which represented the capillary and entered the vein, it gradually lost its bright hue and became dark like venous blood. Though this was only a rough illustration, it enabled me to show how the colour of the blood is changed as it passes from the arteries through the capillaries into the veins. I also explained how, in exchange for fresh materials, the waste matter is given back and carried out of the system.

At the end of this lecture I showed some experiments to prove that carbon, charcoal, and fat are all identical in nature.

In describing respiration, I again had recourse to the glass-blower, who made me an air tube with its air vessel. The latter part I fitted into a small red box to represent an air cell. I then explained how the oxygen passes down the tube, escapes through the walls of the air vessel, enters those of the capillaries, so wonderfully arranged round the sides of the air cell, and finds in the blood the carbon, hydrogen, and other substances with which it unites. This led me to describe the wonderful results of this chemical union; how the heat thus produced burns up the waste parts of the body and turns them into carbonic acid gas; how the water thus formed, unites—in the shape of steam—with the impure gases, organic matter, &c.; and how they together make their way through the walls of the air vessel, just left empty by the pure air, and flying up the air tube escape through the mouth.

During this lecture I tried to dispel the ignorant notion that an infant can be hardened to bear more exposure to cold than a grown up person. A mother related to me how she had lost a fine little girl from cold, whose life she now felt sure might have been saved had her ignorance not led her to expose its arms and legs during the winter. It was very touching to see how ready mothers were to learn and to own their mistakes. Their only comfort was that they had done their best. If the parents of the working classes understood Physiology and Hygiene, their children would have a much better chance of being strong and healthy than those of the wealthy classes; for in the former case the mother's care is directly brought to bear upon the children.

In my three lectures on Digestion and Food I wished to assign a

reason for the great quantity of water in the system. This I did by showing, first, how every substance we eat must be completely mixed with water before it can be changed into blood, and, secondly, how all changes are effected by the agency of oxygen of which water is chiefly composed. I had a great deal to say about the wonderful and beneficent properties of water. In contrast with these I traced the evil effect alcohol has on our food, blood, and organs. Were I a teetotal agitator I should treat this subject physiologically, as it seems to me to be the only sure way of deterring young people from acquiring a taste for stimulants. A medical man in Holbeck told me there was an immense amount of secret drinking among working women in his district. The dreadful air of New Wortley where I spent eleven evenings, would, I can well understand, create a desire for drink. The odours had been so nauseous, as I drove in the dark through this densely populated part, that I determined to pay a visit by daylight to discover their causes. I found there were four gasometers very near the lecture room, within a stone's throw of each other, on either side of the high road, with houses in one case so near them as to form a crescent, with only a narrow road of separation. Last winter an explosion took place, when a dreadful accident occurred, and the loss of life might have been fearful. Within sight of these dangerous machines, I passed over a canal, and in a few minutes over the river Aire. The piece of land which separates these dark waters, several acres in extent, is being gradually filled up with refuse to the depth of several feet. I saw the night soil which is deposited there lying in a liquid state, only waiting for sun and rain to perfect its horrors and spread them broadcast. Ladies who find it necessary to take several glasses of wine daily to strengthen their nerves, when weakened by too much visiting, or by having too little to do, will sympathise with the craving for stimulants which ill-fed and over-worked women experience who are doomed to breathe such an atmosphere as I have described. As I do not believe that stimulants are a cure for any of these evils, I made a strong case against them. The School of Medicine lent me a clot of blood, which had for some time been preserved in alcohol. My object in showing this was to prove that spirits stop the changes which are so essential to persons of all ages, but especially to young children. Gin is administered to them for the slightest ailment. It is said to create a most painful thirst in addition to its many other evil effects. I found that a great deal of prejudice exists against allowing children to drink water as freely as they desire.

Mr. G. Manning, of Colchester, hearing of my work, sent me most kindly a collection of books. From some of them I gained valuable information, particularly about children. I devoted one lecture to their digestion, and explained the necessity for giving them milk until the teeth have come and the bones are formed. I related a touching account, given by Dr. Bedner, Physician to the Foundling Hospital at Vienna, of fifteen post mortem examinations which he made on infants under one year, who had been deprived of a mother's care and of

their natural food. This recital created a great amount of interest and feeling. One of my hearers took the trouble to write and tell me how important it is to give this kind of information, as she knew mothers who forsook their children to work in mills rather than have the trouble of nursing them.

