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Contributors

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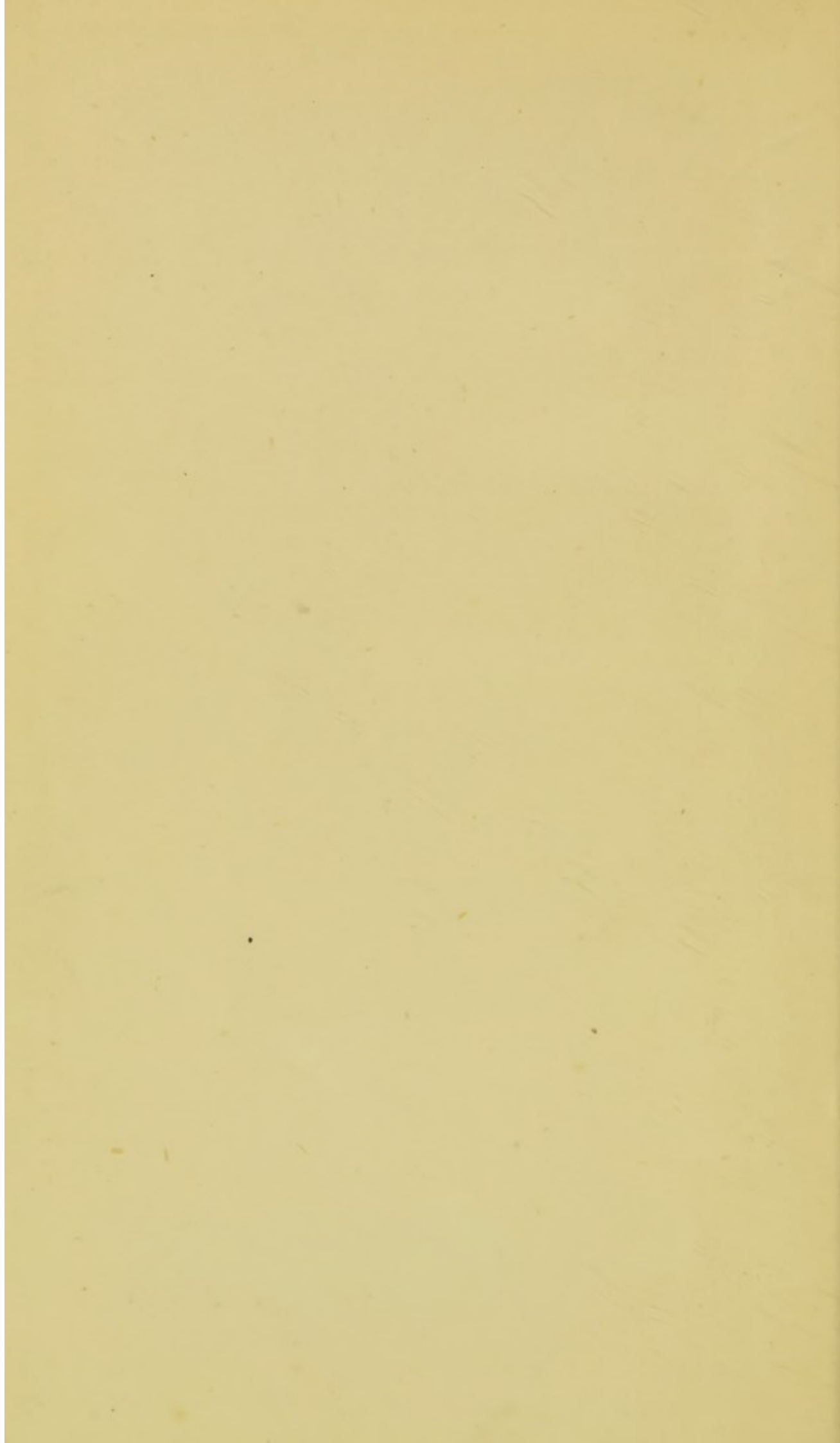




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THE CARE OF INFANTS AND
YOUNG CHILDREN



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THE CARE OF INFANTS AND YOUNG CHILDREN

BY

A. DINGWALL FORDYCE,

M.D., F.R.C.P.(ED.)

EXTRA PHYSICIAN, ROYAL EDINBURGH HOSPITAL FOR
SICK CHILDREN

AUTHOR OF "THE HYGIENE OF INFANCY AND CHILDHOOD"

WITH THIRTY-SIX ILLUSTRATIONS

EDINBURGH

E. & S. LIVINGSTONE, 15 TEVIOT PLACE

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P R E F A C E

FOR the futherance of preventive medicine and the development of a healthier race, it is necessary that those responsible for the care of children or in the position of advisers, should be acquainted with the characteristics of health and the methods commonly advisable to maintain health, should possess an elementary but well-founded and distinct idea of the common dangers to health at the different age-periods and the methods of averting these dangers.

They should likewise be versed in those details of practical medicine which deal with departure from normal health, more particularly the treatment of emergencies and minor ailments. The object of these lectures is to present such information in a suitable manner.

The lectures are extended from those originally delivered to a medical class in connection with the Christian Workers' Training Institute (United Free

Presbytery of Edinburgh), in Edinburgh. It is hoped that in their present form they may prove a useful guide for mothers, nurses, health-visitors, and students of medicine.

Special thanks are due to Drs Fowler and Simpson for permission to reproduce some of their photographs.

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A. DINGWALL FORDYCE.

8 MANOR PLACE,
EDINBURGH, 1911.

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THE CARE OF INFANTS AND YOUNG CHILDREN

LECTURE I

THE CHARACTERISTICS OF HEALTHY CHILDHOOD

THE first act of a new-born baby is to cry lustily.

By this means his lungs are expanded, and fresh air gains admission to them. He is thus able to live an independent existence by breathing, instead of, as previously, obtaining directly into his blood from his mother's blood the substances necessary for life.

Resulting from this new mode of existence, many alterations and changes take place in his organs and tissues. The lungs become functionally active, and much blood is now driven to them by the heart. For the first day or two after birth, it is usually advisable to allow him to settle down to his new conditions without adding to his novelties by giving him much in the way of nourishment.

He kicks and moves his muscles freely. He thereby strengthens his muscles, and keeps up the general tone of his body. But these movements are solely the result of his sense of vitality ; they are not directly governed by his brain, and they are made with no definite purpose.

At this time he appears a pink, plump, little individual.

Now these characteristics of his—pinkness, plumpness, and littleness—have an important relation to points in his efficient management.

He is pink, because the small blood-vessels on the surface of his body are wide open and filled with blood ; he is little, and consequently has a large surface compared with his bulk. Having a comparatively large surface area plentifully supplied with blood, he tends to lose heat readily when the surrounding atmosphere is cold, and he is susceptible to changes in temperature. His plumpness, on the other hand, helps him to maintain his body temperature.

He has a big head and a big stomach. His head as compared with the rest of his body is larger than an adult's, and so also is his abdomen. It is natural for a little baby to be largely head and stomach, and, though many serious diseases are associated with enlargement of the head or of the abdomen, it is often unnecessary to be disturbed because of a large head

or abdomen. While his head is large, his face is comparatively small (*see* fig. 1, page 4).

He has rather short arms and legs which are in frequent motion when he is awake. He cries a good deal, but sleeps most of his time.

A good deal can be learned from a baby's cry.

If he is obviously acutely ill, a long, clear cry shews there is no serious disease in his throat or lungs. On the other hand, if his cry is very short, it is quite likely that his chest is affected. If his cry is loud and clear, comes in paroxysms, occurs sometimes with sudden waking from sleep, and always with drawing up of the legs on the abdomen, there is probably acute disturbance in the abdomen. In chronic illness and weakly babies the cry is usually weak and pitiful, but sometimes it is shrill and rather piercing.

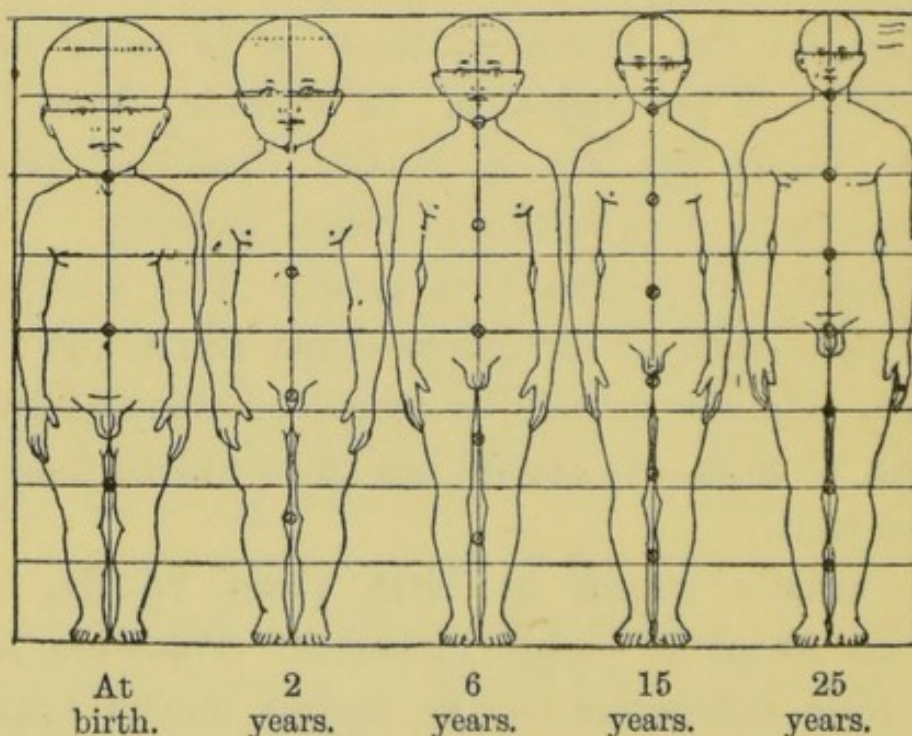
A healthy baby cries from temper, from a sense of uneasiness—such as dampness—from thirst, and from hunger. He can usually be quietened temporarily by a drink of milk, but should not be so treated unless it is meal-time.

He usually weighs at birth about $7\frac{1}{2}$ lbs., and measures about 19 inches in length. There are, however, wide differences in the figures among healthy babies.

Most of his time is spent in sleeping—he sleeps about twenty hours out of every twenty-four.

A healthy baby may sleep in almost any attitude, but the favourite one is that where he lies semi-prone on his face with his arms and legs bent up. He usually sleeps with his eyes shut, but it is not necessarily a sign of illness if a baby sleeps with his eyes half-open. If, however, a baby, who naturally sleeps with his eyes shut, sleeps with them half-open, it is often a symptom accompanying disorder of some sort. If he sleeps with his mouth wide open, he has some obstruction to the easy passage of air from the nostrils to the lungs.

FIG. 1.



In this diagram (after Stratz) the figures at different ages have been drawn to a corresponding scale. Note the large size of the baby's head, the shortness of the legs and arms, and the comparatively large size of the abdomen.

He soon acquires an appetite, and it is important from the very beginning of life to teach him that this appetite is to be satisfied at regular intervals.

Do not confuse thirst with hunger. A baby is often only thirsty when he is supposed to be hungry. Milk is a food, and he is only to get food at meal-times. In practically all cases his thirst can be safely quenched with water. After a satisfactory meal he once again falls asleep, and such a procedure as rocking is not only unnecessary but often harmful.

He grows quickly in weight. At the age of six months he has doubled (15 lbs.) his initial weight, and at the end of the first year has trebled it ($22\frac{1}{2}$ lbs.).

AGE	HEIGHT	WEIGHT
At birth	19.5 inches	7 lbs. 8 ozs.
1 month	20.5 "	8 " $5\frac{1}{2}$ "
2 months	21 "	10 " 4 "
3 "	22 "	11 " 15 "
4 "	23 "	13 " $19\frac{1}{4}$ "
5 "	23.5 "	14 " $14\frac{1}{2}$ "
6 "	24 "	16 " $13\frac{1}{2}$ "
7 "	24.5 "	17 " 5 "
8 "	25 "	18 " 10 "
9 "	25.5 "	20 " 1 "
10 "	26 "	20 " $5\frac{1}{2}$ "
11 "	26.5 "	21 " 2 "
12 "	27 "	22 " 7 "

During this time the health of the mother is all-important. Unless there are insuperable objections, she should nurse him at the breast; and even when she does not nurse him, his very close companionship with her—or with his nurse—is such that the health of his attendant largely influences his well-being.

He breathes quickly, and is readily forced to breathe through his mouth instead of through his nose, and this fact, among others, renders it important that in the early part of life, the temperature of the surrounding air should be warm and equable.

He needs warmth, and requires to be carefully protected from cold; but, while this is so, it is important that his clothes should not be so heavy as to hinder his natural muscular movements. This is true both when he is in the cot, and when he is out of it.

He requires daily bathing with warm water, and careful attention to bodily cleanliness is most important. He should daily have one bath and one sponging, and the simpler the soap used the better.

At the time of birth he possesses instinctively the power of sucking, also of grasping any object which is placed in the palm of his hand. But such action

is not done with a purpose, and until a baby is over three months old, he shews no sign of a power to reason.

During the early weeks and months of life, a baby's smile is most reassuring, simply as a sign of health. It is an expression of tissue well-being—or comparative well-being—and is conspicuous by its absence in acute or serious disease.

A healthy infant may weep or smile, but otherwise his face is largely expressionless. A facial expression of a mental condition common among adults, such as, for example, thought, care, or dread, is an important sign of illness in the infant. At this time of life these facial expressions are the outward symbols of disease, and not of mental conditions (*see* Lect. V., p. 84).

Soon after birth the baby is able to hear, and by the time he is about three months old, he is able to focus his eyes and can recognise familiar objects, but only later does he acquire the sense of distance.

The following table, taken from a book by Professor Preyer,* shews the age at which various powers are usually acquired by the infant.

* *Die Seele des Kindes* (1908).

Movement.	No Trace Existing.	First Attempts.	With Deliberation and Effect.	Remarks.
Head-shaking	...	4th day.	16th week.	In refusal.
Holding the head.	10th week.	11th week.	16th week.	... ..
Seizing.	114th day.	117th day.	17th week.	... ..
Raising the upper part of the body.	12th week.	16th (?) week.	22nd week.	Lying on back without help.
Pointing.	4th month.	8th month.	9th month.	... ..
Sitting.	13th week.	14th week.	42nd week.	Without being held or supported.
Standing.	21st week.	23rd week.	48th week.	Wholly without support.
Walking.	40th week.	41st week.	66th week.	Alone, freely.
Raising self.	13th week.	28th week.	70th week.	Without being held or helped.
Stepping over a threshold.	65th week.	68th week.	70th week.	Without support.
Kissing.	11th month.	12th month.	23rd month.	... ..
Climbing.	24th (?) month.	26th month.	27th month.	Without being held or helped.
Jumping.	24th (?) month.	27th month.	28th month.	... ..

At about the ninth month of life weaning should take place (*see* Lecture II.). This is an important

period of life for several reasons. Not only has the time come for a marked change in the diet of the infant, but the infant's power of digestion has greatly increased, he is on the threshold of the acquirement of his temporary teeth, and right development is largely dependent on good digestion.

The time when the first tooth is cut is a very variable one. As a rule, it is between the sixth and the ninth month of life.

The teeth are usually cut two at a time, and those in the lower jaw appear earlier than the corresponding ones in the upper jaw.

The first to appear are the two middle biting teeth (central incisors), in the lower jaw. They are followed by the corresponding pair in the upper jaw, the incisor tooth on either side of these, and the corresponding lower teeth.

Thus, at about the age of one year the baby has cut his eight biting (incisor) teeth. They are quickly followed by others—the first grinding teeth (molars), the eye teeth (canines), and the second grinding teeth. At the age of two years the baby usually possesses his entire set of twenty first teeth. During this period it is quite common to find that a healthy baby is much upset owing to this process of teething, and even symptoms of apparently serious disease may be produced. It is, however, never safe to be content

with "teething" as the explanation of marked disorder in a baby, without the advice of a physician.

As the teeth are being cut the baby becomes capable of using a greater variety of food.

When the baby is old enough to sit, to stand, and to walk, changes take place in his skeleton owing to the effect of the force of gravity (*see* plate I., fig. 4). Thus curves in the spine and in the bones of the leg, which are natural in the adult, now appear. The bones at this time are growing actively, and it is important that the general health should be good, as, otherwise, unnaturally weak bones may become too curved, or even deformed. About the eighteenth month of life, the opening on the top of the skull (the anterior fontanelle) becomes closed.

Usually about the time he commences to try to walk, the child also begins to attempt speaking.

The power of walking is gained by muscular development, and by the acquirement on the part of the child of power to control his muscular movements.

The power of talking is acquired by the imitation of sounds heard, and by the control of the small muscles concerned in the act of speaking.

A healthy child of two years of age should certainly be able to make use of at least some simple words and sentences.

As the child grows older, his increased powers of movement enable him to walk and run about more freely—he develops a larger environment, with all the advantages and disadvantages accruing from it.

During the second and third years he should sleep at least fourteen hours out of every twenty-four.

As life advances, the child becomes more distinctively a little boy or a little girl. It has been suggested that in long past ages our ancestors may have been pygmies, who attained maturity at about the age of eight to twelve years, and that in them puberty occurred about the age of six. This suggestion has been brought forward as accounting in some manner for the differentiation into sexes of children about the age of six years. However this may be, sexual differences are not definitely marked until the period of puberty is attained.

The permanent teeth are usually cut in the following order:—

First molars	.	.	.	.	.	6 years.
Incisors	.	.	.	.	.	7 to 8 „
Bicuspid	.	.	.	.	.	9 to 10 „
Canines	.	.	.	.	.	11 „
Second molars	.	.	.	.	.	12 „

The cutting of these teeth does not, as a rule, trouble the child at all.

With the commencement of school life opportunities of infection greatly increase, and the question of the proper amount of work and of play also becomes an important one.

The child continues to grow rapidly, he requires plenty of food at regular intervals, and he is naturally fond of almost perpetual motion.

Restraint is irksome, concentration of thought is difficult, quietness is unnatural. But the process of education demands all three, and a large part of education consists in the development of obedience and attention.

Speech, and the finer movements of the hands and fingers become gradually more perfect, and fatigue is apt to evidence itself in twitchings of the small muscles.

Up till the age of twelve years, ten hours, at least, of sleep should be obtained at night.

Puberty is the period of the acquirement of full sexual characteristics. It is a time which occurs at different ages in different people, and it occurs usually earlier in girls than in boys. It lasts a varying time—it may be three, four, five, or more years. As a rule, it does not commence before the twelfth or thirteenth year. Just before its commencement, there is a tendency towards unusually rapid growth and a diminution of general well-being, and this somewhat

dangerous period appears to last longest among the children of the poor, and in them to be characterised more by debility than by rapid growth.

By about seventeen years of age puberty is over and childhood is past.

LECTURE II

DIET IN INFANCY AND CHILDHOOD

THE natural food for a baby during the first eight or nine months of life is his mother's milk. No other food approaches it in value, and the life of the baby often depends on the possibility of obtaining it.

Among all animals who suckle their young, the milk of the mother is, in early life, not only the form of food which is most nourishing and most digestible for her young, but it is also the form of food which serves best to develop their digestive powers. In both respects cow's milk necessarily falls short of mother's milk as food for the baby. It is not so digestible, and it cannot, in the same way as mother's milk, develop the digestive powers of the young along natural lines.

Further, there are peculiarities pertaining to each kind of milk which are not readily discoverable, but all of which go to make it still more an unwise experiment to give a baby any kind of milk except that of his mother whenever suckling is practicable.

Indigestion is often a fatal condition among young

babies, and it is impossible to obtain any food which is at the same time so digestible and so nourishing as mother's milk.

It is specially important that the baby should obtain his mother's milk during the early weeks of life, and consequently, even if the amount of milk in the mother's breasts is small, and she does not appear likely to be able to nurse her baby long, she should be encouraged to do so as long as possible.

A very sick mother or one who is acutely ill should not—and probably could not—nurse her baby, but very often babies are put off, or taken off, the breast for utterly insufficient reasons. Perhaps the mother is not very well. Before weaning her baby in the early weeks or months of life, she requires careful tonic treatment, which may be all that is necessary, or, it may be that regulation of her manner of nursing is also necessary. The nursing mother is no invalid, but she requires plenty of good plain food at definite meal-times, and the regulation of her life so far as possible according to the dictates of common-sense.

Tonics, such as Easton's or Parrish's Syrup, may be called for, and often do good.

Or, it may be, that the baby is not very well, and it is thought that the mother's milk is not sufficiently plentiful for him, that it is not strong enough for him, or that it disagrees with him. The last is an uncommon

condition, and is rarely a valid reason for weaning. Either of the first two suppositions may be true, and, if so, can often be corrected by treatment of the mother, but very frequently these supposed conditions of the mother's milk are not present at all, and what is wrong is that she is not nursing her baby regularly at proper intervals.

If the amount of the mother's milk is really too small for the baby, it may be necessary to give him some other kind of food as well—some other kind of milk.

There is no truth in the statement that mother's milk cannot be given to a baby who is also getting cow's milk or some other form of food.

Mother's milk is practically always the best food for the baby, and can be given along with any other suitable form of food.

The baby should, if possible, be nursed wholly at the breast for the first eight months of life, but, in exceptional cases, he may be nursed for a month or two longer. About the close of the eighth month of life the first teeth are being cut, and the digestive powers are rapidly increasing. Before the eighth month it is uncommon for the mother again to become pregnant, after the eighth month it is common.

As a rule, it is bad both for the mother and the child that breast-nursing should be continued after the close

of the first year. The strain is too great on the strength of the mother, and the milk is not a sufficiently nourishing food for the child.

The occurrence of a monthly period is no reason for weaning the child. It often occurs in young, strong, healthy mothers. If the mother's milk at this period does not suit the child, some form of artificial nourishment should be given him, and when the period is over suckling recommenced.

If pregnancy occur, breast-nursing should, however, as a rule, be stopped.

Regularity in nursing is of the utmost importance. It is not sufficient that the baby is fed at the breast—he must be properly fed at the breast. The baby must be offered the breast at regular intervals, and allowed to suck for a definite length of time.

Shortly, breast-nursing should be conducted as follows:—

During the first two or three days the breast is offered occasionally, four or five times in the day, for a period of five to ten minutes at a time, and the baby may also be given small quantities of warm boiled water occasionally with a spoon.

After this time the baby should be allowed to suck for fifteen minutes at each nursing time, and it is advisable to waken him if necessary at the nursing period.

During the first month, the breast is offered at intervals of two hours during the day (eight nursing periods), and twice during the night; during the second and third months, the breast is given at intervals of two and a half hours during the day (seven nursing periods), and once at night.