Having worked my hearers up to a tolerable knowledge of the necessity for those kinds of food which I called body-warmers, flesh-formers, and blood-purifiers, I dealt with the constituents of food. I drew up a food table (p. 19), and entered into the composition of human and cow's milk, meat, vegetables, and fruit. I then showed how we should roast and boil, so that the juices should be kept in or brought out as the case might require. I made the strongest beef tea at the lecture, gave receipts for making soups, and stated that this kind of food could be made to contain, at the least cost, the three kinds of nourishment which our system requires. With the aid of my table I tried to explain the equivalents of food, and pointed out how it would be possible for a poor family to enjoy a mixed diet of a most nourishing kind without the addition of meat, should that be beyond their means. A training School of Cookery would be the proper supplement to the instruction my lectures have endeavoured to convey; without such previous instruction I cannot see how any real success can be reasonably looked for. A so-called professed cook of the present school may prove a most extravagant poor man's wife, and a lady may attend lectures on cuisine for ever, and still be unable to rear a healthy family, and make small means go far. Rules for proportions are easily forgotten without constant practice, and are only really learned by practice. There were one or two of my hearers who, having served as cooks in gentlemen's families, expressed great satisfaction at being told why they had prepared food in a certain way. I hope next winter we may be able in Leeds to give some practical lessons on Cookery by the aid of an experienced cook, who will prepare dishes that may prove valuable to thrifty wives and mothers. I gave an account of the great service Captain Cook had done to the navy and to mankind in general by his successful treatment of scurvy, and read Dr. Guy's harrowing description of the sad state in which poor sailors used to return from a long voyage of suffering from unwholesome food. It proved that several of my hearers were troubled with scurvy and skin diseases, nor could I wonder at it when I learnt the nature of their diet.

In describing the five senses, I dwelt particularly on the organ of speech, and showed how it was in the power of all mothers to train in their children that wonderful little instrument which is placed in the throat, so that it may produce pleasant if not sweet tones. I urged them to speak most softly whenever they found it necessary to reprove them, as a child's love and respect can only be gained by this means. When I had finished a young mother came up and whispered "I will try." It distresses me to visit some of our National Schools, and hear the harsh tones in which mistresses and juvenile teachers give their

instruction. With all their proficiency, they are incapable of teaching the two most important lessons of gentleness and forbearance.

My last lecture was devoted to a description of our Earth (with the aid of Mr. Jackson's orrery), of the circulation of air, and of water. I concluded it with a short history of coal. All these subjects brought out the wonderful effects which heat and light produce on the animal and vegetable kingdom. I was determined, if possible, to make my hearers understand why it is that the gases which arise from dead vegetation are equally dangerous with those which issue from a drain or a battle field. I explained that an animal and a vegetable germ contain the same organic elements. By way of illustration I had enlarged drawings made of the yeast plant and of the *amœba* (p. 23). The information thus given was received with great astonishment. I heard several interesting remarks, and was assured by a cook that she considered it among the most important of all my wonderful statements.

Dr. Greenhow very kindly looked over the answers to my printed questions, and decided on the successful candidates. Miss Maude, President of the Ladies' Council of the Yorkshire Board of Education, presented one of the two prizes offered to a servant girl, and the other I had the pleasure of giving to the wife of an artizan. Instead of distributing tracts I had a list printed of the books I thought would be most interesting (p. 22). The simplest tract on Physiology and Hygiene requires some previous instruction to secure for it a reading and any useful results. I gave away two printed leaflets, one of my "Food Table," and the other with a "Description of the different kinds of Food most necessary for Health, &c." (p. 22.)

Since January I have given three courses. The first consisted of eight lectures, and there was an average attendance of sixty. At the second, of ten lectures, the attendance reached a hundred. The audience at the third course, which was unavoidably discontinued after the fourth lecture, was collected together by a Bible Reader, and numbered about forty. Mr. Marshall's diagrams are the best I know for a lecture room. I found them most valuable. For private study I used Keith Johnston's, as they are much smaller. As I am constantly asked if I will give the names of books I have made use of in preparing for my lectures, I will here mention the more important ones I have had recourse to, besides those I have already mentioned. They are Dr. Carpenter's "Animal Physiology;" "Philosophy of Health," by Dr. S. Smith; Johnston's "Chemistry of Common Life;" Dr. Lancaster "On Food;" Letheby "On Food;" Dr. Edward Smith's "Practical Dietary for Families, Schools, and the Labouring Classes;" Erasmus Wilson "On the Skin;" and Lewes "On the Physiology of Common Life." The last named is an excellent work to conclude with, as it points out the conflicting opinions held by different medical men, and prevents one from being led away by any one theory. When difficulties beset me in spite of all these authors, I went to Mr. Wheelhouse, one of our leading medical men. Notwithstanding his large practice, he always

found time to clear up my difficulties, and, in addition to valuable suggestions, gave me, what I prized still more, sympathy in the work I found so interesting, but at times almost overwhelming from my want of knowledge.

It is an immense advantage in many ways to be able to use the name of a leading medical man. I was especially pleased to do so, as it gave me an opportunity of removing the universal idea among the poor that the medical profession desire to keep their art a secret. On many occasions remarks were made that prove to me the truth of this assertion. In order to understand how burns and scalds ought to be treated, I paid a visit to the Infirmary, and watched a nurse dress one. She told me that some of the most distressing cases they had arose from these accidents, which ignorant treatment often greatly aggravates, and in many cases the poor sufferers are brought with their wounds quite unprotected. Mr. McGill, the house Surgeon, very kindly furnished me with information, by which I was enabled to give the simplest printed directions. (p. 22.)

It is very encouraging to hear that, besides Mrs. Kitson, Mrs. Baily, Mrs. Fenwick, and myself, who are working in Leeds, Miss Kenrick, of Birmingham, has this winter given Sanitary lectures there, which have, as I understand, been attended with great success. I earnestly hope that what I have written may create in others my own strong conviction, which experience has only confirmed, that want of due consideration for our own species and the brute creation, can only be got rid of by this kind of teaching.

In conclusion, I will mention a circumstance which proves, I think, that this kind of instruction may exert a very humanizing influence. A Missionary told me he knew a woman who used to beat her children in a most brutal manner. Nothing that was said seemed to touch her heart or change her ways until she learnt, from attending my lectures, how delicately and wonderfully a child is made. Her past cruelty then appeared in its true light, and she gave up treating her children unkindly.

FACTS THAT EVERY MAN AND WOMAN IN LEEDS OUGHT TO KNOW.

Number of persons who died
in Leeds last year (1872),
from preventible causes,
such as Scarlet Fever,
Typhus Fever, Small
Pox, &c. ... } **1,538**

Number of Children who died
in Leeds last year from
Fevers, Croup, &c., and
more especially from the
want of a mother's care. } **1,170**

Total number of deaths
from all causes. } **6,881**

TO INSURE GOOD HEALTH,

We must have

FRESH AIR.

PURE WATER.

WHOLESOME FOOD.

CLEAN HOUSES.

CLEAN STREETS.

GOOD DRAINS.

PROPER CLOTHING.

TEMPERANCE.

CLEANLY HABITS.

The following LECTURES will explain how, by attending to these things, and by a better knowledge of the laws of health and of the human frame, the lives of more than 1,538 human beings might have been saved last year in Leeds alone.

1ST LECTURE.

Gave an account of the sanitary state of Leeds.

Explained how impure air causes fevers and other preventible diseases.

Functions of the skin.

Described the unhealthy state of England during the time when the use of baths was unknown.

Illustrations given by the aid of oxy-hydrogen light, to show a section of the sweat gland, pores of the skin, and impure water.

2ND LECTURE.

Described some of the diseases induced in children by impure air. Cautioned mothers against giving their children medicine.

Dangers of having untrapped sink-pipes. Directions for nursing a fever case, so that the infection may not be carried.

Two experiments to show how ventilation may be attained.

Reasons given to explain why cellar dwellings and back-to-back houses are unhealthy.—Experiments with oxygen and carbonic acid gas.