The composition of the milk coming from the breast varies during nursing. It is usually stronger at the close when the baby has been sucking some minutes, and, consequently, if both breasts are used at each nursing period the baby receives a weaker milk.

Usually the milk in one breast is sufficient for one feed.

During the third, fourth, and fifth months the breast is offered at intervals of three hours during the day (six nursing periods), and once at night, while during the sixth, seventh, and eighth months the breast is given three hourly during the day, and not at all at night.

Weaning should, as a rule, commence about the end of the eighth month. It should be a gradual process, and should occupy about a month. At first the baby is given one feed of artificial food instead of the breast, after a few days two feeds, and so on, until breast-nursing is entirely displaced.

A healthy baby ought to gain five to seven ounces a

week in weight after the first ten days of life are past. Regular weighing is an important method of judging how the baby is thriving (*see* figs. 2 and 3, pages 20 and 21).

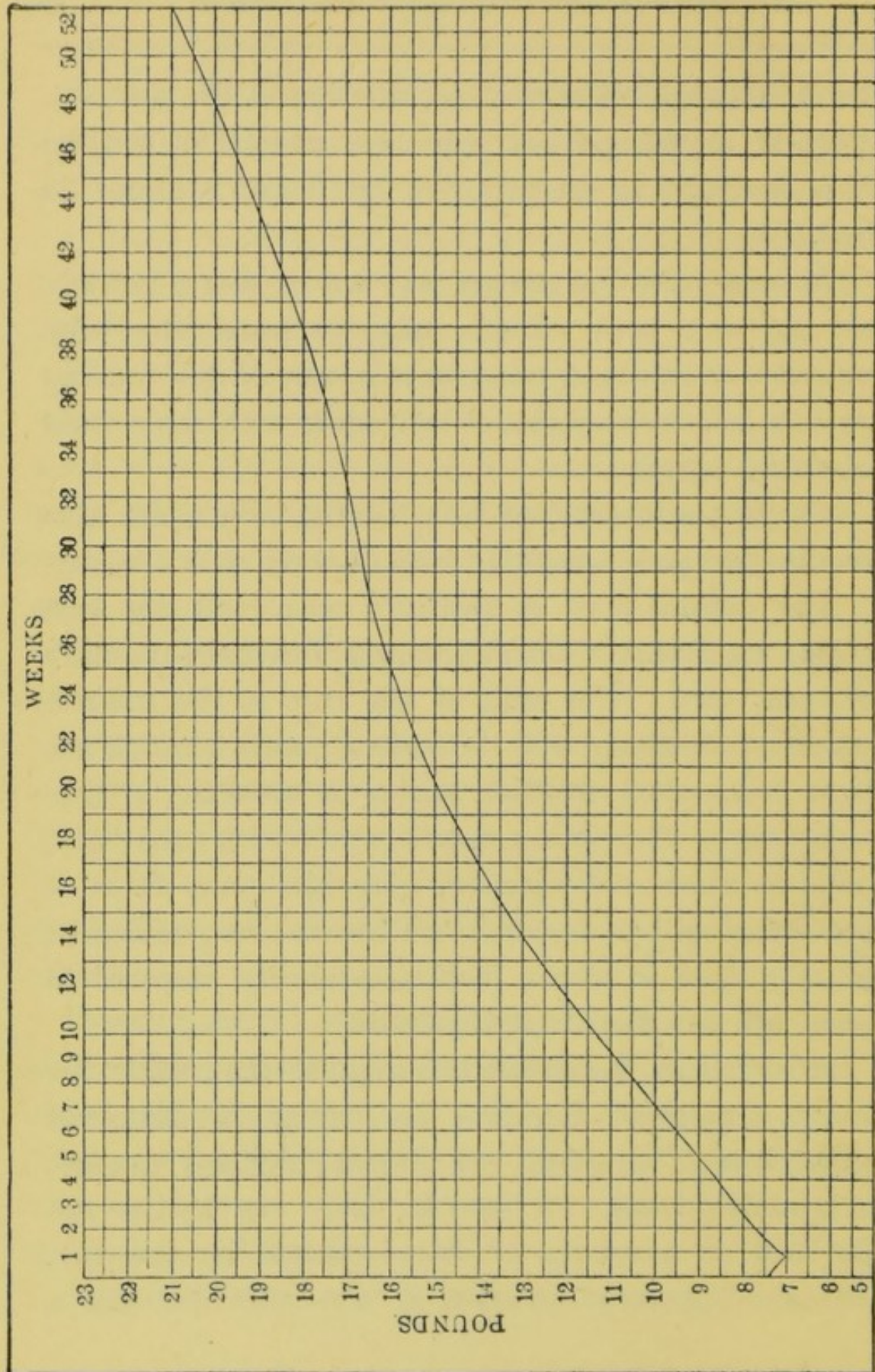
In some cases the mother may not be strong enough, or may not have enough milk, to nurse the baby entirely, and in such cases one or two of the nursing periods have to be replaced by feeding with some form of artificial food.

The best artificial food for a healthy baby under nine months of age is a suitable form of cow's milk mixture.

The natural food is mother's milk, and the best substitute is that which most closely resembles it—milk of some sort. The milk of the cow is the natural practical substitute, and the serious question which has to be faced when artificial rearing is necessary is this,—is dairy milk a fitting and suitable food for the baby, or is it wiser, and safer, to give him some form of condensed milk of constant and known composition, or to rely upon a patent food scientifically prepared to meet his nutritional requirements?

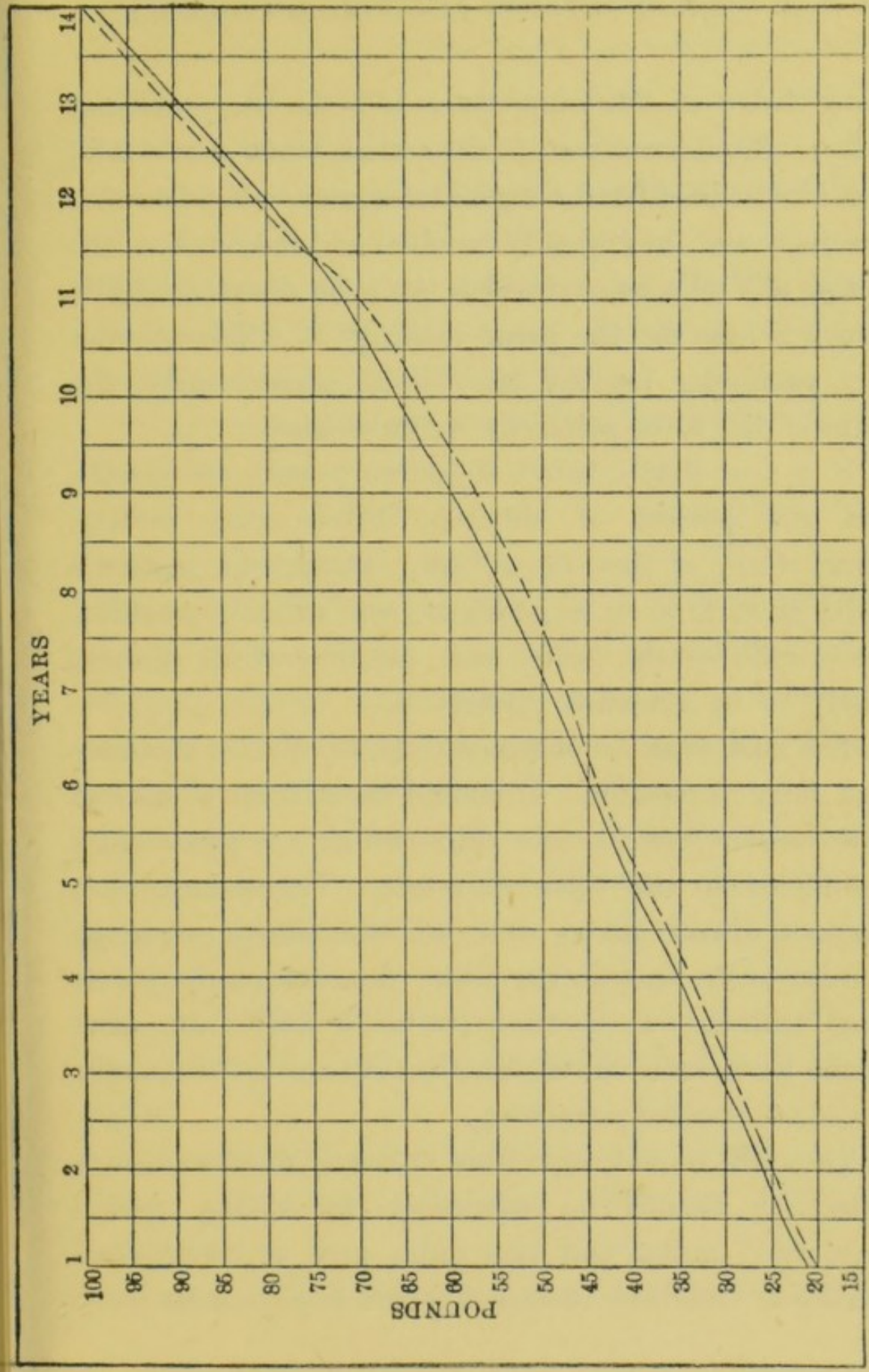
It is well at the outset to recognise that, while the baby's powers of digestion are narrow as compared with those of an adult, yet they are in many respects extremely elastic. A healthy baby can thrive and do well on a variety of diets—patent or otherwise. But the important question is not, what diet can a

Fig. 2.



Weight Chart for the first year ; the curved line indicates the average rate of gain (after Holt).

Fig. 3.



Weight Chart, one to fourteen years. The upper line indicates the average for boys; the lower (dotted) line that for girls (after Holt).

baby thrive on, but what diet is best for the particular baby. Experience goes to show that, when cow's milk can be obtained from a reputable source, and when it is carefully and intelligently handled and modified in the home, this milk so modified is the form of artificial diet which is best for the great majority of children. For any particular healthy baby it is, consequently, the form of diet to be primarily recommended.

It is true that a baby's digestive powers are elastic, but the powers of different babies vary widely. Every form of diet for a baby, except his mother's milk, is at first an experiment, but suitably modified cow's milk is the safest, and the one which is most likely to be generally successful.

The milk must be obtained from as reliable a source and dairy as possible. It should come from a herd of cows—*never from one cow only*—which are periodically submitted to the tuberculin test. Tuberculosis is a common disease among cows, and the infection can be carried to the baby in the milk. One safeguard against such infection is to have the milk only from cows which have been tested for this disease by tuberculin, and have reacted negatively.

The milk should come from ordinary shorthorn cows. There is usually no advantage in having special "nursery" milks, and rich milk, such as comes from Jersey or Guernsey cows, is unsuitable for a little baby.

Besides the bacillus of tuberculosis, which may be present in the milk as it is drawn from the cow, many other microbes are present in dairy milk, however good and clean the farm and the dairy.

The number of these microbes can be kept down considerably if the milk is kept covered, is cooled at once after milking, and is kept cool.

But however carefully the milk is obtained, it should be scalded before it is given to the baby.

Cow's milk differs so much in composition from mother's milk that it requires, as a rule, to be mixed with water before being given to a baby under nine months of age. Lime water may be used instead of ordinary water, but barley water is not usually advisable. Ordinary water which has been boiled is generally best for diluting milk.

In addition to diluting the milk with water it is also necessary to add sugar to it. The best sugar for this purpose is milk sugar, but ordinary white sugar does quite well. A small amount of cream should also be added, as cream contains a great deal of fat, and fat is a most important form of food for the baby.

The mixture for the baby then will consist of milk, water, milk sugar and cream. How are they to be mixed?

Although milk is a fluid, it very quickly curds into

lumps after getting into a baby's stomach, owing to the action of the ferment rennin, secreted by the stomach. The curd of mother's milk is very fine, but that of cow's milk is much coarser and tougher, and this marks an important difference between the two milks.

Diluting cow's milk with water diminishes the bulk of the curd formed in the stomach. This dilution may go as far as two parts of water to one part of milk, but it is usually inadvisable to add any more water in the case of a healthy baby. But this addition of water, while helpful by diminishing the curd, at the same time weakens the milk in other directions. Thus, sugar and fat are important constituents of the milk, and require to be present in the baby's food in comparatively large amount. Fortunately, after diluting the milk we can add them to it separately in the form of sugar of milk and of cream. There is less sugar in undiluted cow's milk than in mother's milk, and, consequently, sugar has to be added pretty freely. The amount of fat present in the two milks is just about the same. When cow's milk is diluted, the fat present is consequently too small in amount, and some cream must be added, but, as the fat of cow's milk is much less readily digested than that of mother's milk, the amount of cream added has to be carefully regulated (*see* plate I., figs. 5 and 6).

For the first two days of life it is usually advisable to offer the baby an occasional drink of sugar and water—one teaspoonful of sugar in four ounces of water—and to withhold milk altogether. After that time regular feeding must be commenced with definite amounts of fluid. At first the milk is diluted with double the amount of water, and as time goes on this degree of dilution is gradually reduced. The amount of sugar added to the mixture is gradually increased up to a dessertspoonful, and cream, which may be added to the bottle in the second week of life in half-teaspoonful amounts to each bottle, is gradually increased to a tablespoonful or rather more.

Thus, while towards the end of the first week of life the baby gets in each bottle one part of milk, two parts of water, and half a teaspoonful of sugar; by three months of age he gets equal parts of milk and water, one and a half teaspoonfuls of sugar, and a dessertspoonful of cream; and by six months, two parts of milk, one part of water, a dessertspoonful of sugar, and a tablespoonful of cream.

But how much milk and water does he get at each feeding time?

The amount, naturally, should not be larger than his stomach can conveniently hold.

We may take it, roughly, that the capacity of the

infant's stomach is, on an average, somewhat as follows:—

At birth	1 fluid ounce or 2 tablespoonfuls
At commencement of 2nd month	2 „ „ or 4 „
At „ „ 3rd „	3 „ „ or 6 „
At „ „ 4th „	4 „ „ or 8 „
At „ „ 5th „	5 „ „ or 10 „
During 6th month	6 „ „ or 12 „
„ 8th „	7 „ „ or 14 „
„ 10th „	8 „ „ or 16 „

Many babies are quite prepared, when opportunity offers, to overload their stomachs, and much harm and future digestive disorder is often started by letting the baby have too much at a time. The above figures are of course, only approximately correct, and have to be considered along with the baby's weight. Thus a big baby of six months of age, weighing perhaps 19 lbs., will very likely be able to take more than six ounces at one time, and a small baby will be able to take correspondingly less.

We now know the strength of the milk mixture, and the amount to be given at each feed. How often is the baby to be fed?

The stomach, like every other part of the body, requires occasional rest, and we lay down the rule at once that no healthy baby should be fed more frequently than every two hours. There is no exception to this rule, but he may occasionally have

in the intervals, if it is thought fit, a drink of plain boiled water.

As life advances the intervals between meals should increase. Thus, while during the first month the baby has eight feeds during the day and two at night; at the age of three months he receives six feeds during the day, at intervals of two and a half hours, and one at night; and by the sixth month he gets six feeds during the day at intervals of three hours, and none at all at night.

We can now shortly summarise what has been said in the following table:—

	Amount at each Feeding.	Number of Feedings in 24 hours.	Relative Amounts of Water and Milk.	Cream and Sugar.
At birth.	2 tablespoons.	10	Water only.	<i>Cream</i> — Begun in second week. Maximum amount attained to be rather over one tablespoonful in a bottle.
At commencement of second month	4 „	9	Water 2 parts, Milk 1 part.	
At commencement of third month.	6 „	8	...	
At commencement of fourth month.	8 „	7	Water and Milk equal parts.	
At commencement of fifth month.	10 „	7	...	<i>Sugar</i> — May be begun at birth. Maximum amount attained to be rather over one dessert-spoonful in a bottle.
During sixth month.	12 „	6	Water 1 part, Milk 2 parts.	
During eighth month.	14 „	6	Pure Milk.	

Knowing what the baby is to get, we have next to consider how it is to be prepared.

It is usually best to prepare all the food for the day at one time. The total amount of milk, water, cream, and sugar is mixed and heated over the fire in an open vessel until bubbles begin to arise on the surface. The dish is then taken off, a close-fitting cover is placed on it, and the dish itself placed in cold water so that the mixture is rapidly cooled. The feeding bottles are then filled with a measured quantity, covered with a rubber cap, and placed in a cool spot until required. Elaborate instruments for "sterilising" or "pasteurising" milk have been invented, but the process above described of scalding the milk is, on the whole, more satisfactory. It is, for several reasons, inadvisable to apply greater heat, or more prolonged heat, to milk than is necessary, and yet the object of the heating—to render the microbes harmless—must be attained. Thorough sterilising of the milk tends to impoverish it unduly, while the effects of pasteurisation are by no means certain (*see* Lecture VI., p. 92).

The feeding bottles used must have no sharp angles or long tubes, and both bottles and teats must be thoroughly cleansed after use, and kept free from contamination until used again.

The best form of bottle is that which can be most

readily and thoroughly cleansed. Corners are always difficult to clean out, and bottles with corners should be avoided. The bottles should be thoroughly cleansed with boiled water and a bottle brush immediately after use, and kept filled with boiled water till needed again. The teats must be treated with equal care. The hole in each should be of such a size as to allow the milk to drop slowly and steadily through it when the bottle is inverted. These rubber teats should be boiled in water after use, and kept in a weak solution of boracic acid until wanted.

Now the method described above of feeding a baby during the first nine months of life is that which in the great majority of cases leads to excellent results. But attention to the most minute details is essential.

The want of such minute attention may nullify the whole method, and the very full instructions for their use, given along with patent foods, is an important cause of the high estimation in which they are held.

The milk mixture for an undersized infant should, as a rule, be adapted more with regard to the weight of the infant than to his age. A big, strong infant often requires stronger food, and rather more of it than the average infant. For a big, strong infant of six months of age, the most satisfactory addition to his milk diet is two ounces of a cereal gruel, such as

oatflour or barley gruel, to two or three of his feeds during the day, or else a proprietary food, such as Allenbury No. 3, or Mellin's Food.

Proprietary foods occupy a large place in the feeding of infants to-day, and their sphere of usefulness is great. But their usefulness would be much greater than it is, if they were employed with more care. Frequently recourse is had to them, "because the baby was not doing well on cow's milk," and in the majority of such cases, the reason for the ill success of feeding with cow's milk is inattention to, or ignorance of, the proper details of such feeding. The baby is given far too much or far too strong a mixture at a time, or he is given a drink too frequently, or too quickly, and he eventually shows symptoms of indigestion—and naturally so. But the fault does not, necessarily, lie in the cow's milk! On the other hand the baby may be fed on a proprietary food from birth and do extremely well. But his good health is not, necessarily, due to the particular form of proprietary food employed. It may well exist in spite of it. As has before been said, cow's milk suitably modified, and given with careful attention to details is, in the great majority of cases, the most satisfactory food for the healthy hand-fed infant. But, undoubtedly, a few exceptional children have difficulty in adapting themselves to feeding with cow's milk;

where the digestion has previously been disturbed from some cause or another, a safe food, of known composition, is often most useful, and even necessary; where a suitable addition and variety to milk feeding may prove helpful; in all such cases, in addition to many conditions of definite illness, the employment of a proprietary food is often the prelude to most gratifying success.

Considering these foods in detail, we find that they may be divided into several important groups:—

- Group 1.* Condensed Milks—such as Nestlé, Milkmaid, Anglo-Swiss, Ideal.
- Group 2.* Dried milk with certain vegetable additions to it which are largely digested before the infant receives it,—such as Allenbury Nos. 1 and 2, Horlick's Malted Milk.
- Group 3.* Dried milk with certain vegetable additions to it which are only partly digested before the infant receives it—such as Carnrick's Soluble Food, and Milo Food.
- Group 4.* Foods largely composed of predigested vegetable material, and which are intended to be added to cow's milk—such as Mellin's Food.
- Group 5.* Foods composed of partially digested vegetable material, and which are intended to be added to cow's milk—such as Benger's

Food, Savory & Moore's Food, Allenbury No. 3.

Group 6. Foods composed of largely undigested vegetable material, and which are intended to be added to cow's milk—such as Robinson's Patent Barley, Scott's Oat Flour Ridge's Food, Neave's Food, Frame Food.

Now we know that the ideal food for a baby is his mother's milk, and that the more nearly any food resembles it in composition the more likely is it to suit him well. We know also that mother's milk contains no starch, and that most babies during the first six months have little power of digesting starch. But vegetable matter is largely composed of starch, and, consequently, all foods which contain *undigested* vegetable matter are unsuited for a baby under six months of age. We therefore rule out of count as unsuited for a baby under six months of age all foods in Group 6. All foods in Groups 5 and 3 we also rule out of count for this baby, because each and all of these contains much of the starch material, which is an unnatural ingredient of the food of an infant of this age, and which he often has much difficulty in digesting. We, therefore, have left as foods for this period—the first six months of life—foods belonging to Groups 1, 2, and 4, namely, various forms of condensed milk, and such foods as Allenbury

Nos. 1 and 2, Horlick's Malted Milk, and Mellin's Food. Of these, the Allenbury Foods are among the best, and usually do extremely well. They are safe foods for the baby, and sometimes do well when the ordinary cow's milk mixture is not well borne. Allenbury No. 1 is prepared to suit the baby for the first two months of life, and Allenbury No. 2 from that time till six months, and to both it is often useful to add a little cream for each bottle.

Horlick's Malted Milk is not usually so satisfactory for the healthy infant as the Allenbury Foods. Both these forms of food consist largely of dried milk, and are prepared for the baby without the addition of milk. Mellin's Food, on the other hand, is simply to be regarded—so far as the healthy infant is concerned—as an addition to a milk mixture. As such it may prove most useful, but when it is given no sugar should be added to the mixture. In many cases, however, in which it is useful, a stronger milk mixture, or a larger amount of cream, would probably have been of equal, if not greater, value to the baby. In all cases in which the above foods are used, whether it be Allenbury No. 1 or No. 2, Horlick's Malted Milk, or Mellin's Food, it is usually advisable to give the baby occasional doses of an alkali—a little magnesia or a little sodium bicarbonate every two or three days.

We still have to consider the use of condensed

milk during the first six months of life. For the sick baby at this time condensed milk is often almost invaluable, but for the healthy baby it is practically never advisable—certainly for any length of time. All the foods about which we are speaking—in all groups—lack the power of preventing scurvy which is possessed by fresh milk, and in all cases in which they are employed for more than two or three weeks, it is advisable to give the baby a teaspoonful of fresh fruit juice once or twice each day.

Condensed milk is very readily digested by the baby, but it is practically impossible so to dilute it as to give the baby a milk mixture of a proper strength. The baby may grow very fat, and be apparently very well, but as he grows older he usually becomes flabby and weakly, and often develops rickets.