3RD LECTURE.

Gave an explanation of the human skeleton, by the aid of Marshall's diagram.

Evil effects of tight lacing, illustrated by 2 diagrams.

Described the muscles.

4TH LECTURE.

Gave an account of the principle substances that the blood ought to contain.

Described the circulation of the blood.

Showed by the aid of 3 experiments that the nature of carbon, charcoal, sugar, and fat is analogous.

5TH LECTURE.

Explained how the blood is purified, and heat is made.

The different habits of people who live in hot and cold countries.

Suggestions as to the most suitable clothing for young children.

6TH LECTURE.

Described the three kinds of food the system requires.

The nature of an organ explained.—Proved that plants have organs, therefore, are made of organic matter, and are living things.

Showed how unwholesome food upsets digestion, and pictured the injury done to every organ by stimulants.

The principles of cooking explained.—The most strengthening beef tea was made before the audience.

7TH LECTURE.

Described an infants' power of digestion.—Properties of milk.—Causes of painful teething.—The proper food for children until the bones are matured.

Evil results brought about by the common practice of giving gin and soothing syrups to infants.

8TH LECTURE.

Explained the constituents and equivalents of food.

Showed how a poor man might feed his family on a mixed and nourishing diet—without meat, should that food be beyond his means,—and pointed out the advantages of soups.

Mentioned the craving children have for sugar, and explained why this craving should be gratified.

9TH LECTURE.

Described the brain, spinal cord, nervous system, and showed how wonderfully the mind affects the body.

Explained the five senses—seeing, hearing, feeling, smell, and touch.

10TH LECTURE.

Gave a description of our earth, by the aid of the Orrery.—Explained the causes of day and night.—The changes of the seasons, and the circulation of air and water.—Dangers that may lurk in pump water.—History of coal.—Wonderful effect that sunshine exerts on mind and body.

FOOD TABLE.

A Human Body which weighs 154 Pounds, or 11 Stones, ought to have about

- 111 lbs. of Water--90 lbs. of this water is Oxygen, the rest is Hydrogen.
- 12 lbs. of Fat (Body-Warmer).
- 24½ lbs. of Protein (Flesh-Former).
- 5¾ lbs. of Phosphate of Lime.
- ¾ lb. of Ashes.

Oxygen is the chief means by which the Food we eat is changed into at least 40 different substances to nourish our different organs. When we are in health these organs ought to be completely changed in about 40 days. 1 lb. of Water contains about 14 ozs. of Oxygen. When Oxygen meets with Carbon, or any other of the 40 substances mentioned, and combines with them in the body, heat is formed. Oxygen purifies the blood.

| BODY-WARMERS. | | FLESH-FORMERS. | |
|--|---|---|---|
| Animal. | Vegetable. | Animal. | Vegetable. |
| Butter. Dripping. Suet. Oil. Lard. | Sugar. Treacle. Starch, which is in Bread and all Vegetables. | Meat. Fish. Poultry. Game. Eggs. Cheese. | Flour. Oatmeal. Rice. Peas. Barley, &c. |

Water is the coolest and safest drink in nature. All our solid food must be mixed with Water, or it cannot be changed into blood. Water can be made to contain more heat than any other liquid. When Water is taken into the body it cools it by sending the heat out through the skin in perspiration and through the mouth in steam or breath.

The following Salts and many others are found in the blood, therefore food must be eaten that contains them.

- Soda.
- Lime.
- Magnesia.
- Phosphate of Iron.
- Potash.
- Phosphate of Lime.

Bread contains a great deal of this salt.

Potash prevents scurvy. It is in all fresh vegetables, most in Potatoes; in all Fruit, most in Lemons.

New Milk is a Body-Warmer, and a Flesh-Former, and contains everything the body requires. Digests in two hours.

ONE PINT OF COW'S MILK MOTHER'S MILK
CONTAINS—

| | | | |
|--------------------|-----|-------------------|---------|
| Water | ... | 13 ozs. | 14 ozs. |
| Flesh-Former | | $\frac{3}{4}$ oz. | less. |
| Body-Warmer | | 1½ oz. | more. |
| Phosphate of Lime, | } | $\frac{1}{2}$ oz. | same. |
| Potash, and other | | | |
| Salts | | | |

The Two Principal Vegetable Flesh-Formers are Bread and Oatmeal.

Time to Digest.

Hours.

- 3½ 2 lbs. of Bread cost 5d., and contain 3 ozs. Flesh-Former, 1 lb. 4½ ozs. Body-Warmer, $\frac{1}{2}$ oz. Ashes, 8 ozs. Water.
- 3½ 2 lbs. of Oatmeal cost 6d., and contain 4 ozs. Flesh-Former, 24 ozs. Body-Warmer, $\frac{1}{2}$ oz. Ashes, 3 ozs. Water (uncooked).

The Principal Animal Flesh-Formers are Beef, Mutton, and Rich Cheese

3½ 2 lbs. of Beef or Mutton cost 1s. 10d., and contain 7 ozs. Flesh-Former, 4½ ozs. Body-Warmer, ¼ oz. Ashes, 20 ozs. Water.

Component parts of Rich Cheddar Cheese in 2 lbs.—Flesh-Former, 9½ ozs.; Fat, 9¾ ozs.; Ashes, 1½ oz.; Water, 11½ oz.

Flour, Oatmeal, Ground Rice, Ground Peas, 1 lb. of any one of these Vegetable Flesh-Formers will give a man as much strength as 3 lbs. of Lean Beef, or 3 lbs. of Veal, or 3 lbs. of Ham, boiled, or nine bottles of Bass's Pale Ale, or six bottles of Guinness's Stout, 10d. per bottle. There is also as much nourishment in 1lb. of Double Gloucester Cheese as there is in the above quantities of Animal Food and Drink.

A full grown man requires daily 10 ozs. of Body-Warmers and 5 ozs. of Flesh-Formers. Water and Ashes are not included in these quantities. These 15 ozs. of solid Food can be got either from Animal or Vegetable Food. But Vegetable Food contains a much smaller proportion of solid matter than the same weight of Animal Food, as it is so largely combined with water. This will be seen from the following list of the component parts of 1 lb. Potatoes:—

| | | | | | | |
|------------------------------|-----|-----|-----|-----|--------|----------|
| Water | ... | ... | ... | ... | nearly | 12¼ ozs. |
| Flesh-Former and Woody Fibre | ... | ... | ... | ... | over | 1¼ „ |
| Starch, Fat, &c.... | ... | ... | ... | ... | „ | 2½ „ |
| Mineral Matter | ... | ... | ... | ... | about | ¼ „ |

A man must eat at least 10½ lbs. of Potatoes to make 4 ozs. of Protein and 10 ozs. of Fat. He had far better make up these two quantities by eating some Animal Fat and Bread with his Potatoes, if he cannot get Meat. The stomach digests a variety of Food better than only one kind. Nature intended us to mix them both together, that is the reason we eat

| | | |
|----------|------|---------|
| Bread | with | Cheese. |
| Bread | „ | Butter. |
| Bread | „ | Milk. |
| Potatoes | „ | Meat. |

There is very little fat in Fowls, therefore we eat Bacon with them. There is very little fat in Veal; therefore, we eat Ham with it. Salt meat has had the juices and ashes taken out by the salt, therefore we must eat Cabbages and Bacon, or Potatoes and Bacon together.

People eat a great deal of Animal Fat in cold countries because they want heat. There is more Oxygen in cold air than in hot air to meet the Carbon. In hot countries Vegetable Fats are more used. There is much more Water in Vegetable than in Animal Fats, and therefore they are more easily digested. Fruit contains a great deal of Sugar and Water. We perspire more in hot countries and hot weather, so require more water.

Children's digestion is more delicate than a grown up person's; therefore, they like Vegetable Fats such as Sugar or Treacle better than Animal Fat, and they are better for them. Sugar also helps to mix the ashes that make bone, and purifies the blood.

Hot Food is more digestible than Cold.

A great quantity of hot liquids taken daily, particularly Tea, is very indigestible, and tends greatly to weaken the power of the stomach.

A DESCRIPTION OF THE DIFFERENT KINDS OF FOOD MOST NECESSARY FOR HEALTH, &c.