About the seventh to the ninth month of life the baby begins to cut his teeth, and his power of digesting starch rapidly increases. He now usually takes with advantage some addition to his milk diet. Added to his milk once or twice a day he may receive any of the foods mentioned above, oat-flour, farola, and such simple forms of cereal food. But it is important also from this time forward to encourage him to chew, to give him something to gnaw, to make him exercise his muscles of mastication. To this end he should be given two or three times a day a hard crust of bread. This crust

may advantageously be spread with a little butter, but it should be decidedly tough, as the chief object in giving it to the baby is not to supply nourishment but to encourage chewing.

About the eighth to the tenth month the diet of the baby should be somewhat as follows:—

First Meal (7 A.M.): Six or seven ounces of milk with one ounce of water, half an ounce of cream and one dessertspoonful of milk sugar. A crust.

Second Meal (10 A.M.): Six ounces of milk thickened with some cereal or proprietary food, *e.g.* Robertson's Patent Barley, Farola. Oatflour, Mellin, etc.

Third Meal (1.30 P.M.): Same as first.

Fourth Meal (4.30 P.M.): Same as second. (It is often an advantage, however, to vary the food used to thicken the milk).

Fifth Meal (7.30 P.M.) Same as first—without crust.

In addition, a little fresh fruit juice suitably sweetened may be given occasionally—one teaspoonful at a time, and if the child is thirsty he may be given a little water between meals.

The bottle at this time should be gradually discontinued.

In the case of some babies it will be found that six meals are called for in the course of the day, but, as a rule, five are entirely sufficient.

By about *the close of the first year of life* the daily food should consist of two pints of milk—or rather less—fine oatmeal porridge, or some of the foods previously mentioned, or bread soaked in milk, at two of the meals—a crust of bread or a small piece of toast or hard biscuit covered with a little butter at any meal, and at the meal in the middle of the day, he may get occasionally a little beef-tea, or plain chicken broth with a lightly boiled egg beaten up in milk or mixed with a little fine breadcrumb.

From the twelfth till the eighteenth month, thin porridge and milk, or bread in milk forms a suitable breakfast. For the second meal, a cupful of milk with a buttered crust will suffice. The third meal consists of either plain soup, with a thin half slice of bread and butter and a drink of milk; or a lightly boiled egg, a tablespoonful of mashed potatoes and butter, and a drink of milk; or, a little gravy and bread-crumbs, with a milk pudding. The fourth meal consists of a drink of milk and a buttered crust, and the last meal of the day, of milk thickened with a cereal.

After the eighteenth month four meals a day are sufficient. Minced meat, fish, and well-cooked green vegetables are gradually added to the dietary, and should be given at the meal in the middle of the day.

Fruit is also good for him during the second year—

such as stewed prunes, or the pulp of a roasted apple. At this time he is developing rapidly in every direction, variations in his food are of marked advantage, and it is unwise to limit his diet altogether to those articles of food which are most readily and fully digested.

In early childhood he should not be given alcohol, tea—except as a pretence—coffee, salad, pickles, or any such condiment, salted food, canned food, raw vegetables, pastry, nuts—unless ground—or raw or unripe fruit.

Even after the third year of life, four meals daily are often advisable, and milk food still forms the bulk of the food supply. Fat continues to be an important article in the diet, and care must be taken to see that the child receives a plentiful supply of milk, butter, eggs, and fatty food generally. He develops a strong taste for sugar, jam, and sweets of all kinds; and, though this is natural, it must not be favoured to the extent of displacing, to any degree, fat in the dietary. Sugar, sweets, and allied foods, when taken in moderation, at meals, and, more especially at the end of a meal, are, however, good for the child.

When he commences school life he should not be allowed to do mental or severe physical work in the morning on an empty stomach, or at any time immediately after a full meal.

LECTURE III

HYGIENE

The Preservation of Health and the Prevention of Disease in Childhood

THE subject of heredity is one which has recently been occupying a great deal of attention from many scientists. Many facts have been discovered, and many theories propounded. With regard to the laws of heredity, much has been learned respecting a variety of low forms of life. But so far as they apply to man most of these laws are as yet extremely indefinite. And this is specially true as regards disease conditions. There certainly are a few diseases about the transmission of which from generation to generation it is possible to speak fairly dogmatically, but these diseases are very few in number. Every one knows what an important thing a good heredity is, but a bad or doubtful heredity can be taken too seriously, and its far-reaching effects considered too all-important.

Since we have known of bacterial life and the

process of bacterial infection, we have come to recognise that, though some people may be more prone than others to a particular infection, it is extremely rare for them to be born doomed to fall victims to this particular disease. Much depends on their surroundings after birth, and a suitable environment may keep at bay and overcome a dread heredity.

What is true of bacterial disease is largely true also of most diseases which are not at present known to be due to bacteria. Heredity may produce a predisposition, but environment may check its development. Galton, more than twenty years ago, proved that children are, on an average, more mediocre than their parents—less distant from the ordinary normal; and Professor Thomson has said, "If there is little or no scientific warrant for our being other than extremely sceptical at present as to the inheritance of acquired characters—or better, the transmission of modifications—this scepticism lends greater importance than ever, on the one hand, to a good 'nature,' to secure which is the business of careful mating; and, on the other hand, to a good 'nurture,' to secure which for our children is one of our most obvious and binding duties."

It is not uncommon to be too fearful of heredity in disease, and to ascribe many childish troubles to

heredity which should more rightly be put to the account of ignorant or careless methods of rearing.

One does not minimise for a moment the value of a good healthy heredity, but in early life we are justified in regarding optimistically a doubtful heredity, and, while reasonably careful in our methods of nurture, should be slow to ascribe any morbid signs to heredity until we have thoroughly proved they are not due to faulty upbringing and hygiene.

It is important to remember that health may be considerably affected by mental impressions, and that this is specially the case in childhood.

At this period of life the brain-cells are growing and developing quickly. These brain-cells are largely responsible for the health—physical and mental—of the child, and the future man or woman, and their growth and development are markedly affected by the impressions conveyed to them.

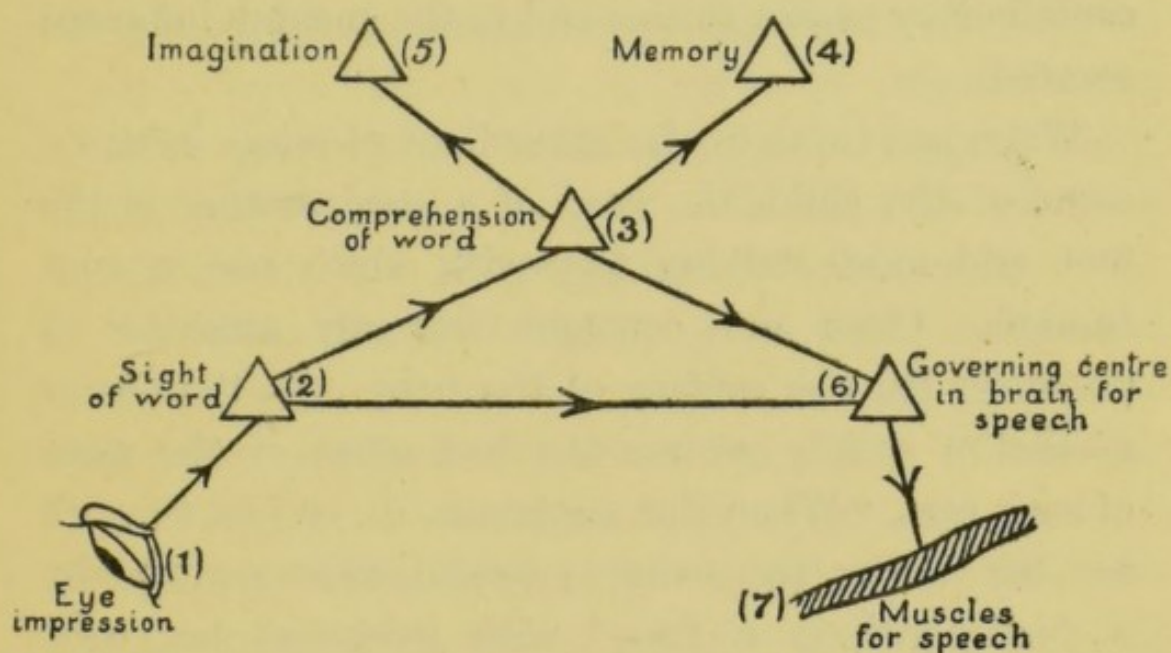
Consider for a moment the simple process of intelligent reading aloud, and glance at this rough scheme of some of the complex nervous mechanism necessary for it (*see* p. 41.)

Imagine that each of these triangular marks represents a nerve cell which has the function marked beside it.

At birth all these nerve cells exist, but undeveloped, shut up each in its own group. With the passage of

time, and with suitable environment and nourishment, each of the cells grows and sends out branches which come into close connection with branches from other cells and groups of cells, and so the transmission of a message all along the line is made possible.

Bright light, sweet smells, musical sounds, pretty



sights and happy surroundings assist good development, while depressing, ugly, and vile surroundings are distinctly harmful.

Education, in early childhood, depends largely on the surroundings of the child. Beauty, country scenery, pretty pictures, cleanly surroundings, tidiness in dress, modulated language—all, in their own way, are of benefit in his proper development.

The subject is a very practical one for all classes

of society. Look at the developments in town-planning, the extension of garden spaces in the slums, the success of the boy-scout movement, and the enthusiasm for health visiting. In one and all of these directions efforts are being made to raise the people to a higher standard, and not the least of the contributory causes to this end is the mental influence exerted.

When one turns to the immediate physical environment of the child, the need of a good mother is the first and most striking fact with which one is confronted. Close and constant womanly attention is necessary for the welfare of the baby. In the poorer classes of society we see the bad effect of the want of such care. When the mother is ill, or has to work for her living, the baby is looked after perhaps by a young girl, or a friend with babies of her own. In either case the baby may be fed correctly, and kept reasonably clean, well-clothed, and often in the open air, and yet it does not thrive satisfactorily. It misses the necessary nursing, movement, variation, which can only be given by one who has practically all her time to devote to it.

In certain circles of the upper classes nursing faults lie in other directions. The baby sometimes possesses, in addition to his mother, several nurses of his own. They may be hospital-trained, or they may not. One

of them probably is. These important persons have superficial, but very definite, ideas regarding the care of an infant, and it is wise to make certain that with a variety of attendants the baby does not suffer.

Cleanliness in body, dress, and surroundings is of the utmost importance, and is necessary, not only to preserve in a healthy condition the surface of the baby's body, but also in order to maintain his general good health. He should be bathed daily, and, as a rule, once daily is sufficient. In place of a second bath he is sponged with warm water.

The bath should be given in a warm room, and not sooner than one hour after feeding. The head and face are washed and dried first. Then the infant's body is soaped, and he is put in the bath with his body well supported by the hand and arm of the nurse. Very little soap is required, and the bath should be given quickly. The body is then dried rapidly with a soft towel, but with very little rubbing, and plain Fuller's earth may be applied to parts of his body. The temperature of the water in the bath should be between 95° F. and 90° F. for a baby under six months of age, and for older babies it may be gradually lowered to 85° F.

As the child grows older a cold morning bath, or at least a douche of cold water over the neck and back while in warm water, is usually advisable.

It is sometimes considered advisable to give a baby a *cold bath* in order to reduce a very high temperature. When a doctor orders such a bath, he wishes the baby to be placed in a bath rather below the ordinary temperature of the body. While the baby is in the bath cold water is added, and the temperature of the bath gradually reduced. Such a bath must never be given to a sick child except under the strict orders of a doctor.

A *warm bath* has a soothing effect in many conditions. A child should not be kept in it longer than fifteen minutes.

When a child is in a collapsed state a *hot bath* acts as a stimulant, if he is not kept in it longer than three or four minutes. If *mustard* is added to the hot water the bath is still more stimulating. One or two tablespoonfuls of mustard may be added to the water of the bath, and the child should be kept in it only about two minutes, or till the arms of the attendant begin to tingle.

Napkins should be immediately removed from the nursery when soiled or wet, and should be washed as soon as possible. They should be very thoroughly rinsed to prevent irritation of the skin. Irritation of the skin is specially apt to occur over the buttocks, as the parts are so frequently wet and soiled, and so the utmost cleanliness is desirable. Chafing of the skin

may also be caused by using too strong soap, or by omitting to dust folds in the skin, especially in very fat infants. When such chafing has occurred, no soap should be used with the bath, but a little wheat bran should be placed in it in a bag of coarse muslin, or a little common salt added to the water. After bathing a simple dusting powder, such as starch (two parts), and boracic acid (one part), should be used.

Skin troubles in early infancy are, not infrequently, started by excessive perspiration due to over-clothing.

The most essential points in the clothing of infants are that the clothes should fit and cover the body snugly, but at the same time should be moderately loose, and not so tight as to interfere with the free play of muscles, the free movements of the chest in breathing, or press too firmly on the stomach. They must be sufficiently warm, but at the same time light. A broad flannel band round the abdomen is advisable during the first six months of life, and may often be continued longer with advantage. Woollen underclothing in winter and cool weather, and gauze flannel in summer weather should be worn. Changes in temperature should be met by changes in the outer garments, and it is important that the cool of the morning and evening should be guarded against. The baby must be kept warm, and attempts to harden him by under-clothing him are

sheer folly, but at the same time it is important to guard against over-heating from excess of clothing.

In the case of older children, unless the weather is very hot, no advantage whatever is gained by permitting them to go about with their legs bare.

The infants of the poor are usually over-clothed. Even when the mother is insufficiently clad, the baby is wrapped round and round with shirts, petticoats, binders, and shawls of all descriptions. The prospects of bathing in such cases are often problematical, and one of the most serious dangers to the health of such an infant is his mass of dirty clothes.

When in his cot also the young baby should not be too closely or too heavily covered, and his position should be changed occasionally during sleep. Older children tend to kick off the bedclothes during sleep and leave their legs uncovered, and care must be taken to see that this is remedied.

The temperature of the nursery should not be allowed to go above 70° F, and for the first two or three months of life it should not be below 65° F. Later, a lower temperature is permissible, and after the first year it may be as low as 45° F, at night.

Fresh air is very necessary for the baby, and the nursery should be aired thoroughly twice daily, while he is in another room.

The new-born baby must be guarded against

draughts, and, except in very hot weather, the window of the nursery should not be left open at night until he is about two months old. During the day it is an advantage to have it open a little at the top when the weather is not extremely cold, the nursery is reasonably large, the baby kept out of a draught, and the temperature of the room well maintained.

In summer weather the baby may be taken out for the first time ten days or a fortnight after birth, but in winter not until he is about six weeks old, and only then if the day is pleasant and not windy. Even in cold weather, however, the baby may receive an airing in the nursery when a month old. He is dressed as for going out, placed in his crib, and the windows opened wide for about ten minutes. The length of time can be gradually increased as he grows older.

When he begins to go out, he should not at first be out longer than fifteen or twenty minutes. He should not be taken out in very cold weather, or in very windy weather, and he should be guarded against the direct rays of the sun. After the first few months of life are past, the more fresh air a young child gets the better, so long as he is carefully clad.

Children living in the country naturally have opportunities of breathing a fresher, purer air than those in a town, but open windows day and night for

healthy children living in town and past early babyhood are extremely important.

The temperature in different parts of the country, and at different seasons of the year, varies very widely, but fresh air in abundance is necessary for healthy childhood. Our climate is uncertain, but we are fortunate in that we have no very severe heat, and no very severe cold, and children can obtain exercise in the open air throughout the year.

In many ways school-life is associated with danger to the child. At school he is specially apt to catch the infection of various infective fevers, skin conditions, and so forth, and quite apart from infection, school may strain him severely—mentally or physically, or in both directions. Arrest of development, malnutrition, or loss of control of the smaller muscles may result. In the poorer classes of society the dangers of school life are often less imminent than those of home life, but in the upper classes it is often extremely difficult to gauge the relative value of the two. The maintenance of good health is the first desideratum at this period of life, but even for rather delicate children school life is usually of the utmost value in every way.

It is unnatural for a child to be kept sitting for long at work, but discipline and obedience are the most important educational aims at this period of life, and play and athletics in moderation serve to

counterbalance the dangers. Such games as football and cricket are not only health-giving, but as corporate games, as games in which the success of self is necessarily subservient to the success of the side or team they serve also to develop discipline and unselfishness.

To maintain health, digestion must be preserved and feeding carefully supervised.

Most diseases are extremely complex in origin, but it is useful to recognise two important methods by which disease may originate. The great variety of digestive disorders, many forms of headache, cough, sleeplessness, langour, and such diseases as rickets and scurvy are due to improper feeding. They are dietetic in origin, and consist in disordered chemistry of the cells of the body. Such conditions may lead on directly—may predispose—to the second form of disease, that which is due to the invasion of the tissues by a microbe, it may be by the microbe of influenza, of tuberculosis, of pneumonia, or many others.

Now food is composed of five substances, the amount of each substance varying in the different forms of food. These substances are the same as those which go to make up our bodies. They are proteins, carbohydrates, fats, salts, and water.

Protein is the substance which goes to form and to repair tissue. It is more abundant in animal than in vegetable food. It occurs in greater amount in

cow's milk than in mother's milk, and, as it is the substance in milk which forms a curd in the stomach, its abundance in cow's milk is often one of the difficulties in feeding a baby by the bottle.

As children are always growing, they need plenty of protein in their food. They should obtain this during the first few years chiefly from milk, cream, oatmeal, eggs, fish, and only occasionally — once daily—from the meat of animals.

Sugar and starch are the two chief forms of *carbo-hydrate*. These substances occur more abundantly in vegetable than in animal food. Milk contains a good deal of sugar but no starch, and starch is, consequently, not good for a young baby. Barley water and many patent baby "foods" contain starch.

Carbo-hydrate is a valuable source of energy, and is usefully given to a young child after weaning, in the form of bread, biscuits, potatoes, sugar, and fruit. Children are usually fond of sweets, but much carbo-hydrate in the food is apt to produce indigestion and various forms of ill-health.

The third food substance mentioned is *fat*, and the chief sources of fat are cream, butter, eggs, oatmeal, bacon, suet, and meat fat. Fat is the chief source of body heat, and it is very important that it should occur in plenty in the food of young children.

Milk or cream, it will be noticed, has been men-

tioned as containing a considerable amount of all the three food-stuffs—protein, carbo-hydrate, and fat—and milk must be regarded as the most valuable food in early childhood. It contains also in abundance the last two food-stuffs—salts and water.

Salts occur in sufficiency in all ordinary food.

A plentiful supply of *water* is most important, and at any age an occasional drink of water between meals is good for the health.

In addition to proper food and regular meals, it is important that the teeth should be properly cared for. The mouth should be kept clean, and decayed teeth attended to by a dentist. Otherwise indigestion is bound to result, and infection is likely to occur from a sore mouth (*see* plate II., fig. 11).

By *infection* we understand invasion of the body by microbes. The skin, and such cavities of the body as the mouth and nose are covered by large numbers of microbes, and there are also large numbers floating about in the air. Most of these, however, are harmless. Certain varieties of microbe produce certain forms of disease, and it is important that these varieties should be kept at a distance (*see* plate I., figs. 7, 8, 9).

The manner in which they are apt to produce infection is (1) by breathing—inhalation; (2) by eating and drinking—ingestion; (3) by direct contact; and (4) infection of a person from himself.

(1) *Infection by Inhalation.*

Most microbes can live for a long time outside the human body, and if they become dried in the air may be inhaled by breathing. By this means they are apt to be deposited on the tonsils and the back of the throat, or they may pass further in the air tubes into the bronchi, or lung. The immediate surroundings of the child naturally influence very largely such infection through breathing.

Through coughing, sneezing, or even talking, microbes may be spread, and if they are inhaled by the child such diseases as influenza or tuberculosis may be contracted.

It is important that the attendants and dwellers in the home of the child, and especially of the infant, should be healthy.

In every case there should be a constant home supply of pure air; the windows should be kept open.

When there is a sick person in the house, any abnormal discharge or sputum must be immediately disinfected.

Owing to unavoidable crowding in small houses, infection spreads very readily, and so we find many infective diseases very much commoner among the poor than among those who are better housed.

(2) *Infection by Ingestion.*

Microbes in the air may cause infection through breathing, and, by contaminating food, may cause infection through eating. They may also be present in the food itself, and so cause disease—for example, typhoid bacilli in water, or tubercle bacilli in milk.

It is specially important to remember that cow's milk may readily carry disease germs.

Milk often comes from diseased cows, and already contains microbes when drawn from the udder. During the process of milking, carrying, storing, and delivering, millions more are usually added to it, and, unless care is taken, may continue to be added to it in the home.

It is therefore necessary, as a rule, to scald all milk which is to be drunk by young children, and, after scalding, this milk must be carefully guarded from further contamination.

(3) *Infection by Direct Contact.*

This occurs when microbes are directly transferred through contact with some diseased tissue or sore.

Thus, the eyesight of many babies is permanently injured through infection acquired from the mother at the time of birth, and it is always extremely

important that the eyes of a new-born baby should be kept carefully clean.

They should be cleansed with a piece of soft linen soaked in a lukewarm solution of boracic acid, and if any pus appears in the eyes, this should be done every hour. If the lids stick together a little simple vaseline may be placed on them at night. If the condition does not at once respond to such treatment, a doctor should be seen (*see* Lecture V., p. 74).

Many suppurating conditions of the skin are also spread in this way, and also such skin diseases as ringworm.

(4) *Self Infection.*

By rubbing, or scratching, or sucking, the child may spread infection from one part of his body to another.

Common Antiseptics.

Boracic acid is a mild, safe antiseptic occurring as white scales which are readily soluble in water. A saturated solution is generally used, and can be safely applied even to such a tender part as the eye.

Carbolic acid—a much stronger antiseptic. It is used only in very dilute solution; it should never be applied to the eye, nor over a large surface of a child, and should never be used as a poultice.

Corrosive sublimate — perchloride of mercury. A very powerful antiseptic, which should only be used under medical advice.

Condy's fluid—potassium permanganate. Dark red crystals, which are employed dissolved in water. Except under doctor's advice it should be employed only in dilute solution, and for external application. The solution should be made fresh just before use.

LECTURE IV

INFANTILE MORTALITY

THE chief needs of a little baby are :—

1. Close womanly attention.
2. Suitable food.
3. Fresh air and warmth.
4. Avoidance of infection.

In some parts of the country—and especially certain districts in large cities—about one in three of all babies that are born die before they are a year old, and the other two often grow up diseased, incapacitated, and consequently heavily handicapped. Something must be wrong! These babies are, for the most part, healthy when they are born: why do so many die early?

The answer is in two words—poverty and ignorance.

The first need of a baby is, as has been said, close womanly attention. The proper care of a baby is full work for a woman. Bathing, feeding, clothing, nursing, and general tending require the setting aside of a very considerable amount of time. It is absolutely necessary

that this should be done if the baby is to have the best chance of thriving, but in poor families it is often utterly impossible that it should be done satisfactorily.

A baby can be over-nursed, but among people of the poorer class such is not the danger. It is unnatural for a baby to lie long quiet, or to lie long at all in one position. If the duties of the mother or guardian are such as to render it impossible to give the infant the handling and nursing which it naturally craves, the danger is considerable of pacifying the baby by other, and, consequently, unnatural and harmful methods.

The chief and most common danger is that of giving the baby something to drink at odd intervals.

The manner and methods of feeding in infancy are very closely associated with the degree of health, and the very high death-rate among the babies of the poor in towns.

The proper food for the infant is the milk of his mother, and the want of mother's milk is a very serious disadvantage indeed. But many mothers do not suckle their infants, and among the poor the following are the chief reasons for this state of affairs:—

Firstly.—Work. Many of these women have to work in order to live. On their shoulders largely lies the responsibility of providing money for the support

of themselves and their families. The baby is, of necessity, separated from them for a large part of each day, and suckling is utterly impossible.

Secondly.—Ill-health. Among women of this class an attempt at suckling is the usual practice. But in a certain number of cases the attempt is unsuccessful, the quantity of milk in their breasts gradually or rapidly diminishes, and finally disappears.

Thirdly.—Bad advice. In no small number of cases the baby is deprived of his mother's milk, because the mother has acted on ignorant or ill-considered advice. The death of the child may lie at the account of such an adviser, and in every case, without exception, the authority of a physician should be obtained before weaning a baby during the first eight months of life.

Fourthly.—Illness of the baby. This illness may be real or it may be imaginary. In either case weaning is not usually the proper method of procedure. The mother may think the baby is not thriving satisfactorily, or he may actually be in a weakly condition: she comes to the conclusion that her milk "is not strong enough," and she weans the baby.

This process of reasoning is usually quite wrong.

In some cases the milk of the mother is poor in quality; she herself requires treatment, and the baby may need some form of nourishment in addition to her milk.

But in most cases the baby is not thriving, because he is not being fed regularly. Practically always, in these cases, he is put to the breast too often.

When breast-milk alone is not sufficient for the baby, or when the mother cannot be with her infant to nurse him as needed, at some of the feeding-times he must be hand-fed. Many mothers, however, continue a modified form of this mixed feeding far too long. They give the baby the breast occasionally, and let him have all sorts of other food as well, and they continue this for perhaps eighteen months or two years. It is neither good for the mother nor for the baby that he should be suckled, even partially, after the close of the first year.

At all times, and whatever the form of nourishment be, regularity in feeding-times is most important. Irregularity is certain, sooner or later, to produce indigestion and malnutrition. The stomach requires time to digest one meal before it is prepared for the next, and the baby must not be allowed to lie with a bottle beside him, from which he drinks a little every now and then. It is common to be told that a baby is being fed regularly every two or three hours, as the case may be, when the truth is that every two or three hours the baby is given a bottle which lies beside him, and from which he drinks at intervals until the time for the next bottle

arrives. The bottle should be given for a definite period (at most fifteen minutes), at fixed intervals of time.

It is very important for the infant that he should be given suitable food. If, however, he does not obtain his mother's milk, the problem is often a difficult one. Cow's milk is comparatively dear—too dear for some families. The baby, therefore, probably gets some weak tea, soup, "saps," and a hundred and one other things which vary according to the household. The money is not forthcoming for milk for the baby. Where there is a little more money, and when the mother has an inkling that the baby needs more milk, a can of condensed milk is probably got for him on occasions. In all these cases the mother is unable to provide a suitable food for her baby, even if she knew what was needed. The baby almost inevitably develops indigestion; attempts at soothing are made by means of almost constant feeding, and the baby's system is thoroughly undermined. In addition to advice as regards the feeding, such a mother must have assistance in the form of money or milk if it is to be possible to feed the baby properly.

When there is sufficient money in the household to buy milk for the baby, the common errors in feeding are:—(1) That he is fed at irregular intervals,

and almost always too often. (2) That he is not fed chiefly on milk. Patent foods are the cause of a great deal of sickness in little babies. These foods differ very much in their composition, and though a few of them are suitable for young infants, most of them are only fit for babies who have cut their teeth. They, however, appear to be used more or less indiscriminately by poor mothers. (3) That the baby, though fed chiefly on milk, receives other food. (4) That the milk used is unsuited to the baby. The milk may be mixed with too little water, or with too much—usually too little. It may be sour, or dirty, or contain living microbes. Milk, as bought at the dairy, always swarms with microbes, and must be scalded, and carefully bottled and guarded before it is used. But the milk is often simply warmed, with the idea that it is then sterilised, left in an open dish, and given to the baby in a bottle with a long rubber tube; when such is the procedure, the milk is a very dangerous food.

Closely connected with proper feeding and with cleanliness is the nature of the house.

Now, poverty, as one of the great causes of infantile mortality, is closely associated with the subject of housing, and in this connection figures are quoted from a recent report of the Medical Officer of Health for Edinburgh.

Of houses in Edinburgh with a rental over £50 the great majority are in the wards of Newington, Morningside, and Haymarket, and in these three wards the infantile mortality rate was, in 1908, respectively, 54, 38, and 102 per 1000 births. In the slums, on the other hand, the figures were very much higher. Thus in certain districts we read the rate was 232, 216, and 214 per 1000 births. In one street it was 286 per 1000 births, and in the Cowgate it was 344 per 1000 births.

In poor houses it is obviously very difficult to avoid contamination of the milk; and infectious diseases are, in such houses, very readily spread. The people are massed together in a small space; infection passes easily from one to another. The baby catches the sickness, and has little power to withstand it. Fresh air and open windows are therefore always advisable.

Much is being done, and much can be done, to attempt to check this unnecessary loss of life. The agencies working towards this end are numerous, but on the whole co-operation between them has not heretofore been strongly marked. Whole-hearted co-operation is a *sine qua non*. Nearly all these mothers are anxious to do the best possible for their children, but they lack requisite knowledge, and they often do not realise their ignorance. Knowledge has to be imparted to them, and imparted tactfully, carefully,

and repeatedly. Money is usually wanting in the household. Is the family deserving of help or is it not? If it is not deserving, and the baby is suffering, the case is one for the Society for the Prevention of Cruelty to Children. If the family is deserving, where can help be got, and in what form is it to be given? The amount of money spent by various charitable organisations connected with baby life is at present enormous, overlapping frequently occurs, and a thorough sifting of the deserts of any family is often conspicuous by its absence. Closer co-operation would certainly mean the saving of money; and money occasionally is absolutely essential if the baby is to have any chance of a healthy existence. But even when there is no absolute penury, the baby imperatively demands a good, safe food—good, safe milk, and cannot get it.

Breast-nursing is not entirely a thing of the past, but is a natural function which, even at the present day, can be very largely developed by judicious medical and social measures. We do not want bad, cheap milk for the baby. We want, above all things, breast-nursing, and where that is impossible, good, safe milk. Costly milk depôts with elaborate technique are entirely uncalled for. Sound milk, securely bottled in small quantities is entirely sufficient, capable health visitors under direct medical supervision are the

guiding force to superintend the details of feeding, and the money at present loosely spent in ill-directed effort would be more than sufficient to improve to a vast extent the feeding of the infants of the deserving poor.

LECTURE V

THE PECULIARITIES OF DISEASE IN CHILDHOOD

A CHILD is not merely a little man or a little woman.

A healthy child has characteristics and peculiarities which are his simply because he is a child. The shape and structure of his body are different from those of an adult, and the manner in which the variety of cells in his tissues act and work is also different. Both in structure and function he is a being apart.

At this time he is growing steadily. Almost all his tissues and organs are developing rapidly. His powers of various kinds are gradually increasing, and at different ages his growth and development are most marked in special directions. As he grows older, also, his immediate and his general surroundings vary and widen considerably. At first he is constantly with his mother or nurse, and his horizon is very limited. Later, he becomes more independent: he learns to walk, and opportunities for mischief greatly increase. He begins to see and hear with understanding; he passes through the trying time of cutting his teeth, and he shows implicit belief in his newly-acquired

biting capacity, and in the strength of his digestive organs, by manfully putting anything and everything within reach into his mouth. He commences to mix with his fellows; he arrives at school age, and becomes a member of a large childish community which has many distinctive characters. He passes on through the closing years of childhood till the dawn of sex begins to lighten upon him, and to bring about radical changes in his nature and in his physical state. For some years he passes through this transition stage; he becomes adolescent, and the child of yesterday is a child no longer.

In the course of his development certain periods may with advantage be definitely distinguished.

For the first nine months of life he is, or should be, nursed at his mother's breast. This is the very distinct period of life as a suckling. From the age of nine months until he is two years old is the period when the first teeth are being cut. This is often a trying time; and although teething is a natural process, yet it is often associated, even in the cases of apparently perfectly healthy babies, with much discomfort and, not infrequently, with symptoms which may cause suspicion of grave disease. From two to five years children are in what may be termed the run-about period. They are now strong on their feet, are more independent, and have passed the period of

babyhood. The years from five to twelve we may call the school age, as at this period school, and all that the term implies, exerts a very important influence on the health of the child. After twelve years of age we come to the time when puberty may commence, the period of puberty and adolescence.

It is impossible to separate the medical care of the child from his life as a whole; and all the factors which influence him at any particular time, and all the characteristics of his particular age, have to be broadly recognised when dealing with the subject of the preservation or restoration of his health.

Certain diseases are unknown in childhood, and certain diseases common to any age occur in a peculiar form at this period.

There are, again, diseases which are peculiar to childhood—and more, there are diseases peculiar to every period of childhood. Such diseases as rickets and infantile paralysis, for example, only occur at certain periods of life. In childhood, senile changes, largely brought about by tissue wear and tear in the course of a long life, are conspicuous by their absence, as usually any injurious effects from such substances as alcohol or tobacco. Disease tends to be purer and simpler than in later life.

The onset of disease, again, is often characteristic of the age. Acute disease is apt to set in violently.

In the early years of life fits often occur at the commencement of an illness, and do not necessarily mean that the child is dangerously ill. Fits also occur with disorders of digestion, teething, worms in the intestine, and a great variety of minor troubles; and, although they may be a symptom of deadly disease, yet, when they occur at the onset of an acute disease, their significance is usually no greater than that the child has suddenly taken ill. The temperature at the onset of disease often mounts rapidly and very high; and here, again, the importance of the sign is lessened by the fact that the extent of the divergence from the normal is largely a measure of the general instability of the regulating bodily mechanism at this age, rather than of the actual severity of the oncoming disease.

The distribution of the disease also varies markedly with the age of the patient. In childhood we find that many infections, such as those due to the microbe of pneumonia, tuberculosis, or some of the microbes which normally live in a healthy intestine, attack parts of the body which are very rarely attacked in later life; and, consequently, that diseases due to infections by such microbes vary widely in their severity, in their locality, in their symptoms, and in their treatment. But a further characteristic of disease at this time is that wherever, and however,

an infection commences, it tends to spread throughout the body to a much greater extent than is the case among adults. A baby is comparatively easily overwhelmed by an infection: he goes down quickly, his powers of resistance diminish rapidly, and the disease becomes widespread among his tissues. But if he can tide over the attack his powers of recovery are wonderful. Youth is now on his side, and the rapidity of his progress towards good health may be positively astounding.

All the peculiarities of disease in childhood affect the treatment. His powers and his weaknesses are peculiar to his age: the disease is largely peculiar to it, and proper treatment is bound to be so also. The digestive powers of his age must influence dietetic treatment. The dose of many medicines varies greatly according to age, quite apart from size. Little children require even larger doses than adults of some medicines, while other drugs are dangerous to give at all. In every respect the treatment differs considerably from that of an adult, and as a consequence of this we find such institutions as special hospitals for children.

The peculiarities of infection in childhood are largely due to special characteristics of the child. Thus, in connection with the various orifices of the body, the secretions and excretions are not under the control

which exists in later life, soiling of the surrounding parts constantly occurs, and careful nursing is needed to prevent irritation and infection.

In connection with the mouth, we have to remember that the saliva which is naturally swallowed and passes into the stomach, often drips from the mouth of the young baby. In the older child and adult the whole of the saliva passes to the stomach, it serves to wash out the mouth, and to carry the microbes from the mouth into the stomach. But in the first few months of life there is very little saliva, and so microbes in the mouth have a greater chance of remaining there, causing infection and producing sores.

When the microbes are carried by the saliva into the stomach, they are, in older people, mostly killed by the acid (hydro-chloric) secreted in the stomach. But in infants very little of this acid is secreted, the microbes have a good chance of escaping with their lives, and may pass from the stomach into the intestine.

The death-rate among babies under one year of age is very high. A great many of these deaths are due to disorders of digestion, and from what has been said above, it is clear that during the early months of life there is special danger in microbes passing from the mouth to the stomach, and that they may pass into

the intestine alive, and so cause serious trouble. Clean food is therefore very necessary.

Then, again, the skin of young children is very delicate. It is easily injured or broken, and so rendered liable to infection. And this is not only true of the skin, but of all the surface layers of the body. The eye is specially delicate, and the cells lining such structures as the digestive and breathing (respiratory) passages, are all specially friable.

We see, therefore, that the armour of the child against infection by microbes is not very strong. But how about the powers of resistance after the armour is pierced, after the skin or surface layer is broken, and microbes have forced an entrance?

When this has occurred the microbes pass in the lymph channels to the lymphatic glands. Thus these glands are specially liable to be infected in childhood. Now, in early childhood these glands are naturally working specially hard, and any tissue which is working hard tends to be easily taken in the flank by the enemy. Thus, again, these glands are under a disadvantage.

The tonsil is one such gland often infected, and the glands in the neck are also often attacked.

The microbes may pass no further than the glands. The cells in the gland may prove too strong for the microbes and kill them off, or, on the other hand, the

microbes may prove too strong for the cells (*see* plate II., fig. 10). A great deal depends upon the general health and strength of the baby or young child, and here again we have to note the peculiarity that a baby or young child is apt to lose strength very rapidly. Fortunately, however, while this is so, it is also true that a child, as compared with an adult, has a much greater power of recovery.

Most babies are born healthy, but a baby may, at birth, suffer from a disease which it has caught from its mother, or it may be injured at the time of birth. Some babies are born mal-formed owing to causes which we cannot discover. The malformation may be external and obvious, or it may affect some internal organ. Malformations of the heart are not very rare. Children suffering from them may, in some cases, pass through life almost unaffected, and sometimes unaware of the fact that anything is wrong. But in most cases the condition is a serious one. The child tends to be bluish in colour, and to get very blue and breathless on exertion and sometimes after meals. The extremities are usually cold, and the tips of the fingers are enlarged and rounded—what is known as clubbed (*see* plate II., fig. 12). In such cases the child seldom survives puberty. The child, again, may be an idiot from birth, and this idiocy may be present quite apart from any obvious bodily abnormality. He

is an idiot, and that is all we can say. We do not know how or why the condition has come about, and very often it is only as he grows older, and we notice that he does not develop like an ordinary child, that we can definitely decide that he is an idiot. But short of idiocy, impairment of mental ability is often brought about by hæmorrhage taking place within the skull owing to difficulty and pressure at the time of birth. The clot of blood produced by the hæmorrhage presses on the brain, prevents its proper development, and consequently the attainment of full mental power, often causes fits soon after birth, and produces a condition of partial paralysis of some or all of the limbs, with a tendency to permanent contraction of the muscles (*see* plate III., fig. 13). But the hæmorrhage, instead of being inside the skull, may simply be under the soft tissues of the scalp and outside the bone of the skull, and, in such cases, is of no serious importance. Here the child is born with a big soft lump on one side of his head which will gradually get quite well, and should be left alone. A difficult labour may, however, be the cause of various forms of paralysis in the baby, but, apart from that already mentioned—a hæmorrhage pressing on the brain, the probability is that complete recovery will occur. Sometimes one side of the face is paralysed and sometimes one arm (*see* plate III., fig. 14), but either form usually recovers in time.

There are two affections of the new-born baby which it is important and necessary to mention. These are syphilis and gonorrhœa, known as venereal diseases, because among adults infection is commonly conveyed by sexual intercourse. When a mother suffers from gonorrhœa—a condition which produces a purulent discharge from the vagina—the risk is great that the eyes of the baby will become infected at the time of birth. The proper treatment has already been noted (*see* Lecture III, p. 54). If the parents, or if either of the parents, suffer, or have suffered, from syphilis, the baby may be born already infected with the disease. Many such babies are born dead, but very often the baby at birth, and for the first month or so, seems very healthy. During the second or third month of life, however, he shows various signs of illness. A rash of unusual colour appears—a colour varying from a purple blue to a brownish yellow. This rash may be very scanty or it may be widespread, and is more marked on the legs, arms, and head than on the trunk. Scales of skin are seen to be peeling off the soles and palms, but there is no itchiness. He has a constant snuffle, and there is much discharge from the nostrils which is often tinged with blood. He also suffers from cracks and sores about his lips and mouth (*see* plate III., fig. 17).

This baby is a danger to all attendants except his mother, because the sores on his body and the discharge from his nostrils contain the bacteria which cause the disease, and, if there be a crack in the attendant's skin, infection may occur by touching these sores or the discharge. The mother, however, cannot take the disease from the baby. These babies are usually very difficult to rear, and suffer from weakness of all forms; but if the condition is recognised early, medical treatment is often extremely satisfactory. The sooner a baby with suspicious symptoms is seen by a physician the better.

During the early months of life, the chief troubles the baby is subject to are those affecting his digestion and his breathing system—his bronchial tubes and lungs. Whatever ails him, he is apt to lose flesh and strength rapidly. Therefore no illness, however slight, should be disregarded. But the most important disorders during the early months of life are those connected with digestion, because they are very common, we can prevent them by proper feeding, and we can usually cure them by proper treatment, when they are seen early. He has, as yet, suffered from no form of infectious disease, and so is very liable to become infected. When infected, the disease tends to spread widely throughout his body. It is therefore important that he should be guarded, so

far as possible, from infection, and specially that he should not come into close contact with tuberculous persons.

During the few days after birth, it may be discovered that the baby has a swelling of the breast. This swelling is associated with the secretion of milk in the baby's breast. It should not be rubbed, or an abscess may form, but the doctor's advice must be asked regarding its treatment (*see* plate V., fig. 23).

During the early months of life the baby has little control over the action of his nervous system. His brain tends to act unsteadily, and its actions are much affected by the general condition of his body. Thus, if his digestion is out of order, or if he is only slightly ill, he may even take fits. A baby suffering from a fit, or convulsion, is a very trying sight for a mother or nurse, but the condition is not one which is usually dangerous to life at the time. The fit may be very slight, or it may be very well marked. The baby may simply roll his eyes, stiffen, and give a kind of shudder, or he may stiffen all over, turn his eyes upwards till only the whites are visible, and then begin to twitch violently all over. His colour changes, and he may become quite death-like. Do not be in a hurry to do anything. Prepare a hot mustard bath, and if the convulsions do not begin to improve in a few minutes, or if the child becomes

very pale, blue, and cold, place him in the bath for a minute or two.

Short of actual fits, many nervous symptoms evidenced by twitching of muscles may occur. The muscles of the face may twitch, or some of the muscles of the hands and feet may be kept contracted, and the hands and feet are consequently held in an unnatural position (*see* plate III., fig. 15). These twitchings are commonly due to improper feeding and a disturbed digestion, but it is important to remember that at this age, when such irregularity and instability of muscle contraction is easily produced, it may also affect the muscles in the wall of the intestine. Under normal conditions, the contents of the intestine are gradually forced downwards by waves of muscular contraction passing down the walls. But these waves may become irregular and spasmodic, one piece of the intestine may be squeezed inside another piece, may get nipped there, and be unable to extricate itself, and an extremely serious position of affairs is at once developed (*see* plate IV., fig. 21). In such cases the baby may, or may not, have been slightly unwell for a day or two. He takes ill suddenly, cries out with pain, and draws up his legs on the abdomen. These sharp attacks of abdominal pain return at intervals, and are probably associated with the passage of small loose motions. If these motions contain a good deal

of blood and semi-translucent mucus, the immediate attendance of a doctor is imperative, as such cases practically always require operation. When operated on early they do extremely well, and the longer an operation is put off the worse are the prospects of the child.

During the first year it may become evident that the baby is mentally defective. Mental defect is the result of a great variety of causes, some of which we know, and some of which we are ignorant of. The baby with the abnormally small skull (microcephalus) (*see* plate III., fig. 18) is mentally defective, so is the baby very often with the unusually large skull (hydrocephalus) (*see* plate III., fig. 19). Some babies, owing to their facial resemblance to Oriental peoples, are known as Mongols (*see* plates IV. and VII., figs. 20 and 30). They are always mentally defective. Children with hæmorrhages on their brain, which occurred at birth, are backward mentally, and there are many other forms of idiocy of a slighter or greater extent. Little babies who suffer from severe disease of any internal organ usually are, to some extent, mentally backward in later years, and a very particular form of such a condition is that where the thyroid gland in the neck is affected, where its secretion is absent—wholly or partly—where the child, if untreated, grows up a peculiar kind of dwarf—a cretin (*see* plate IV., fig. 22).

Smallpox is now a rare disease in our country, and some people, consequently, think it is unnecessary to have a child vaccinated. It should, however, always be done, as it is only by the practice of general vaccination that smallpox is kept down. It should usually be done between the third and sixth month of life, but if the child is delicate, or suffers from skin disease, it may be deferred.

A child should be re-vaccinated before puberty, and again at any time when likely to be subject to infection.

From about the age of nine months till two years the baby's first teeth are being cut, and this process of teething is often associated with various symptoms of ill-health.

About the same time, also, he is beginning to move about—to creep, to stand, and to walk. His weight is consequently being placed on his legs, and if his bones are ill-developed and soft, they bend and become deformed. There is no advantage to be gained by encouraging a delicate, “rickety” baby to walk: the longer he is in learning to walk the less likely are his legs to bend.

He is by this time capable of making use of a wider dietary, but indigestion is still a common trouble.

He is often fed too much on soft pap-food, and

is apt at this time, and for some years after, to get too much sugar and starch in his food—too much bread, potatoes, biscuits, rusks, rice, sugar, jam, and so forth.

Teething is, of course, a natural process, but many healthy children suffer at this time from various symptoms, due apparently to no other cause than this. They are fretful, peevish, sleep badly, have little appetite, are subject to attacks of diarrhoea, catch cold readily, and are generally *below par*. These symptoms are, however, much more often due to some error in diet or hygiene. They are often marked if the child suffers from rickets.

During the period of the primary dentition meningitis is not uncommon, and often commences with very vague symptoms, which may be thought to be due to teething or indigestion.