OUR BODY-WARMERS

Are Butter, Dripping, Suet, any kind of Fat, or Sugar.

If you were to live on these alone you would be pined.

OUR FLESH-FORMERS

Are Bread, Oatmeal, and all kinds of Flour, Eggs, Cheese, and Meat.

If you lived entirely on these foods you would have scurvy and skin diseases.

POTASH WILL PREVENT OUR HAVING SCURVY.

The Potash bought at a Druggist's shop won't cure you. You must eat food in which it is. All green vegetables have a little, also ripe Fruit, Oranges, and Lemons particularly. Potatoes and all fresh vegetables are nearly all starch; therefore, let the water be boiling when you put them into the pan, then the skin hardens directly, and all the Potash is kept in. Dried Grains, such as Rice, Split Peas, &c., must be soaked in cold water (or milk if Rice) for several hours.

LIME AND PHOSPHORUS.

The two earths that form the hard part of our Bones, are to be found in the largest quantities in Bread and Oatmeal. No Doctor or Druggist can give you these mixed as nature mixes them in these two kinds of food.

An infant cannot digest bread until it has cut its teeth.

MILK

Is the only one food that contains all the forty things that can nourish the body. It is the only safe food for an infant until it is a year old. Every child ought to take a great deal of it daily, in Puddings, with Porridge at Breakfast, and at Tea, until it is eight years old, or it will be in danger of having Rickets or soft bones, for the bones are not hard under that age. An infant fed on cream which is fat would be pined. It is only a body-warmer. Skimmed Milk is a flesh former. New Milk is both a body-warmer and a flesh-former. Cow's Milk is the best milk for an infant brought up by hand. Swiss Milk comes next.

NOURISHING SOUP FOR CHILDREN AND WORKING MEN.

Some Meat (Beef is best) should be cut into pieces and stewed for two hours. Then add to the Meat and Broth Flour of any kind to thicken it, and put as much Milk as you can. Let it stew for an hour, and flavour with Salt.

Soyer, the celebrated cook, almost always used brown sugar and a little vinegar in making his soup. Soup is a most economical food, and digestible if bread is eaten with it.

When we make Soup or Beef Tea, we want to get all the juices and ashes out into the water; therefore, cut it up into small pieces, and put a little salt on it, and let it stand in cold water some hours. Don't let it quite boil, only simmer, for the steam carries off the ashes and juices.

When we roast meat we want to keep in all its juices, therefore we must harden the outside skin by placing the joint near a hot fire for the first ten minutes, then it ought to be roasted very gradually by removing it to a much greater distance, as meat quickly cooked is never good. When meat is baked there ought to be a ventilator in the oven to let out the steam.

To keep the juices in boiled meat, place it in boiling water for ten minutes, and then cook it very gradually.

If Meat cannot be got, Cheese is as nourishing for people who work hard or take much exercise, and is not difficult to digest as some people think it is.

HOW TO DRESS A SCALD OR BURN.

You must keep the air from it instantly, as the germs that fly in the air settle in the flesh. Dip a linen rag in olive or any sweet oil, put it over the place so as to entirely cover it, then wrap it up with a good deal of cotton wool, or a piece of old blanket; don't remove these for seven days, as a new skin will form in that time, and then dress again in the same way. If the skin is not broken and there is no blister, you may put on cold bandages or place the limb in cold water, and so keep out the air. The great thing is to keep out the air and not to break the skin. If the scald or burn is a bad one send immediately for a doctor.

HOW TO RESTORE LIFE TO A PERSON WHO HAS APPARENTLY BEEN DROWNED.

The first thing is to try and bring back the breathing by turning the face down for a moment, so that the water may run out and the tongue fall into its place. Draw out the tongue as far as possible, and keep it out by tying a string over it and round the jaw. If no string is at hand a piece torn off a pocket-handkerchief will answer the purpose. If the tongue falls back it covers the pipe through which the air passes to the lungs. When the tongue is safe you may place the person on his back, take care the shoulders and head are raised a little. Lift the arms up and down to open the chest, drawing them well up by the side of the head and pressing them forcibly against the chest when you bring them down. When the breathing has returned, dry clothes and warm things can be put on. Plenty of fresh air must get into the lungs; bad close air thickens the blood and prevents it from circulating. People must not crowd round the patient. It is dangerous to use great heat suddenly, such as a hot bath. Rubbing and warmth ought to be continued for two hours at least. Life has been known to return after several hours of unconsciousness.