During the first few years of life another not uncommon condition is a form of paralysis, which is so largely peculiar to this age that it has been called infantile paralysis.

A baby affected with this disease usually takes ill suddenly when apparently in sound health. He becomes feverish, uneasy, and generally ill, and it is noticed that he cannot move one or more of his limbs. The acute symptoms of illness rapidly pass away, but leave behind weakness or complete paralysis of part

or whole of a limb or more than one limb. With the passage of time—of several months—this weakness may almost entirely disappear, but very often it remains permanently throughout life.

About the age of five the child goes to school, and set training of the finer muscular movements commences. Such training is hard for him, and, from this time onwards, fatigue or debility is apt to show itself in irregular or spasmodic twists and jerks of the finer muscles. St Vitus dance (chorea) may develop, and this is usually a symptom of rheumatism.

Rheumatism is common between the ages of five and twelve, and is specially dangerous, because its symptoms may be somewhat vague and indefinite, and yet it is very apt permanently to injure the heart.

At school children are apt to catch the acute infective diseases, and of these measles and whooping-cough are important, for the reason that they very often do not cause the child to be seriously ill at the time, and yet, if not properly treated, are apt to be followed by serious disease—often tuberculosis.

The cutting of the second teeth does not, as a rule, affect the child's health at all, but it is very important that these teeth should be kept clean, and, as far as possible, decay prevented.

Overwork at school produces general fatigue, debility, and increased susceptibility to all kinds of

infection. Bad ventilation of the school produces loss of appetite and anaemia. Unsuitable desks cause spinal curvature (*see* plate III., fig. 16), and the eye-sight may be unduly taxed by over-straining or the want of suitable spectacles.

Recognition of the value of individual symptoms at different ages is of considerable importance. A capacity for intelligent observation is the most valuable gift for any one dealing with children.

By means of *sight* much can be learned. The attitude of the child both when awake and when asleep is full of importance. Naturally, he is energetic and full of movement. His movements are free all over. But if he has a paralysed or injured limb it does not move freely, disorder of a joint leads to constraint on motion, disease of the spine causes rigidity of the back-bone, and, if marked, produces deformity, while weakness and improper attitudes may produce a twisting of the back-bone to one side. When asleep many attitudes are adopted by the healthy child, but a necessity for half sitting up during sleep points to trouble in the chest, probably aggravated by disorder in the abdomen. Is the position of the head natural? Can the baby hold up his head unsupported? Is the head kept constantly twisted slightly to one side, as it not infrequently is when there is trouble with enlarged

glands in the neck? The head may be bent backwards and kept firmly in this position, and attempts to move it forwards cause crying, and are firmly resisted. This is a very suspicious symptom, and is often due to meningitis (*see* plate V., fig. 24.)

Then it is important to watch the position of the limbs. Are the bones bent as they may be in cases of rickets, and do the limbs correspond in size and power of movement on the two sides? A paralysed limb may hang limp and soft, or some of the muscles may be strongly contracted, and so twist the limb into an unnatural position. Does the attitude suggest that pain is experienced anywhere? Is any part of the body obviously supported to prevent dragging or strain? Are there any twitchings of the muscles? It is not natural to see twitching of the muscles of a young baby. Sometimes when the baby is seriously ill, and specially when he has something wrong with his brain, fine tremblings of the muscles of his arms are visible when he moves and holds out his arms. In older children coarser tremors of the muscles, which are largely uncontrollable and often occur only on one side of the body, are the chief symptoms of chorea. When a baby rubs the back of his head backwards and forwards on the pillow until he may perhaps wear off all his hair, it is not usually a symptom of serious illness. These babies often suffer

from rickets, and perspire very freely. Another symptom shown by a baby suffering from rickets is wagging his head from side to side, or up and down. It is of more serious importance, however, if a baby keeps hitting his head with his fist, or banging his head against the bed. These babies are often mentally defective.

How does the child walk? Are the bones of his legs straight? Does he save himself on one side as if in pain? Does he limp or drag one leg? Is he steady on his feet?

What can be learned by a careful study of the facies—of the child's face? The most valuable method of examination of a young child a doctor has is observation, and the most important part of it is observation of the face. Many diseases can be accurately diagnosed by observation of the face alone, many more can be suspected, and in almost all cases the careful observer gleans from it in some direction or other information or evidence of importance (*see* plates III., IV., VI., and VII.).

This subject has already (*see* Lecture I., p. 7), been generally alluded to. We note the general expression of the face. Does it picture mental impressions foreign to a child of this age? Fear—as in acute diarrhoea and vomiting? Thought or care—as in meningitis? Sly cunning and coyness—

as in chorea? Unnatural astonishment, premature old age, or vacuity? The peculiar vacuous look of many idiots is to be noted. The alert look associated with uneasiness of fever. The sunken, collapsed appearance of many acute digestive disorders. The puffiness of the face in kidney disease and in whooping cough. The depressed appearance in typhoid fever.

Simple observation of the face of the child is sufficient to tell us whether the child is dangerously or acutely ill. How about the colour? Is there excessive colour as in many cases of fever, or loss of colour as in anæmia, wasting, and acute conditions unassociated with fever? Is the colour natural? Is the general appearance bluish or purplish, as in heart disease dating from before birth? If so, there is often also associated with it a bleary appearance of the eyes, and a sort of congested appearance of the whole face. Lesser degrees of blueness—of the lips, tip of nose, and ears—occur in conditions of collapse, in acute conditions when the heart is overstrained, associated with fits, sometimes along with colic, and sometimes simply due to cold. A yellow colour, best seen in the whites of the eyes, means jaundice. A less marked yellowish colour, lighter in tinge, and associated usually with a greater degree of pallor, occurs in some chronic deep-seated diseases. Is the

face fat or thin? Do the muscles of the face move naturally and equally on the two sides?

What is to be noted about the breathing? Irregularity of breathing is common in little children, especially during sleep, and is of little importance. Rapidity of breathing increases with the temperature of the child, but is specially increased in disease of the lungs. In severe disease of the lungs the child breathes very rapidly, and to assist him in his breathing many muscles not commonly in use are brought into play. Among them are the small muscles in the nostrils, and we see that with each breath the nostrils of such a child are opened and closed by the muscles on either side. Or the child may breathe with his mouth constantly open, and then undoubtedly suffers from some obstruction to breathing through the nose—such as adenoid growths.

We look for sores on the mouth and lips, and discharge from the nose, and think of syphilis. We note if the tongue appears too large for the mouth as in some forms of idiocy, if there is discharge from the ears, or if the ear is unduly prominent on either side owing to an abscess pressing it outwards from behind.

A healthy little baby objects strongly to being stared at straight in the eye. It is from the eyes, of course, we glean much of our evidence for noting

the general expression. But there is more to be noted. Can the child see? If not, is he blind or is his brain so stunned by disease that such special nerves as those of sight have been thrown out of action—is he comatose?

Have his eyes a heavy, laden, drugged, stupid, alcoholic appearance, such as is the case when he is felled by the effects of a virulent infection? Does he or she glance as it were round the corner from under half-lowered lids as in chorea, or is there a permanent drop of one upper lid which usually means nothing at all, and is often a family characteristic?

The child may squint, and the importance of this symptom depends largely on the history, and on other symptoms of illness present. A squint may be evidence of very serious disease, or it may be of very slight importance. It is a grave sign only when it is associated with other signs of disease connected with the brain.

Again, on looking at the eyes we may notice that there is a constant twittering or trembling of them, which is probably most marked when the child fixes the eyes on some object. This symptom is usually of no importance, further than that it is an accompaniment of some degree of debility.

By the sense of *hearing* we can also learn much.

Listen for the child's breathing. Is it audible?

It shouldn't be. If it is fairly regular, quick, hoarse, and rather crowing in the intake think of diphtheria. But it might signify the onset of measles, or an inflammation of the throat—laryngitis. Other symptoms must be considered. Why not croup? Croup comes in spasms, gets better and worse again, and when bad the crowing intake of air is unnaturally long. Diphtheria gets gradually worse, and laryngitis may remain much the same.

Does the baby snuffle? If he does, it may be due to cold, or a little attention to cleansing the nostrils may improve the condition.

Is there anything characteristic about the cry? Is there any cough? A cough is not infrequently caused by indigestion. Following indigestion a state of irritation is produced at the back of the throat and a loud, short, hard cough is often complained of. This cough is not at all hoarse, as it occasionally is in cases where there is chronic mischief associated with the lungs, it is not accompanied by wheezing or the sound of mucus in the chest, and no attempts are made to check or subdue it by the child as if it were causing pain. It is often most troublesome in the morning and evening. A cough may also be caused by inflammation or irritation of the throat, or by disease of the lungs.

A hoarse cough, associated with a hoarse cry and

difficult, harsh breathing, means obstruction in the windpipe. In whooping cough the cough comes in paroxysms, and is usually followed by vomiting.

Hiccough is not unusual among babies, and is by many people thought to be quite natural. It certainly does not show that there is necessarily anything wrong with the baby, but it is always wise, if a baby hiccoughs much, carefully to consider if there is no detail in which his dietary could be improved.

By *feeling* we can gain a good deal of information regarding the temperature, and also can decide whether the skin is too moist or too dry. A baby often strongly objects to having his temperature taken by a thermometer, and the hand is frequently sufficient indication. But in the event of distinct illness it is not wise to trust altogether to the hand. The temperature is usually conveniently taken by means of a thermometer in the groin.

The pulse rate in children is normally higher than in adults, and it varies very much. Movement, crying, or excitement, quicken it markedly. It is quite common to find the pulse irregular, especially during sleep.

Does the child suffer from pain? If so, where? The second question is often difficult to answer. Gentle palpation — touching and pressing with the palm of the hand—over the whole body may show

that pain or tenderness is limited to one particular area. But not infrequently a child in pain is extremely sensitive all over, and it is impossible, by touch alone, to say that the cause of the pain is in any particular place. When the pain is caused by colic, pressure over the abdomen may relieve it, but when it is due to acute disease in the abdomen, pressure increases it, and the muscles lying over the diseased area stiffen and contract in order to act as a guard.

In the course of *general observation* we have to note if there are signs that anything is wrong with the passing of water or of the motions. In both cases it depends very much on the amount of care which has been bestowed on the training of the child at what age control of these actions is completely gained. "Wetting the bed" is a common condition in older children, and is frequently due to bad training. But this is by no means always so. Children who are mentally defective are usually deficient in control, and weakly children are often late in acquiring it. But the power, once gained, may be again lost, and such cases are often very difficult to treat. It is a definite sign of illness, and should not be lightly regarded, as, though comparatively trifling in itself, it may lead to considerable trouble later.

The advice of a physician should be obtained where there is discharge from the genital organs of a girl, or when the foreskin of a boy is so long and tight that it cannot be pushed back.

If a child suffers from hæmorrhage, do not bother thinking about arteries and veins, but put your finger on the bleeding point, if it is accessible, and keep it there. Get a pad made, and bind it firmly on the bleeding point. Try to keep the child quiet, and give no stimulant. In severe bleeding from the nose keep the child upright, compress the nostrils with the fingers, and have cold water applied to the back of the neck.

If a child be burned or scalded, and if very dirty, wash softly with a little soap and plenty of boiled warm water. Cover gently with cotton wool, or soft, clean material. Do not open blisters or apply any medicaments. If the child is at all collapsed, give stimulants (one teaspoonful of whisky or brandy in a wine-glass of water).

LECTURE VI

DISORDERS OF DIGESTION

(A) *In Infancy*

THERE are so many peculiarities about the diet in infancy, and about the methods of treatment of disorders of digestion, that it is well, in the first place, to define what is meant by certain terms.

The Treatment of Milk by Heat.—The chief reason for applying heat to milk is to destroy the powers of microbes which may be in it. Many of these microbes are very resistant to the action of heat, and, in order to kill them, the milk would require to be boiled for half an hour or longer. When such a method is adopted the milk is said to be sterilised. Short of killing *all* the microbes, most of them are killed, and the powers of the remaining ones greatly reduced, by simply bringing the milk to the boil—scalding it. Pasteurised milk is milk which has been heated at a temperature of 150° F. or 160° F. for twenty or thirty minutes, and then rapidly cooled. In order that this pasteurising process may be carried out satisfactorily, it is necessary to have an apparatus which will enable

one to make sure of the correct temperature. It was previously stated (*see* Lecture II), that scalding—heating milk till bubbles begin to rise—is, as a general rule, the most satisfactory procedure. While this is so, it is also sometimes advisable to have recourse to other methods. Special apparatus for pasteurising or sterilising milk can be obtained through any medical instrument-maker or chemist. A good type is the Soxhlet. It consists of a kettle containing a rack holding ten bottles. To use it, pour a measured amount of the milk mixture into each bottle, cover the mouth of the bottle with the rubber stopper, and over this place the metal cap to keep it in position. Place the rack in the kettle, and fill the kettle with cold water to the same level as the milk in the bottles, and then keep the whole at the boiling-point for as long as desired. The bottles are afterwards cooled quickly, and by this process the rubber stopper becomes partially sucked in, and so effectively seals the bottle.

Peptonised Milk.—Peptonised milk is milk which has been partially digested by artificial methods before it is given to the baby. It consequently calls for little digestive activity on the part of the baby, and can be tolerated and made use of when untreated milk could not be borne.

To Peptonise Milk or Milk Mixtures.—Zymine or

peptonising powders may be used. Mix the powder with the milk, and keep the bottle containing the mixture in warm water at a temperature of about 110° F. (or keep warm in front of the fire) for about half an hour. Then rapidly boil the mixture, and cool.

Fairchild's peptogenic milk powder may also be used, and on each bottle containing the powder full instructions are given as to the method of its employment.

Citrated Milk.—It has been found that by adding small quantities of a powder consisting of citrate of soda to the bottle of milk, or milk mixture, curdling of the milk can be prevented in the stomach without interfering with the value of the milk as a food. One or two grains of this powder added to a tablespoonful of milk almost entirely prevents curd formation, and smaller quantities diminish it. As cow's milk forms much larger curds in the stomach of the baby than mother's milk, it is often useful to add this powder to keep down the curd formation. The powder is soluble in water, and so can be procured from the chemist in a liquid form, and added to each bottle in a teaspoonful containing the number of grains desired.

Buttermilk.—In the ordinary preparation of butter, fresh cow's milk is allowed to stand for twelve to

eighteen hours; it is then creamed, and the cream is allowed to sour or "ripen." This "ripening" is due to the appearance of numbers of bacteria and the production of acid. The sour cream is then churned, the fat globules coalesce to form butter, and the liquid which drains away is the buttermilk. The chief points about buttermilk are that it is usually easy to digest, it contains very little fat, and is very acid. The bacteria which cause the souring of milk are those which cause the production of lactic acid, and these bacteria can be grown in a laboratory and added to milk at will, and so buttermilk can be obtained without the process of churning. There are many methods of making buttermilk in this artificial way, and the Bulgarian bacillus of lactic acid is the best known means, the advantage of artificial methods being that the process is under immediate control, and cleanliness, etc., can be rigidly enforced.

Whey.—To prepare whey, add one teaspoonful of commercial rennet to one pint of milk, and heat at about blood heat (about 100° F.), for twenty minutes. Break up the curd with a fork and strain the whey away. Bring the whey rapidly to the boiling-point and then cool quickly.

Albumen Water.—Take the white of a fresh raw egg, shake it up with half a pint of cold water and strain through muslin. The whites of two eggs may be

used instead of one, and even then the amount of nourishment in the albumen water is very small.

Barley Water.—To prepare barley water, add one tablespoonful of prepared barley flour to one pint of water, boil for twenty minutes, and make up with plain water again to a pint. Barley water can be made of different strengths, and either prepared barley flour, or washed pearl barley may be used. It is always advisable, however, to know the strength of the barley water which is being used, as the starch which it contains is not a natural food for a little baby, and if difficulty with the feeding occurs it is well to know exactly what the baby is getting.

Lime Water.—Barley water is often used to dilute milk, and so is lime water. Besides acting as a diluent, lime water makes the mixture more alkaline than if ordinary plain water were added to the milk. The amount of lime or chalk in the water is comparatively small.

Suppositories and Enemata.—The baby is very often treated directly by the bowel by means of suppositories or enemata, and such treatment once commenced is apt to be carried on indefinitely. Such methods of treatment are often undertaken far too lightly, are practised when unnecessary, and even do harm by distracting the attention from desirable changes of diet.

Certainly a small suppository, or cone, or thread of soap occasionally placed just within the bowel is often a most satisfactory means of inducing a motion, and can do no possible harm to a fairly healthy baby. The same is true of an injection into the bowel of soap and water. But these methods, and especially the latter, should not be lightly undertaken over prolonged periods. It is possible that such treatment is the best available; but, on the other hand, it may be merely tinkering with the condition when some radical change in diet or hygiene is called for.

The best method of giving an enema to a little baby is by means of a glass funnel and catheter, or a small all-rubber syringe (*see* plate VII., fig. 33). A Higginson's syringe should not be used.

Proper and Improper Feeding.—Feeding and digestion occupy a large part of the time of the infant, and it is extremely important that this time should be well used. Improper feeding is the cause of much trouble, of various conditions of illness, of the weakly state of many children, and of the death of many babies. Improper feeding is the cause of most of the disorders of digestion in infancy. But when we speak of improper feeding, we include in the term a large number of methods of feeding, some of them almost obviously improper to anybody, some of them obviously improper to educated people, and some

improper in some detail which may be hard to determine.

Many babies, especially in the lower classes, are fed at grossly irregular intervals. They are fed at any time, and always when the baby cries. However suitable the fluid in the bottle may be, such gross irregularity is certain, sooner or later, to lead to disorder of digestion. It is usually merely a matter of time till vomiting and diarrhoea commence, the baby weakens, loses flesh, and becomes seriously ill. Complicating such cases, one usually finds that an unsuitable form of bottle is being used. Often the bottle is one with a long tube, which allows the mother to go about her ordinary business, and leave the baby with the bottle lying beside him, with a constant opportunity of having a drink. Such bottles are bad for this reason, but they are also bad because it is almost impossible to keep them properly clean, and so the baby is not only almost constantly drinking, but what he drinks is usually contaminated by a dirty bottle. If the fluid in the bottle is also unsuited to the age of the baby, it is obvious that such an infant has little or no chance of retaining satisfactory powers of digestion. But it is just in such cases, where almost everything has been wrong as regards the feeding of the baby, that the most satisfactory results are got by feeding him properly. These are

the cases which come in large numbers to the out-patient department of Children's Hospitals, and which can be treated very satisfactorily at home by the co-operation of physician and health visitor. The tube-bottle has to be put on one side, the importance of regularity in feeding explained, and the method of preparation and composition of the food—whatever its nature—described, and given to the mother in the form of written directions. But regular supervision is also necessary; and here the value of the work of a good health visitor in seeing that the mother carries out the instructions of the doctor is almost inestimable.

At first, the baby is usually so ill that anything much in the nature of food—milk—is out of the question. The first step is to stop all the evil practices. A dose of castor-oil (about two teaspoonfuls) is usually desirable, and no food whatever for some hours. During these six, ten, twelve, or more hours of temporary starvation, the baby always needs boiled water to drink, and may have as much as he likes. He often needs also some stimulant, the form and amount of which would be prescribed by the doctor who may be in attendance. Having removed the causes of the diarrhoea and vomiting, the doctor's plan is to accustom the child gradually to a suitable diet. If the baby is gravely ill, the doctor begins

feeding very slowly, and gradually strengthens the food. After the course of water, he may perhaps tell the mother to give the baby albumen water or whey for a day or two, then he adds a little cream to the bottle, and then advances to some mixture of milk and water—perhaps peptonised. The whole process is gradual, and the instructions have to be carefully carried out. When this is possible very marked improvement in the condition of the child usually occurs.

Another type of grossly improper feeding is that where the baby is given food quite unsuited to his powers of digestion. He may get tea, “saps,” biscuits, soup, potatoes, etc., and any of a large number of patent foods suitable only for older children before he is more than two or three months old. He may be fed regularly, but usually he is not, and almost always he is fed too often. Milk, for such a precocious baby, is often looked upon more as a sort of soothing drink than as anything serious in the way of food. Unsuitable food and irregularity of feeding cause the death of many infants.

Yet another gross error in feeding is to give the baby at each meal far more than he is fitted to receive. The amount in each bottle should be—at least roughly—measured. Many babies are given far more fluid at one meal-time than it is possible for their stomachs

to contain. and this causes indigestion, and may lead to gradual dilatation of the stomach.

Constant changing of the food is another gross error. One method of feeding is tried after another at the interval of a few days. Perhaps the idea is to make the baby grow more quickly, to make him fatter, to give him more colour, to encourage teething, or it may be they are desperate efforts "to find a food which suits him," when all the time what is wrong is irregularity or too frequent feeding, bad bottles, neglect of proper details, or simply the constant change itself.

All the errors so far mentioned are gross, are largely limited to the children of the poor, and are due to ignorance, and occasionally to carelessness.

Among the children of the well-to-do, however, some of these errors are not unknown, but more commonly the error is of a minor type. Irregularity of feeding times is here, again, not uncommon. The irregularity is often due to the fact that the baby is left to sleep undisturbed over a meal-time, when he ought to be wakened to receive his meal at the proper time. Or else the baby, for some reason, refuses his food, or part of his food, at the meal-time, and, instead of letting him wait till next meal-time for more food, he is allowed to complete his meal between times.

All forms of irregularity are unwise, and, though it is a practical impossibility to be always exact as to times, yet the greater care that is exercised in this direction, the better is it for the baby. Such irregularity may not obviously, to any extent, or at all, injure the baby; but it tends to do so, and it throws unnecessary strain on his digestive powers. Fresh milk is poured into his stomach before the previous supply has been fully dealt with, and after a while he perhaps begins to vomit occasionally, he takes turns of diarrhoea, and he eventually loses his appetite and becomes definitely ill. Such a baby has to be treated for his diarrhoea and vomiting first—largely by partial and temporary starvation, as noted before, and then gradually accustomed to a suitable food at suitable intervals.

But the baby may be fed quite regularly, and yet become ill, because he is getting unsuitable food. As has been said before, a baby may thrive on almost any of the more commonly known or advertised forms of milk or baby foods; on the other hand he may have trouble even when the error in feeding is comparatively slight. He may be given some patent food containing starch before he is able to digest it, he may be given too much cream in the bottle, he may be kept too long on condensed milk. The milk itself may be unsuitable. It may, for example, come

from Jersey, Guernsey, or Alderney cows, and such milk is unsuited for infants, as the fat in it is difficult to digest.

The particular error may be hard to detect, and suspicion of its existence, owing to unsatisfactory symptoms on the part of the infant, may lead unnecessarily to error in another direction. Attention being attracted to the feeding, care may become excessive. The milk mixture may be thoroughly peptonised, or citrate of soda may be constantly added to it, or it may be considerably reduced in strength, or it may be sterilised for prolonged periods, or a variety of "simple" baby foods may be tried.

The error here lies in running away from facts: in risking unnecessary food experiments without determining the original error.

When such methods as are here outlined are adopted, the risk is that the food is too weak for the infant, or too simple—as when peptonised—to properly satisfy his growing digestive powers. Undoubtedly, all such methods are frequently extremely satisfactory for short periods, but the baby must receive suitable food for a healthy infant as soon as possible.

In the upper classes, as well as in the lower, the amount the baby receives at a time is, not uncommonly, excessive, and a common fault is constant changing of food.

There is no doubt, however, that some babies are unable to thrive satisfactorily on food which is suitable for the average baby. The feeding may be in every respect excellent, and yet the baby does badly. It is extremely difficult to find a proper food for many of these babies, and many kinds may have to be tried. In such cases our hope lies in tiding over the time till the seventh or eighth month of life is reached, when, usually, a great increase in the digestive power is developed. In some cases a wet-nurse may save the baby's life.

Disorders not connected with Improper Feeding.—Acute illness from disorder in the abdomen may be due to disease of some organ, or to such a condition as appendicitis. But more frequently it is caused by a sudden disorder of digestion. A chill may be the cause, or it may be an accidental or occasional error in diet. The chief symptoms are colic, restlessness, diarrhoea, and vomiting, and these may, perhaps, be entirely removed by a dose of castor-oil.

But the condition may be more serious. In very hot weather babies are apt to suffer from severe and acute attacks of diarrhoea and vomiting, and may die in a very short time. This dangerous condition is largely caused by the difficulty of keeping milk satisfactorily in such weather. The microbes in the milk multiply with extraordinary rapidity, and, specially

among the very poor, the food supply of the babies becomes almost hopelessly contaminated. In such weather the milk for the baby should be boiled as nearly as possible before the meal-time.

Sores in the Mouth.—Little sore patches or ulcers often occur on the inside of the lips, gums, cheeks, or on the tongue and throat, when the baby's digestion is out of order or he is sucking dirty teats. The chief danger of the "comforter" or dummy teat is the impossibility of keeping it clean. Apart from that, the dangers of its use are slight, and, as a rule, the health visitor must accept it as an essential part of the household, must explain the necessity of attempting to keep it clean, and would often only lose prestige by attempting to insist on its complete removal.

When such ulcers are present in the baby's mouth his feeding must be carefully attended to, and it is often useful to give him a teaspoonful of fresh fruit juice two or three times a day. It is also useful to cleanse the baby's mouth frequently with a piece of soft cloth or clean rag soaked in boracic lotion. This cleansing must, however, be done carefully and softly, as a little roughness may do more harm than good.

Eructation.—Bringing up a little wind after feeding is common among babies. It is not a sign of illness, but may become a troublesome habit. It may, however, be caused by improper food, by too large a feed,

or by too rapid drinking. Gas and a little fluid may be brought up, and this is often prevented by slightly propping up the baby in the crib after feeding, and by taking care that he is not shaken or nursed.

Vomiting.—This is one of the chief symptoms of indigestion. This form of indigestion may be acute and come on suddenly, or it may be more chronic. It is usually associated with diarrhoea.

Vomiting occurs easily in a baby, and when continued is always dangerous, because the amount of nourishment retained is small, and the strength rapidly fails. It is important to note when the vomiting occurs. If it occurs immediately after a feed, the amount of food may have been too great, or the food too irritating for the stomach, or the stomach may be in an irritable condition. If the vomiting takes place some time after feeding, it is probably due to changes taking place in the food in the stomach, and the vomited matter has a very acid smell. But, apart from indigestion, vomiting occurs at the beginning of any acute illness, and often if there is any inflammation in connection with the brain.

The usual cause, however, is indigestion. Is there any discoverable cause for this indigestion? Has the feeding been in all respects proper? If not, how did it err? The baby may have been getting far too much food at a time and the amount requires to be cut

down; or he may have been fed too frequently, and longer intervals are necessary between feeds. He may have been getting too much cream in the bottle, or in some other way the feeding may have been improper. In all cases, careful consideration must be had as to whether the diet is in all respects suitable. If the condition is slight, and due to some exceptional cause, the act of vomiting may suffice in a measure to put matters right. But if the condition is more severe and attended by diarrhoea, it is necessary to stop, for a time, all milk food, to make sure that the stomach and intestines are cleared of all irritating matter by a mild purgative such as castor-oil, to begin feeding carefully, and only gradually to increase the strength of the food.

When the vomiting is not very severe, but is continuous, it is often useful to add citrate of soda to the milk mixture for a few days or even a few weeks; while, in other cases, peptonised milk or Nestlé's milk for a short time may prove more satisfactory.

A baby who is being nursed at the breast sometimes vomits at the time when his mother has a monthly period. If this is so, it may be necessary to feed him for the two or three days on a suitable cow's milk mixture, and draw the milk off the mother's breasts. When the period is past let him be nursed again at the breast.

Loss of Appetite.—In any acute illness loss of appetite is a common symptom, and when the illness is due to acute indigestion this loss of appetite is accompanied by diarrhoea and, usually, by vomiting.

But loss of appetite may be the only sign that renders the baby's attendant suspicious that all is not well with him. He gradually becomes more and more disinclined for his food, he, perhaps, takes part of it and refuses the rest, or else he has apparently little interest as to whether he gets food or not, and takes it languidly when it is put before him. This state of affairs is often associated with a certain degree of constipation. The motions are rather more solid than is natural, are rather light in colour, and, perhaps, small in amount. Medicine, or enemata, or suppositories are being given every few days, and occasionally much larger motions are passed. Such a child is probably suffering from overfeeding. At any rate, much of the food he is getting is not being digested. It is likely that the overfeeding is not of the nature of feeding too often. It may be too much food at a time, but more probably it is too strong food, for example, too much cream. The baby's digestion is beginning to refuse work, and he needs to have his digestive powers rested for a few days, and then the error in diet corrected.

Loss of appetite in a baby who is not being

over-fed in any manner, must cause suspicion of disease somewhere in the body.

Diarrhœa.—Diarrhœa occurs very readily in infancy, and is the principal sign of irritation in the digestive canal.

Its onset may be only of slight significance, or it may be of very serious importance, and severe diarrhœa can never be treated lightly.

Profuse diarrhœa is, of itself, a dangerous condition, and the drain of fluid may lead to serious collapse.

In treating the condition we have first to make sure that all the irritating contents of the intestine have been expelled, and we probably do this by giving a dose of castor-oil. Then we have to see that the digestive powers are rested for a time by the withholding of food. Finally, we have to keep up the strength, and attempt to control the diarrhœa, if it continues, by various medicinal means.

If the condition does not yield to some such simple treatment as a dose of castor-oil, a doctor should always be consulted.

Children with diarrhœa are usually thirsty, and there is no harm in allowing them to drink as much boiled water as they like.

A chill or a cold is a common cause of diarrhœa. The baby is often otherwise quite healthy, and perhaps being nursed at the breast. The condition is associated

with fretfulness, disturbed sleep, abdominal pain, and the discharge of green, watery motions containing lumps of curd, but usually with no marked rise of temperature.

Improper feeding is a very common cause of diarrhoea as it is of vomiting, and the two symptoms commonly occur together.

The onset of these symptoms may be very acute, or they may only gradually become marked. In acute cases it is important to note whether there is any blood in the motions or not, and if there is blood a doctor must always be called in at once, as the very serious condition of intussusception, which has previously been mentioned (*see* Lecture V., p. 77), may be present, and call for immediate operation.

Colic.—When a baby has colic he cries out sharply, tightens his muscles generally, and bends his knees up over his abdomen. His abdomen is usually distended, and feels tense and hard.

Colic is usually associated with the frequent passage of wind, and with diarrhoea, and calls for the administration of a purgative. The pain is often temporarily relieved by gentle pressure, and the application of warmth to the abdomen. An occasional teaspoonful of dill water by the mouth, and the injection of warm water (6 tablespoonfuls) into the bowel, help to relieve the condition.

Colic is due to indigestion, and is usually caused by improper feeding, but may also be brought about by a chill.

Constipation. — This condition is very common among otherwise healthy babies, and it occurs quite often when the infant is being nursed at the breast, or is otherwise apparently suitably fed.

By the term constipation we are to understand that the stools of the baby are harder and drier than is natural, and that they are passed less frequently. We, consequently, have to know what is the normal condition of affairs as regards the stools at this period of life.

During the first few weeks of life the infant has three or four movements of the bowels daily. Later, two movements daily are common. These stools consist of two or three ounces of light, or brownish-yellow substance, of an even, semi-solid consistence. If kept for any time exposed to the air the stool tends to become greenish. In cases of diarrhoea the stools are often green when passed, and after the taking of some medicines they are changed in colour.

An infant should pass at least one fair-sized motion in the twenty-four hours. If he does not do so he suffers from constipation. If, however, he passes even two or three motions daily, each of which is extremely hard and very small, he also suffers from constipation.

Is the condition serious? Constipation may exist without any symptom of illness on the part of the child, but, usually, he is fretful, sleeps badly, is uncertain in his feeding, and suffers occasionally from colic. These symptoms may be due to the constipation, or both they and the constipation may be due to a common cause. Such symptoms are decidedly sufficient to call for serious treatment.

It has been noted that the condition is common among otherwise healthy children. It must, therefore, be looked upon as a condition which is one of the natural weaknesses of children of the present day, and its treatment must consist rather in strengthening the weak spot than in merely affording relief for the moment. By this is meant that the haphazard use of medicines, enemata, suppositories, and so forth, is always injurious, and very often only increases the weakness, and the last state is worse than the first. Satisfactory treatment is often extremely difficult to discover. If there is some gross error in diet or hygiene, its correction may suffice. But the error may be slight and hard to discover, or there may be nothing of which one has sufficient knowledge to term an error.

A healthy child nursed at the breast of a healthy mother may suffer from marked constipation. The health and mode of life of the mother is excellent, and the baby is nursed regularly. Thoroughly bad

treatment for such a child is frequent small doses of castor-oil — they simply aggravate the condition. Dosing of the mother is also bad unless she herself be markedly constipated.

The most important factors in treatment in any case are training and proper diet.

Attempts should be made to train the baby to have a movement of the bowels at exactly the same time every day, and often this can be ensured by the second month if training is begun early. Training consists in placing the baby upon a small chamber set between the nurse's knees, and this should be done twice a day, always at the same hour, and, preferably, after a meal. At first a small piece of soap may be placed just within the bowel to suggest to the baby why he is placed upon the chamber, but this soon becomes unnecessary.

Training is also most helpful in assisting to overcome constipation after it has developed, but nearly always other measures are also required. The most important of these is regulation of the diet. Constipation may sometimes be relieved by the addition of cream to the food, by giving the baby half a teaspoonful of sugar in water before the feed, or by adding to his food a little of one of the simpler patent foods. Such treatment is, not infrequently, most excellent, but it is often overdone. It is sheer folly to

give the baby an excessive supply of food, or of some particular food-constituent, and so force him to face the inevitable dangers of improper feeding. If the diet is deficient in any respect, certainly this deficiency must be remedied, and a slight excess—specially of cream—is often most useful. But the excess must be slight, and if it is unavailing other methods must be tried. The addition of a cereal gruel to the food is sometimes useful, as also is a teaspoonful of fresh fruit juice several times a day. But often it is necessary to have recourse to medicinal treatment of some sort.

The constant use of enemata is utterly bad. Marked constipation is a condition whose treatment should always be in the hands of a doctor, and it is entirely erroneous to imagine that by giving enemata at least no harm is done. This form of treatment is usually inefficient over prolonged periods; it does not, as a rule, touch the root of the evil; it may be directly harmful, and, consequently, it is bad treatment. If employed at all, enemata should consist of about a tablespoonful of olive oil in four or five tablespoonfuls of soap and water. In severe cases such injections may be absolutely necessary, but their routine employment in less severe cases is always inadvisable. Soap suppositories are much less objectionable than enemata, and are often useful. However,

when medicinal methods are called for, it is usually wiser to treat the baby with medicines by the mouth, although, along with such treatment, it may also be necessary to give treatment by the bowel. When medicine is given by the mouth for this condition, it must be given several times a day in small quantities, and its administration continued over a prolonged period. By this means the natural functions are gradually stimulated, instead of mere relief of the present necessity being obtained.

It is well to remember that a baby who is being fed on a milk-mixture, to which sodium citrate is added, tends to suffer from constipation, and that this is relieved by stopping or diminishing the amount of the sodium citrate.

(B) In Older Children.

Symptoms.—The main symptoms of acute indigestion are vomiting, diarrhoea, and abdominal pain.

Vomiting, in addition, is often one of the symptoms of the onset of an acute infective condition, such as pneumonia or scarlet fever.

In cases of chronic indigestion the symptoms may be very various. Among them are general wasting, loss of appetite, languor, increase of nervous irritability, frightening dreams and pallor. The mother may notice that the face of the child occasionally

changes colour quickly, becomes a dull purple or a greyish white. In addition there may be constipation, or constipation alternating with diarrhoea, occasional vomiting, and abdominal pain. The various symptoms may be constantly present, or may be less marked for varying periods with occasional recurrent outbursts.

Faulty diet is a very common cause, another is caries of the teeth. It is extremely important that children should early be taught the necessity of keeping the teeth clean, and it is no less important that when decay of the teeth does set in, it should be promptly attended to, either by removal of the tooth or its proper stopping. No matter how satisfactory the diet may be, a mouth full of decayed teeth, painful very likely, is quite sufficient to disturb the digestion.

Treatment. — In addition to consideration of the actual diet, several other points are of importance.

Does the child chew his food properly? Does he take long enough to his meal? Does he have a period of rest after his meal?

Very often one finds that by diminishing the amount of sugar and starch foods great improvement occurs. Toast may be given instead of bread, cake and sweets are cut off the dietary, and the amount of potatoes is greatly reduced.

Vegetables and fruit also often cause trouble. Vegetables must be thoroughly boiled and can hardly be boiled too much, while fruit too should be cooked and should rarely be given raw.

Tonics of some sort, and specially iron, are often given to children suffering from chronic indigestion, when it is not properly understood that indigestion is really the cause of the anæmia, langour, etc. In such cases iron tonics do more harm than good, and only tend to aggravate the disorder of digestion.

Intestinal Worms.—The common kinds of worms are little white worms like white threads—thread worms, and larger worms about the size of the ordinary garden worm—round worms.

Both kinds usually are present in large numbers, and are often difficult to get rid of.

Less commonly a tape worm may be present in the intestine, and in this case fragments of it are passed in the motions. Each fragment is white and about the shape, though smaller than, a postage stamp. Quite often several fragments are united end-to-end.

LECTURE VII

OTHER COMMON DISORDERS IN CHILDHOOD

Enlarged Tonsils and Adenoids.—There are several advantages in breathing through the nose rather than through the mouth, but a little baby often tends to be a mouth breather. As the child grows older the difficulty in breathing through the nose may continue, and the boy or girl of five or six years of age may be noticed to keep the mouth constantly open during the day, and may be heard to snore loudly at night. This child has often also a broad, swollen-looking nose, and appears dull and somewhat stupid (*see plate VII., fig. 35*). He or she suffers from a narrowing of the passage from the nose to the throat, due to the presence of adenoid growths. Enlargement of the tonsils often occurs along with excessive adenoid growth in the nose, and this enlargement may be so great that the tonsils touch one another in the middle line. These conditions may cause little, if any, trouble, but when they are well marked the child is apt to suffer in a variety of ways. There is, very often more or less constantly, a discharge

from the nostrils, and the child catches cold easily. He is constantly having attacks of sore throat, and he probably has a harsh, croupy cough. He is not very quick at school, but rather slow and heavy; he suffers very frequently from deafness, and he is subject to headaches. The difficulty in breathing tends to make him restless at night, and to put him off his sleep.

Even quite small babies suffer sometimes from this obstruction, and if it is marked, or if the baby is weakly, it may produce serious deformity of the chest. The ribs become indrawn at the sides of the chest, and the lungs, consequently, do not have proper scope, as the space for them is diminished. The cause of the condition is not accurately known, but it is possible that it may be only one symptom of a condition affecting the body generally.

Wetting the bed, or enuresis, often occurs along with this, and, though surgical removal of the adenoids and tonsils may cure this condition, yet it not infrequently persists in spite of such removal, and may possibly in some cases be another form of evidence of the general condition.

Even when adenoid growths or enlarged tonsils are not present, discharges in the nostril, or dried crusts, are apt to interfere with a baby's breathing, and render sucking a matter of difficulty. In such cases,

it is useful to cleanse the baby's nostrils three or four times daily. Dissolve a little boracic powder in warm water, and add a little baking soda to it. With a spoon drop some of the lotion into each nostril while the baby is lying on his back, or else use a small rubber syringe (*see* plate VII., fig. 33).

It is necessary, of course, to be gentle in all procedure, but, when the rubber syringe is used, syringe freely into the nostril till the fluid returns from the other nostril or the mouth. There is no fear of choking.

Discharges from the nose of a little baby are, however, sometimes of a very infectious nature, and no health visitor should, unless it is necessary, touch any baby with open sores, purulent or bloody discharges, or affections of the skin. Such babies, not infrequently, suffer from congenital syphilis. This disease is contagious, and the only person for whom it is safe to handle the baby is his mother (*see* Lecture V., page 74).

When the condition of adenoid growths and enlarged tonsils is present, the question of operation always arises, and a doctor's advice is necessary. If little trouble is being caused, regular practice in attempts at nose breathing, painting the throat with various agents, and keeping the nose clean, may be sufficient. But when serious deformity of the

chest is being caused, or there are definite symptoms of ill-health, it is wise to have recourse to surgical treatment.

Enlarged Glands.—Lumps in the neck, under the arms, or in the groins are almost always due to enlarged glands. These glands are enlarged because microbes are passing to them from a broken surface of the body.

At the back of the neck enlarged glands are due to sores on the scalp, and, among dirty children this is often caused by lice in the hair.

Enlarged glands in the front or sides of the neck are due to infection from the mouth, throat, or ear.

When there is a sore on the arm or leg the glands above it may become enlarged, and a small sore on the hand or foot may cause enlargement of the glands up to the arm-pit or the groin.

The glands are enlarged because they are stimulated to activity to fight the microbes and prevent them passing further (*see* Lecture V., page 71). They should not be rubbed, as such irritation may cause them to break down and form an abscess.

The place where the microbes are entering should be sought for and kept as clean as possible.

Anæmia.—Pallor may be due to a great many different causes.

It is often associated with indigestion, and it is

usually unwise to try and stuff the child with food. It may, however, be due to tuberculous disease commencing somewhere, and it is often extremely difficult to distinguish between these two causes.

All chronic diseases tend to produce anæmia, and thus, though pallor may be a symptom of comparatively little importance, and one which is readily and satisfactorily treated, yet it may also be only one sign, and perhaps an early sign, of grave illness.

Regulation of the bowels and plenty of fresh air are always beneficial. Rest is of great value in many cases: if possible rest in bed. It is sometimes wonderful to what an extent a pallid, languid, weakly child will improve with the rest obtained by a week or two in bed.

Blueness, Cold Extremities, Clubbed Fingers.—When these conditions exist in a marked degree the cause is usually a disorder of the heart which has existed from birth.

As a rule, this disorder is permanent, and nothing can cure it, but it does not necessarily tend to get worse.

Slight degrees of blueness and of coldness are more or less constantly present when the circulation of the blood is poor. This occurs in quite healthy children if they are chilled, and is often also connected with disorders of digestion.

Children suffering from tuberculosis often have a blue appearance about the face, but almost the same appearance may be due to chronic constipation.

Colds.—A cold in the head is a much more serious condition in a young child than in an adult. The nose passages are so narrow in early childhood that the swelling associated with a cold makes nose breathing almost impossible. There are always many microbes lying about the mouth, nose, and throat. When a cold is caught these microbes have a better chance of attacking the tissues. A cold in the nose is very apt to spread down to the bronchial tubes, and then to the lungs.

For all these reasons a cold in the head demands careful attention. Plenty of fresh air is good treatment for all diseases at all times of life. But in infancy and early childhood, when such a condition as cold in the head is present, it is extremely important that the air breathed by the child should not be very cold, and should be of a more or less even temperature. If the weather is cold or windy, the child should be kept in the house.

Bronchitis.—When the inflammation passes to the bronchial tubes, still greater care is necessary. Bronchitis may occur as an acute attack, or it may be chronic. Often it comes in attacks every now and then and at frequent intervals. This usually occurs

in weakly babies or babies suffering from rickets. Bronchitis is also a disorder which sometimes appears to be connected with difficulties in teething. In an acute attack a baby may be much troubled with his breathing. He is often oppressed by the amount of secretion in his chest, and is, perhaps, too weak to cough energetically. Any secretion which is coughed up is promptly swallowed, and digestive troubles are likely to occur along with the chest condition. For such a baby a warm, moist atmosphere is usually very helpful, and the steam from a bronchitis kettle is serviceable. When suffering from acute bronchitis he should be kept in the house, in one room. Among the poor this may not be possible, and we frequently find babies brought to hospital suffering from severe bronchitis. The mothers of these babies usually rub the child's chest and back with oil of some sort, or may even cover him under his clothing with oiled brown paper. Such treatment is quite good, provided that proper cleanliness is observed—a daily bath, and provided that the clothing is not too heavy. The surface layer of oil helps to protect the baby against chills, but often an absurdly excessive amount of clothing is added.

In cases of chronic bronchitis general tonics and plenty of fresh air is usually the best treatment. Bronchitis can often be satisfactorily treated without

giving any medicine, so it is unwise to encourage the random administration of "cough-mixtures." They are apt to disturb the digestion.

If poultices are ordered, it is usually better to put them on the back of the chest rather than the front. A heavy weight, such as a poultice, lying on the front of the chest of a young child, renders breathing still more difficult.

Poultices.—In cases of open wounds or superficial inflammation it is often advisable to apply an *antiseptic* poultice. The antiseptic used should be a solution of boracic acid. A piece of lint or clean cloth is wrung out of this warm lotion and placed over the part. Over this is placed a piece of oil-skin larger than the cloth, and the whole kept in place by a bandage.

A poultice may also be used to relieve the pain or spasm in the abdomen or chest. In such cases an *ordinary linseed poultice* is usually employed. It must be tested by the back of the hand or the cheek before being applied to make sure it is not too hot. It should be remembered that in the cases of weakly or young babies it is inadvisable to lay a heavy poultice on the front of the chest, and in such cases as those of bronchitis it is much better to place the poultice on the back of the baby's chest.

Hot fomentations are often just as efficacious as poultices.