BOOKS

That tell about our bodies, and the food we ought to eat, how to cook it, the air we ought not to breathe, and the water we ought not to drink:—

| | s. | d. |
|---|----|----|
| "Our Bodies" | 1 | 0 |
| "Our Food" | 1 | 0 |
| "Practical Dietary" | 0 | 2 |
| "The Penny Vegetarian Cookery" | 0 | 1 |
| "Tracts of the Ladies' Sanitary Society," sold in 1s. packets | 1 | 0 |
| "First Lessons on Health" | 1 | 0 |
| "Hints on Nursing the Sick" | 0 | 6 |
| "Life of Howard" | 0 | 1 |
| "Life of Captain Cook" | 0 | 1 |
| "Public Health," by Dr. Guy | 2 | 6 |

W. Wood, Bookseller, 17, Market Street, Leeds; and Bernard and Co., Woodhouse Lane, Leeds.

THE NAMES OF THE BEST AND CHEAPEST DISINFECTANTS ARE PERMANGANATE OF POTASH AND FRESH AIR.

Oxygen kills all germs of disease. Permanganate of Potash is nearly all made of Oxygen. A packet that makes twenty gallons can be bought for a shilling. A teaspoonful is to be mixed with two gallons of water. You can wash the body with it safely, as well as furniture, clothes, and floors. It is kept by Harvey & Reynolds, Commercial Street, Leeds, and by all druggists. The air in a bedroom where there is fever is full of poisonous germs. Open the window at the top, or break a hole in the top pane of glass. A pound of fresh air contains about a quarter of a pound of oxygen.



Vegetable Germ—Yeast Plant.



Animal Germ—Amœba.

A GERM is the beginning of life in all
PLANTS and ANIMALS.

PLANTS have Organs.

ANIMALS have Organs.

They are therefore both made of ORGANIC MATTER.

Both Germs contain exactly the same substances—
OXYGEN, HYDROGEN, NITROGEN, and CARBON.

NOTICE.

The first duty of a Town Council is to see that all nuisances are removed, such as middens, pigsties, bad drains, Courts where no air can circulate, such as Wellington Place, in which there are several cellar dwellings. Enclosures like this would serve as perfect hot beds for the growth and spread of cholera germs, should that dreadful disease again visit Leeds. We have long been told on the best authority that it is coming. Any public or private neglect will therefore be inexcusable. With cleanliness and sobriety there is little to fear.

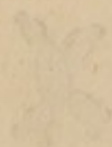
The working men and women who pay rates and taxes, and are obliged to live and work in the town, ought to see that their money is used first of all to make their town healthy for themselves and their children.

The Nuisance Inspector, whose salary is paid out of the rates, will immediately see that all nuisances are removed, if you send a Post Card to this address :—

*The Inspector of Nuisances,
Corn Exchange,
Leeds.*

* * Ladies who desire to circulate this pamphlet can obtain 100 copies at a reduced rate upon application personally or by post card to the General Honorary Secretary of the Ladies' Council of the Yorkshire Board of Education. The Office of this Board, 16, St. Andrew's Chambers, Park Row, Leeds, is open, and the Assistant Secretary is in attendance daily, from 10 a.m. until 2 p.m.; on Saturdays until 1 o'clock.





THE UNIVERSITY OF CHICAGO
LIBRARY
ANNUAL REPORT OF THE BOARD OF TRUSTEES
FOR THE YEAR 1900
CHICAGO, ILL., 1901

The Board of Trustees of the University of Chicago, in their annual report for the year 1900, have the honor to acknowledge the many favors and courtesies which have been extended to them by the various departments of the University, and to express their appreciation of the many valuable suggestions and criticisms which have been offered to them. They also wish to express their appreciation of the many valuable suggestions and criticisms which have been offered to them. They also wish to express their appreciation of the many valuable suggestions and criticisms which have been offered to them.

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