When *mustard poultices* are employed, the amount of mustard must be carefully limited; one teaspoonful of mustard to six of linseed is quite strong enough for a little baby.

Another form of poultice is in very frequent use. This is the *starch poultice*, and is used to cleanse the surface of the skin, and more especially to remove crusts and scales. It is prepared as follows:—Add a teaspoonful of boracic powder to a teaspoonful of cold water starch, mix with a little cold water, then pour in a pint of boiling water, and stir till melted; let stand till cold; spread the cold starch thickly on pieces of cotton, cover with muslin, and apply to the part, changing the poultices every few hours.

Running from the Ear.—A discharge of pus from the ear is a very common condition. It shows that there has been inflammation and suppuration in the inside of the ear, that this purulent matter has burst through the membrane closing the ear, and is then escaping by the passage in the external ear. The pus is coming, therefore, from the cavity of the ear situated in the bone, escapes through a hole in the membrane which guards one side, and then passes down a comparatively long, narrow channel. The first and natural treatment is to clear away this pus frequently, and to keep the parts as clean as possible.

But to do this it is not sufficient to trickle water or fluid gently into the ear passage. If any marked good is to be done, it is necessary to cleanse the ear cavity in the bone beyond the membrane. To do this it is advisable to use a rubber-ball syringe (*see* plate VII., fig. 33), to fill this with boric lotion, to place the nozzle well into the ear canal, and to press the fluid firmly in (*see* plate VII., fig. 36). This should be repeated several times a day, and the ear gently stopped with cotton wool afterwards.

Croup.—This alarming condition usually demands the attendance of a doctor. Ordinary croup is not so dangerous as it appears and sounds, but it often requires skill and experience to tell whether the condition is ordinary croup or something more serious. Croup is apt to recur, and is best prevented by attention to the general details of life.

In cases of croup there is inflammation in the throat along with occasional spasms.

Croup usually occurs at night, and is apt to recur on succeeding nights, and to be better during the day. Croup is quite a different condition from that of diphtheria, but, at a casual glance, it is often difficult to distinguish between them, and a physician's aid is always necessary.

If a baby has a dry, barking cough with harsh, difficult breathing, he should be kept in a warm,

moist atmosphere (steam kettle), and hot cloths may be applied over the throat. If the symptoms become very urgent before the arrival of the doctor, attempts should be made to get the baby to vomit. This may be done by tickling the back of the throat with a feather, by making the baby drink a little mustard and water (one teaspoonful of mustard in a tumbler of warm water), or by the administration of a teaspoonful of syrup of ipecacuanha if it is at hand.

Spasm in Breathing.—Babies who are weakly occasionally suffer from sudden attacks of difficulty in breathing. These attacks are due to muscular spasm in the throat. They come on very suddenly, and last less than a minute, when the baby gives a crow like that in whooping cough, and begins breathing again. These spasms frequently occur when the baby is wakened suddenly from sleep, or is startled in any way. They are usually a symptom of rickets, and rapidly disappear under proper treatment. But a spasm may last so long that the baby dies. During an attack sprinkling of the face with cold water is useful.

Foreign Body in the Throat.—Unless the foreign body is causing immediate symptoms of pain or distress, or is within easy reach—do nothing. If the body is causing distress try to remove it with the finger. If this is impossible, and the condition serious, invert the child and smack the back of the chest.

Skin Conditions.—Many skin conditions are associated with general constitutional disorders. They require general treatment for their effective cure.

Many affections of the skin, however, are due to direct infection of it by microbes or parasites, and thus are easily spread from one child to another by rubbing or contact.

Purulent spots on the face and elsewhere are often spread in this way, and ring-worm and other conditions of the scalp may be spread by the interchange of caps.

There are several conditions which cause large scabs over the head, the face, or other parts of the body. To treat such areas it is necessary to remove these scabs—as, for example, by a starch poultice (*see* p. 126), before applying any medicament.

Various Nervous Conditions.—Nervousness in childhood is often a sign of ill-health (*see* Rheumatism, Lecture VIII.)

The nervous child is often smart and clever, keen both at work and play. It is usually unwise to press such a child with mental work; it is often wise to restrain his energy.

Screaming at night and having terrible dreams are common nervous symptoms. They may be caused by comparatively trivial irritation—such as intestinal worms—or may be due to the general constitutional

nervous condition of the child. Fits in a young child may be also due to trivial causes, or may be the symptom of very grave disease.

Scurvy.—This is an uncommon condition, and one which is readily cured by giving fresh fruit juice. In a case of scurvy the gums are red, tender, and bleed easily. There is general tenderness of the body, swellings on the bones, specially of the legs, blood in the urine, and often bleeding at various parts of the body.

Rickets.—This is a disease which affects all the tissues of the baby's body. The symptoms appear about the time when the baby is cutting his first teeth—from about the sixth or eighth month till the end of the second year or later.

The disease is extremely common, especially among the children of the poor. It is a result of improper feeding, and unsatisfactory surroundings and hygiene generally. It is common in babies who have been brought up on condensed milk.

It causes softening of the bones, bloodlessness, and general weakness and flabbiness, which are usually accompanied by a tendency to bronchitis and diarrhœa. It is important to remember that a child with rickets is not merely a child with crooked legs or big head, but is a child, every cell in whose body is *below par*, who is specially subject to recurring attacks of illness,

who is susceptible of infection, and who is apt to go down quickly. The most obvious symptom of the condition is the change in the bones. A child suffering from rickets is usually late in learning to walk, but when he does put his weight on his legs the bones bend. It is therefore important that he should be kept off his feet as long as possible, to give the bones time to harden.

The bones at the ankles and wrists become swollen looking and knobby, little lumps develop on the ribs down each side of his chest, and the chest often sinks in on either side (*see* plate VII., fig. 31). His head is often abnormally large and square looking, and he sweats a great deal about the head. His bones are rather brittle, and carelessness and roughness in moving or lifting him may readily break a bone in the arm. He catches cold easily, and he has difficulty in throwing off attacks of bronchitis. He may have frequent attacks of diarrhoea, and he is subject to the spasms in breathing which have already been mentioned (*see* p. 128). He is also liable to have chronic spasm in the muscles of the arm and leg which cause them to be held in a curious stiff position (*see* Lecture V., p. 77).

He suffers altogether from a condition of general debility, this debility being specially marked in the bones.

He should be as much as possible in the open

air, warmly wrapped up, and he should get a plentiful supply of milk, cream, eggs, butter, and fat in his food. It is usually also of great benefit to give him every morning a douche of cold water over the head and back before taking him from his warm bath.

LECTURE VIII

INFECTIVE DISEASES, ACUTE AND CHRONIC, IN CHILDHOOD

Tuberculosis.—This is a common disease in man and in most animals. It is caused by a microbe, and this microbe has great powers of resistance, and can live for a long time outside the body of man or animal. The sources of infection, therefore, are many, and the child may be infected either by breathing, or by eating and drinking.

Glands and bones are specially apt to be attacked, but whatever part of the body may be originally infected, the disease tends to spread from it throughout the whole body.

Tuberculosis is such a common disease that opportunities of infection must be constantly occurring to healthy people. But an opportunity for the microbe to infect is not alone sufficient for infection to take place. The person may be strong enough to throw off the infecting germs—to kill them, and only when he is in a weakly state are they able to overpower his resistance and produce an infection. It is

important, therefore, to maintain general good health. But, even if the general health is not as good as could be desired, it yet may be sufficiently good to withstand the attack of comparatively few tubercle bacilli, even though unable to cope with large and constant numbers of them.

To prevent tuberculous infection taking place we want to keep the child in good general health, to prevent him running the risk of attack by tubercle bacilli, and if that is not altogether possible, to see that he is not subject to the danger of attack by large numbers of the bacilli.

The first point—the maintenance of general good health—is one which has already been discussed. Good, simple food and fresh air are the main factors in success.

To prevent attack by tubercle bacilli it is necessary to realise whence this attack is likely to come. The most important source is an adult suffering from tuberculosis of the lungs—phthisis. This person coughs frequently, and, it may be, spits more or less indiscriminately. By these means vast numbers of tubercle bacilli are set free, and, if the sputum dries unattended to, they pollute the atmosphere along with the dust. They are thus apt to be breathed in by the child at each breath, and, if he is constantly in such an atmosphere, the young child is almost certain

to become infected. Such large numbers of bacilli may cause infection rapidly. A person suffering from advanced phthisis visiting a house for a few days, seeing a good deal of the baby, and, perhaps, not very careful as regards his sputum, is, not infrequently, the cause of infection. A young child should not live in a small house with a phthisical person, should never be constantly attended by one, and however great care be taken, should not be much in the company of such a person.

A great deal, of course, can be done in the way of preventing infection. The sputum should be received on to an antiseptic rag and immediately burned, or it may be received in a strong solution of an antiseptic which destroys the bacilli. Kissing the child should not be allowed. The greatest cleanliness in surroundings should be observed. Dust should not be allowed to accumulate, windows should always be open, and as much fresh air and sunlight as possible admitted into the house. Dust containing tubercle bacilli may not only be in the air which the child breathes, but may get into the milk which he drinks, if it is left uncovered. Tubercle bacilli may be present in the milk before it comes into the house, but they also may get into it afterwards.

We always cook the flesh of animals before eating it, and, consequently, though tuberculosis is a common

disease among animals, infection from eating their flesh is guarded against. But milk is animal food, it often contains tubercle bacilli derived from the cow, and it is a very suitable fluid for the growth of tubercle bacilli from a human being. It should always be kept carefully covered and be scalded before it is given to a young child.

What are the common forms in which tuberculosis shows itself in young children? When may they be suspected? What should be done?

A little child of perhaps two or three years of age has been troubled, off and on, for a few weeks or months with his abdomen. He may have been fed incorrectly, but perhaps his feeding has been all that could be desired. He has occasional attacks of abdominal pain, and perhaps of diarrhoea. He does not thrive as he should. He is not gaining weight, but is becoming softer, flabbier and thinner. He is pale, and sometimes rather bluish about the lips. His appetite is not so good as it was. He is often fretful at night, and sleeps badly. His abdomen, in contrast to the rest of his body, is large and full.

Such a child may be suffering from tuberculosis in the abdomen. But it is also possible that he may be suffering from no such thing. The symptoms are almost the same with improper feeding, chronic indigestion, worms in the intestine, and other conditions.

It is usually very difficult to tell in the early days. But, whether it is possible or not to tell definitely what is the exact cause, all obviously possible causes should be removed as far as possible.

His feeding must be carefully regulated, worms removed, earache attended to, and his general health improved in every possible way.

Perhaps it is now possible to feel lumps in his abdomen, or there may be a collection of fluid. He is definitely suffering from tuberculous infection in the abdomen. His temperature begins to rise in the evening, he gets thinner and more fretful, and suddenly one day he takes a fit. The tubercle bacilli have spread to his brain, he is suffering from tuberculous meningitis, he is now acutely ill, and will die within a few weeks.

Such is a possible termination of the condition of abdominal tuberculosis, but it is not the usual one.

Much more often the tubercle bacilli remain in the abdomen, and do not pass to the head or any other part of the body, and if the child is kept at rest in bed, has his diet carefully attended to, and lives almost entirely in the open air, his chances of complete recovery are very good.

Another child of perhaps six or seven years of age has had an attack of measles or whooping-cough. As soon as he was free of infection he was sent back

to school, the weather has been wet and uncertain, he has never seemed quite himself since his illness, has never put on flesh again, but has been rather capricious in his appetite, and has never quite got rid of a short cough.

It is quite likely that this child has tuberculous disease in his lungs. He may have a sort of brassy, croupy cough, be rather short of breath, tired, and generally unwell for some years, but with general care may gradually grow out of his weakness.

Or he may remain a weakly child for several years, able to compete with his school-fellows but much strained in doing so, with a more or less constant cough and obvious weakness in the chest. Later on he takes some acute illness, is not strong enough to withstand it, and dies.

Or, in the last place, he may go steadily downhill until a few months, or a year or so, after the attack of measles, he dies from tuberculosis.

It should always be seen that the cure of measles and whooping-cough is complete, as, when it is not, tuberculosis is apt to follow.

But a baby or young child may have an attack of pneumonia, and, for long after, the signs of improvement are only slight. Eventually, however, he improves and gets all right, and, even in apparently desperate cases of chronic lung trouble in young

children, there is always justification in hoping for the best.

A common form of tuberculosis is that in which the glands of the neck are infected. These glands become swollen and may cause much disfigurement. Bad teeth may cause enlargement of glands, but when these glands are much swelled in a chronic state the usual cause is tuberculous infection. They should never be rubbed, as this only irritates them, may hasten their breaking down, and cause an abscess.

Another form of tuberculosis is that in which bones are affected. It may be the back bone (*see* plate VII., fig. 32). It is kept stiff, and is painful to the touch. Later on a marked pointed projection develops, and complete rest is absolutely necessary. Or it may be the bones of the fingers (*see* plate V., fig. 25), several of which become swollen; or a toe, or one of the larger bones or joints is affected.

As a whole, the early symptoms of tuberculous infection are very indefinite. Tuberculosis is a common disease, and, therefore, it is only natural and wise that its presence should be suspected when such doubtful symptoms exist. But, fortunately, in childhood, we are justified in regarding optimistically such indefinite symptoms pointing to possible tuberculous infection, and in hoping and believing that, with suitable care, such infection may be ultimately overcome.

Rheumatism.—This disease is also due to a microbe, and infection is common after the first three or four years of life. Before that time it is very uncommon. The infection does not appear to spread in the same way as tuberculosis, and, consequently, the disease is not “infectious” in the same sense, from person to person. It is frequently insidious in its onset.

The health of a girl of nine or ten is not quite satisfactory. It is difficult, off-hand, to say what is wrong, or that anything is very far wrong, but the impression is left that she is not as well as she should be. On investigation, several of her near relatives have suffered from rheumatism, but, then, rheumatism is so common! She is tall and well-grown for her age, smart and clever, and keen on her work. She is rather good-looking, has long, straight hair, fine teeth, and a good complexion,—at present, perhaps, rather too pink and white. She is not specially shy, but has a nervous jumpy manner, and appears excitable and high-strung. She complains of nothing particular at present, but has been having constant aches and pains, and is obviously thin. “Growing pains” in her joints, bones, and all over her body have bothered her at intervals for years, but have never been really bad, and there has never been any swelling or redness. She catches cold easily, and is subject to sore throats. These sore throats are pretty bad, and

her tonsils and the back of her throat get very red and lumpy looking. Her digestion is uncertain and easily disturbed, but she has a fairly good appetite, and it cannot be said that she suffers from indigestion. She has no cough, except when she has a sore throat, or her digestion is out of sorts.

A year or two ago she had a slight attack of St Vitus' dance. She was very nervous then and excitable, dropped things occasionally with her right hand, had difficulty in writing, and, in fact, for a week or two was so unlike herself and so trembly and jumpy in the right arm and leg, that she had to be taken from school for two or three weeks. Since then she has seemed at times to be a little breathless even after only moderate exertion, and, occasionally, when she is tired, has a nasty, bluish, drawn look.

She is suffering from rheumatism. That accounts for the sore throats, growing pains, St Vitus' dance, indigestion, nervousness, pallor, loss of breath, and bluish look. She has never been acutely ill, it is true, but none the less the condition has been a serious one. At the time of the St Vitus' dance she developed rheumatic disease of the heart, and she will never be entirely strong.

What could have been done in such a typical case?

The symptoms mentioned above are those characteristic of rheumatism in a child. Comparatively

seldom are the symptoms acute or localised, as they are in a case of acute rheumatism in an adult.

The symptoms are general, widespread, rather indefinite in themselves, but very characteristic when regarded as a whole. Though the symptoms are rather chronic, and do not seem very important, yet very often, accompanying them, is the beginning of heart disease.

Heart disease is the great danger; heart disease is what must be avoided at all costs. To this end rest is the great means; thorough rest, bodily and mental.

The child is keen and quick—she must not be pressed at school. She is lively and energetic—she must get a long night's rest, and not be subjected to unnecessary excitement. If any acute symptoms, such as St Vitus' dance, appear, she must be kept wholly in bed, if necessary for weeks or months, and treated as a very sick child.

A heart, once damaged, is a very serious handicap throughout life, and, if by prolonged rest in bed such damage may be avoided or recovered from, all other considerations must give way.

Pneumonia.—Pneumonia—inflammation of the lung—sometimes occurs when the child is recovering from other diseases, or is in a weakly state generally, but sometimes occurs in otherwise strong children.

In the former case it is often a long, protracted, and not very acute illness; but it is a very serious one for the already weakened child. In the latter case it is usually more acute, and lasts a shorter time.

In a baby the disease may commence with fits and a sudden rise of temperature, and in older children, with shivering fits and sickness.

The child is obviously seriously ill, breathes quickly, and refrains from deep breaths or long cries (*see* plate VI., fig. 28).

His improvement later on may be very gradual, and sometimes pus accumulates outside his lung, and has to be withdrawn by the surgeon.

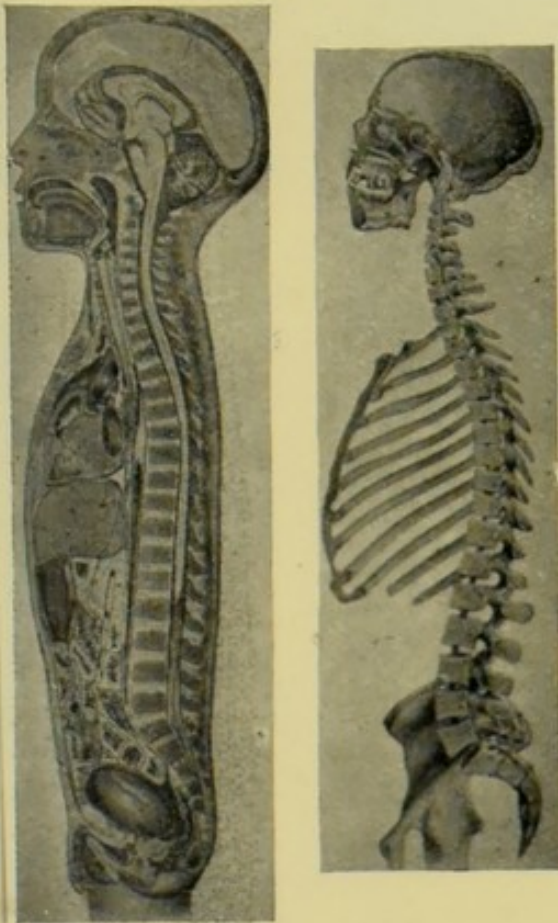
Acute Infective Fevers.—The following short synopsis is largely taken from the book on the subject by Dr C. B. Ker.*

<i>Chicken-Pox</i>	.	.	Incubation	.	12 to 21 days.
			Quarantine	.	22 days.
			Infectivity	.	While crusts present.
<i>Typhoid</i>	.	.	Incubation	.	Variable. 1 to 3 weeks, or may be less than 1 week.
			Infectivity	.	————
<i>Diphtheria</i>	.	.	Incubation	.	1 to 7 days.
			Quarantine	.	Swab from throat.
			Infectivity	.	Swab „ „

* Infectious Diseases, 1910.

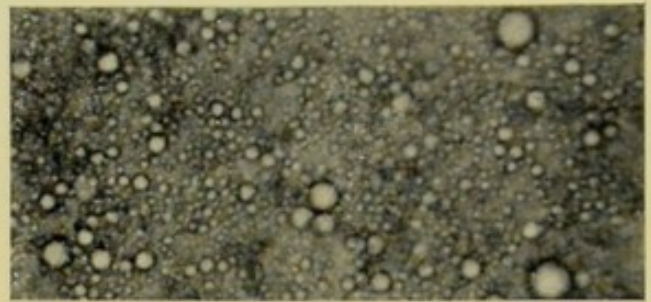
<i>Whooping-Cough</i>	Incubation	2 to 14 days.
	Quarantine	A fortnight.
	Infectivity	Till whoop is well marked.
<i>Mumps</i>	Incubation	12 to 26 days.
	Quarantine	26 days.
	Infectivity	Isolation of patient, at least 3 weeks from date of appearance of parotid swelling, and, in prolonged cases, for not less than a week from the date of its subsidence.
<i>Measles</i>	Incubation	10 to 14 days.
	Quarantine	A fortnight.
	Infectivity	From first symptom to disappearance of catarrh, which seldom outlasts rash.
<i>German Measles</i>	Incubation	14 to 21 days.
	Quarantine	3 weeks is too drastic and may isolate from 10th to 21st day.
	Infectivity	Short-lived.
<i>Scarlet</i>	Incubation	2 to 7 days.
	Quarantine	A week.
	Infectivity	"Six weeks from date of onset minimum detention for young children who have no discharges."

Fig. 4.



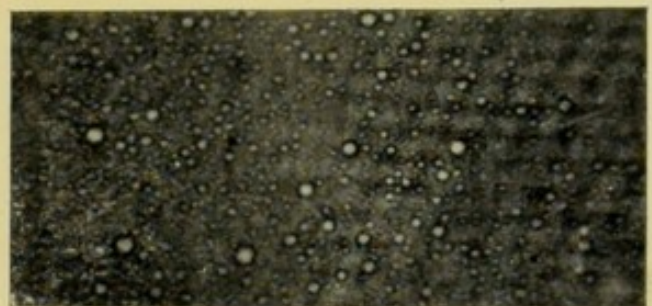
(a) A new-born child. (b) An adult.
The effect of the force of gravity is to produce various curves in the spine.

Fig. 5.



Cow's Milk (as seen under the microscope).

Fig. 6.



Mother's Milk (as seen under the microscope).
The light, round particles with dark outlines are globules of fat. It will be noticed that those of cow's milk are larger than those of mother's milk, and also that the envelope surrounding them is thicker.

TO SHOW THE PREVALENCE OF MICROBES.

Fig. 7.

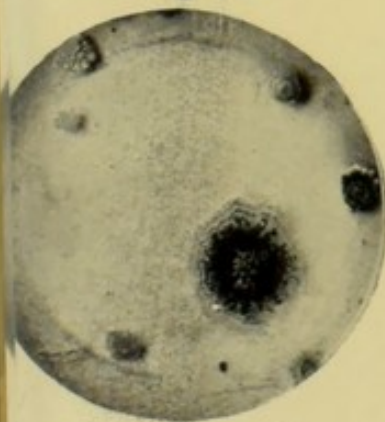


Fig. 8.

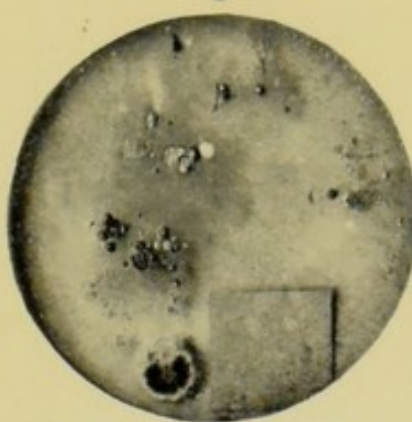
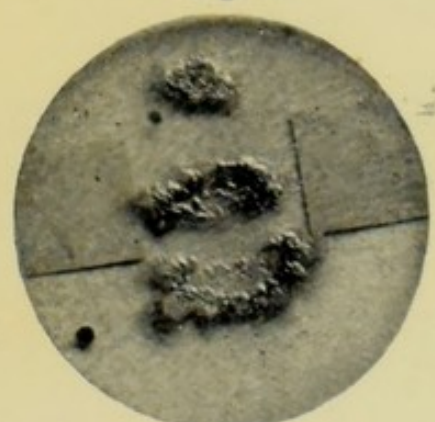


Fig. 9.



Microbes grow readily in certain forms of jelly when kept warm.
Fig. 7 shows a dish of jelly which was exposed to the air of a room for ten minutes, then covered and kept warm for twenty-four hours. The growths covering the surface of the jelly consist of millions of microbes.
Fig. 8 shows a similar dish touched by the tips of hairs.
Fig. 9 shows a similar dish with the imprint of a kiss. Above are the multitudes of microbes resulting from the pressure of the tip of the nose, in the middle those from the upper lip, and beneath those from the lower lip.

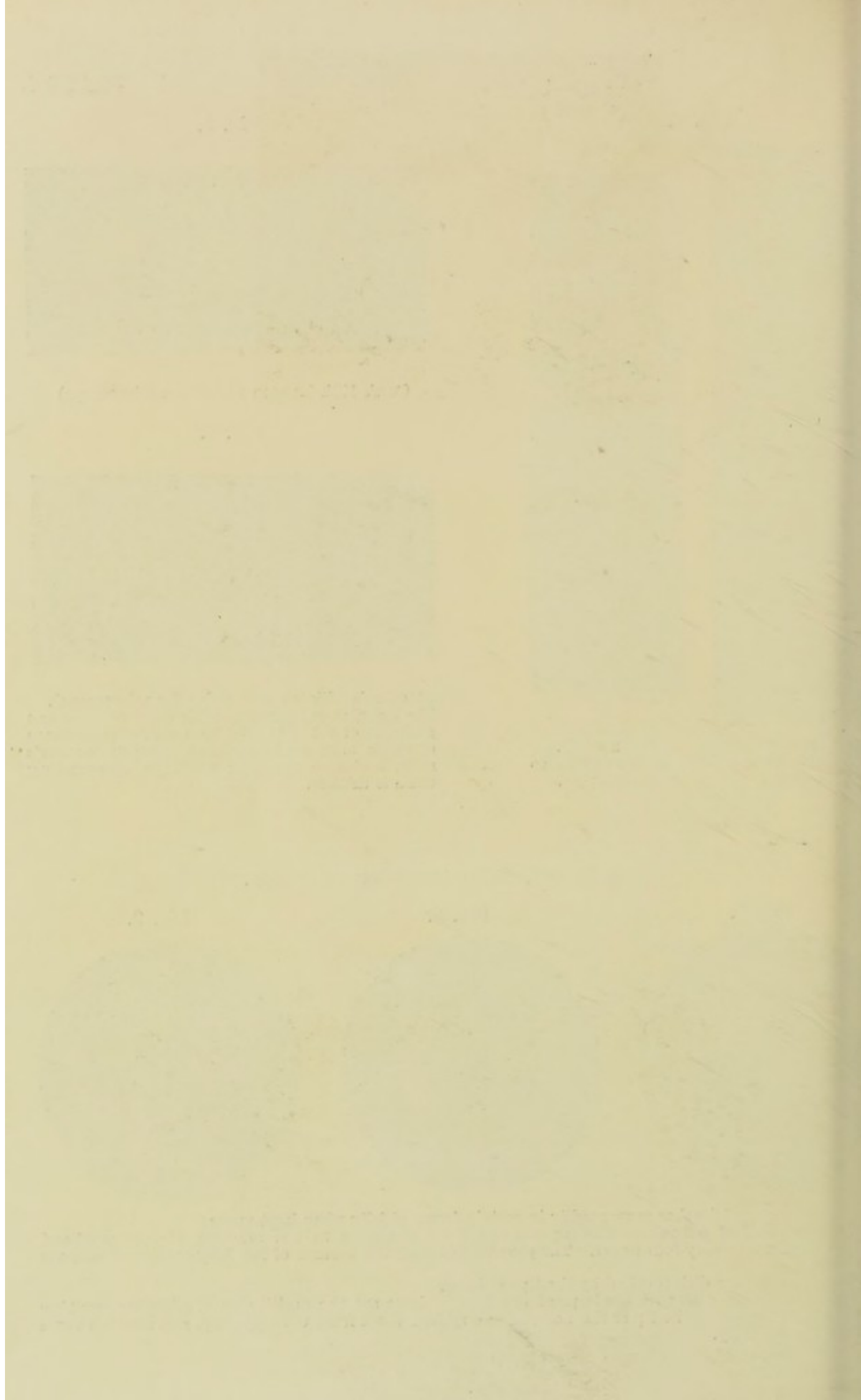
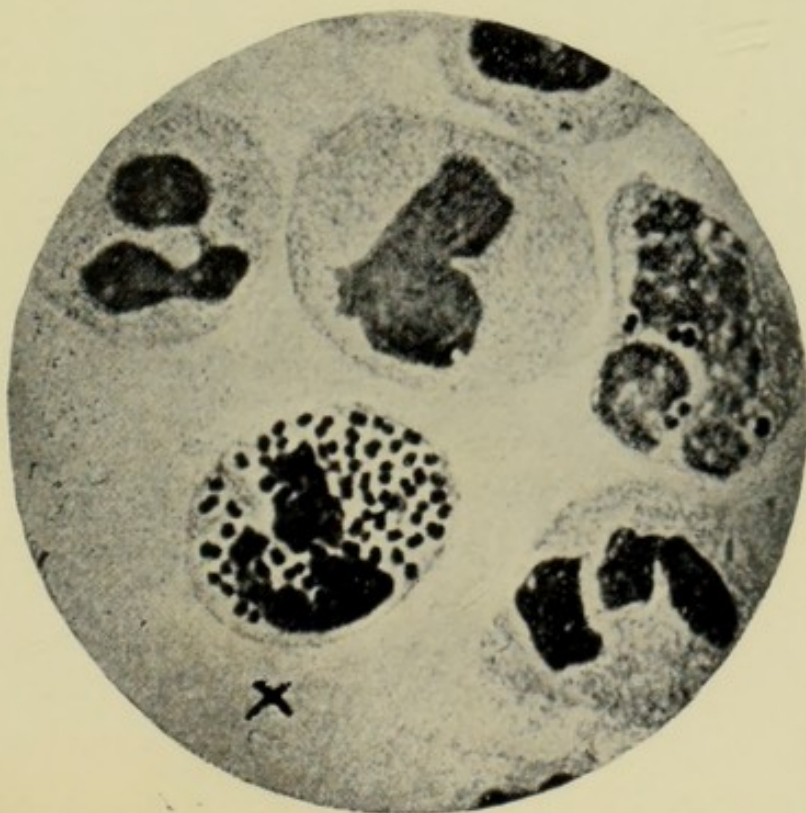
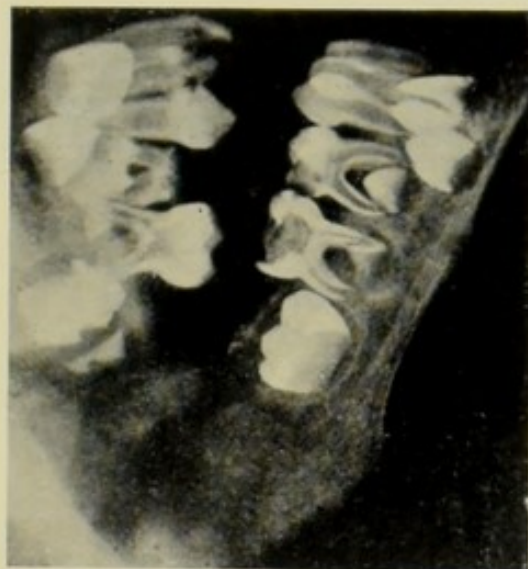


Fig. 10.



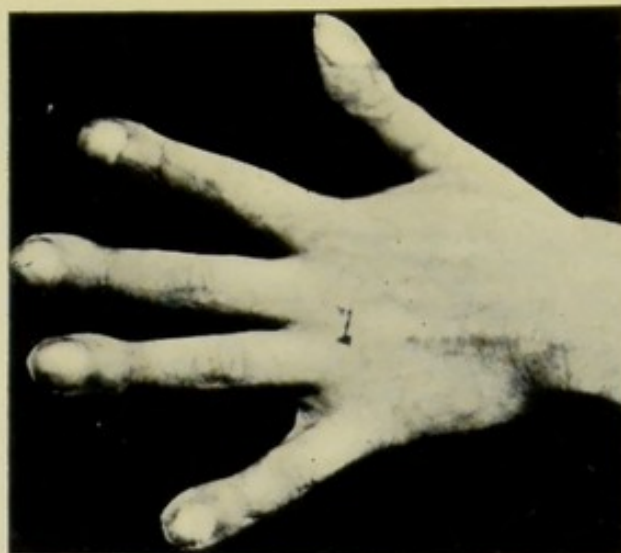
This figure shows some white cells of the blood, the large, dark objects in these cells being their nuclei. The cells have the power of eating up microbes, and in one of them (X) many microbes are seen, as black dots, which have been engulfed.

Fig. 11.



Carious Teeth—X-ray photograph (Rotch). Showing how the 2nd teeth are present ready to take the place of the first when these are removed.

Fig. 12.



Clubbed fingers. (Dr J. W. Simpson's Case.)

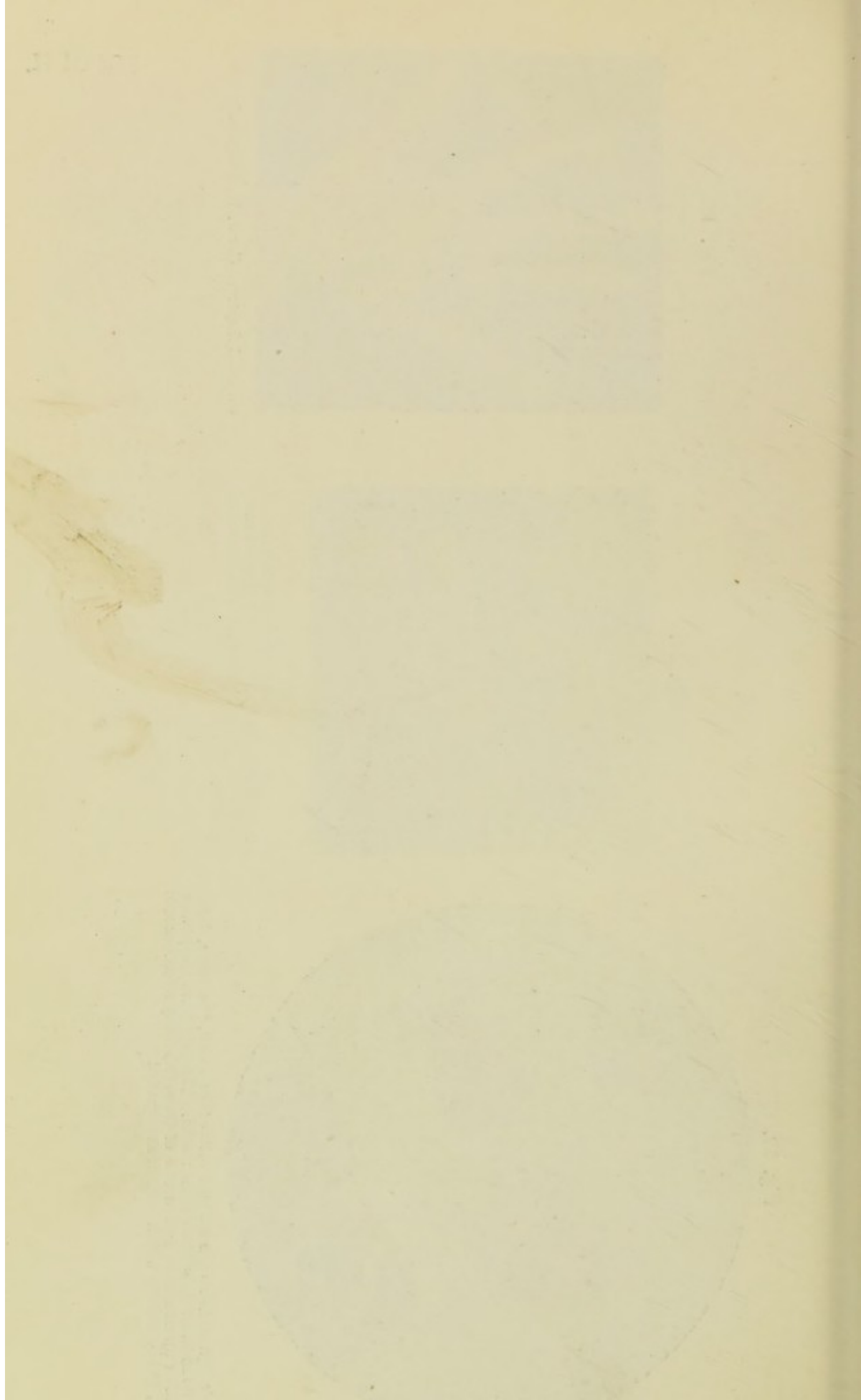
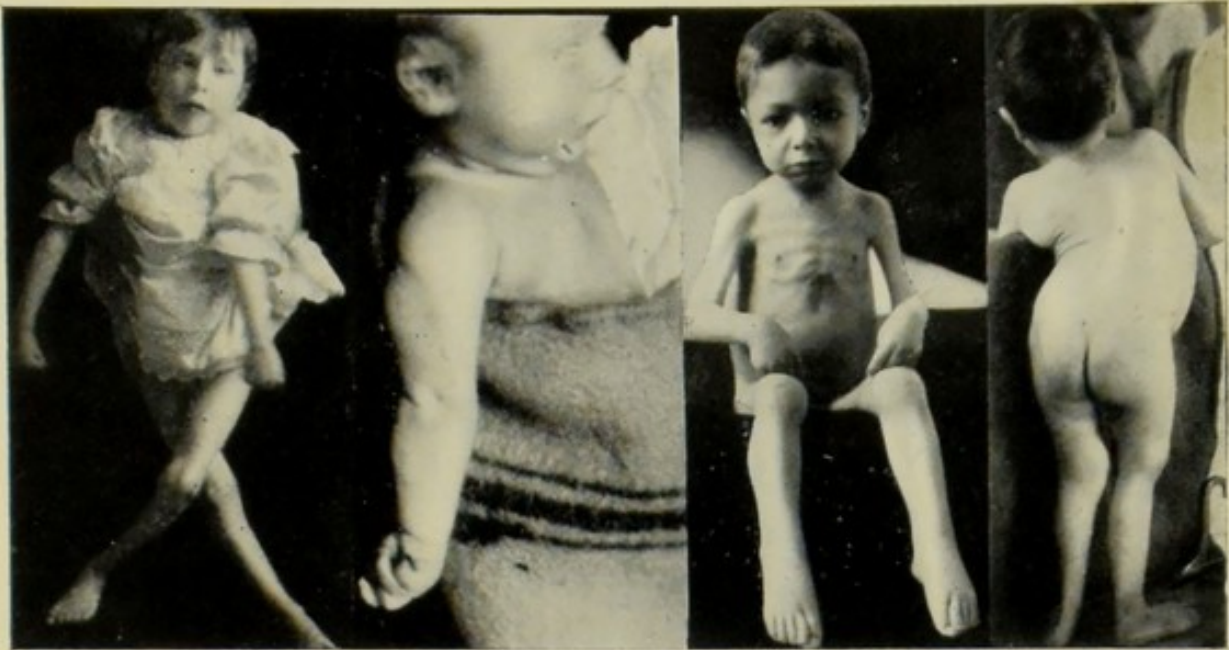


Fig. 13.

Fig. 14.

Fig. 15.

Fig. 16.



13. Birth paralysis due to hæmorrhage on brain. (Dr J. W. Simpson's Case.)
14. Paralysis of arm occurring at birth. Note peculiar position of arm. This form of paralysis is often completely recovered from. (Dr J. S. Fowler's Case.)
15. Tetany, *i.e.* spasm of the muscles of the hands and feet associated with general disorder of nutrition. (Dr J. S. Fowler's Case.)
16. Spinal curvature due to a mechanical cause (*e.g.* habitual unsuitable position) and not to disease of the bones of the spine. This curvative is lateral. (*Cp.* plate VII., fig. 32) (Dr J. S. Fowler's Case.)

Fig. 17.

Fig. 18.

Fig. 19.



17. A baby suffering from congenital syphilis, *i.e.* syphilis with which he has been infected before birth.
18. Microcephalus. (Dr J. S. Fowler's Case.)
19. Hydrocephalus.

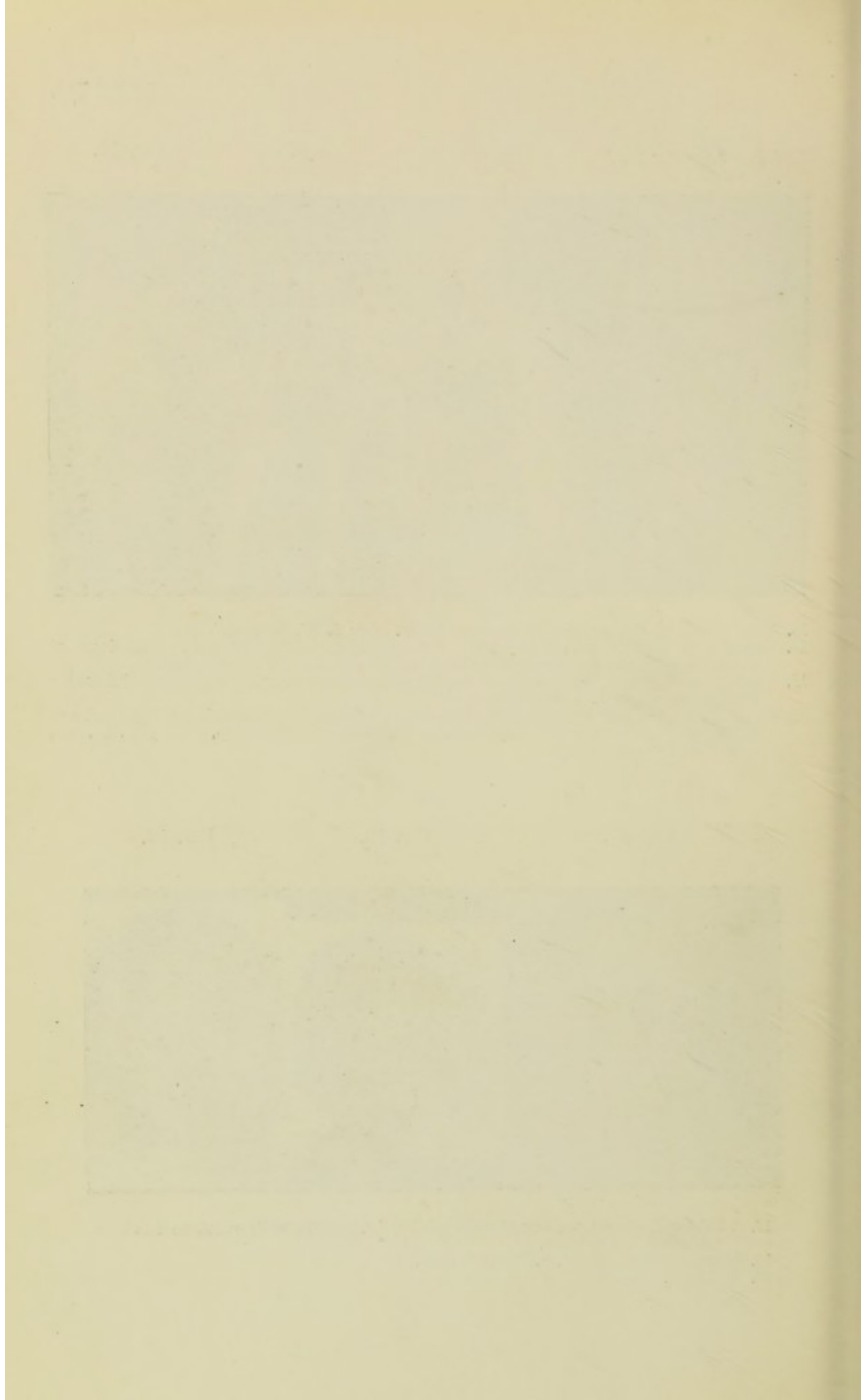
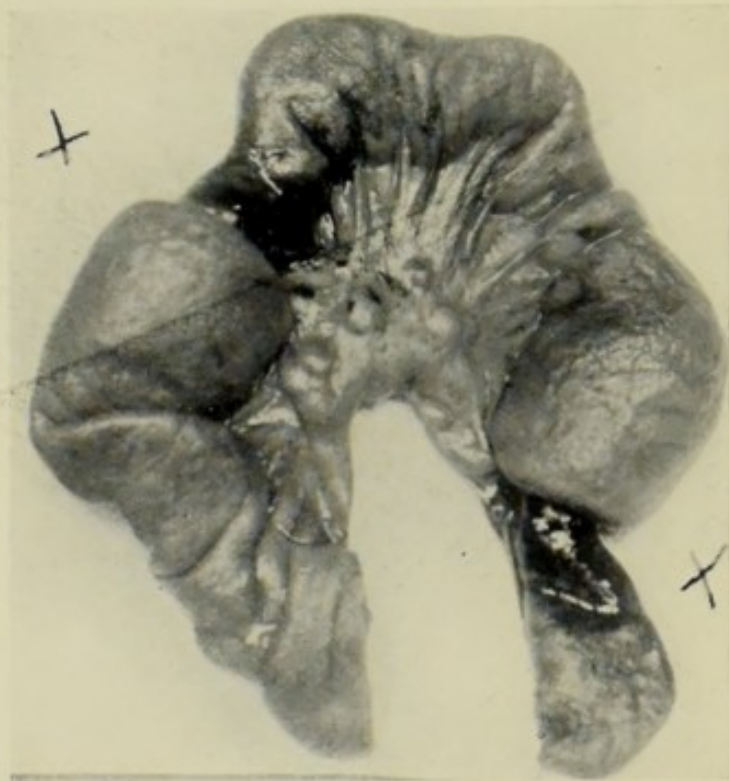


Fig. 20.



20. A Mongol. (*Cp.* plate VII., fig. 30.) (Dr J. S. Fowler's Case).

Fig. 21.

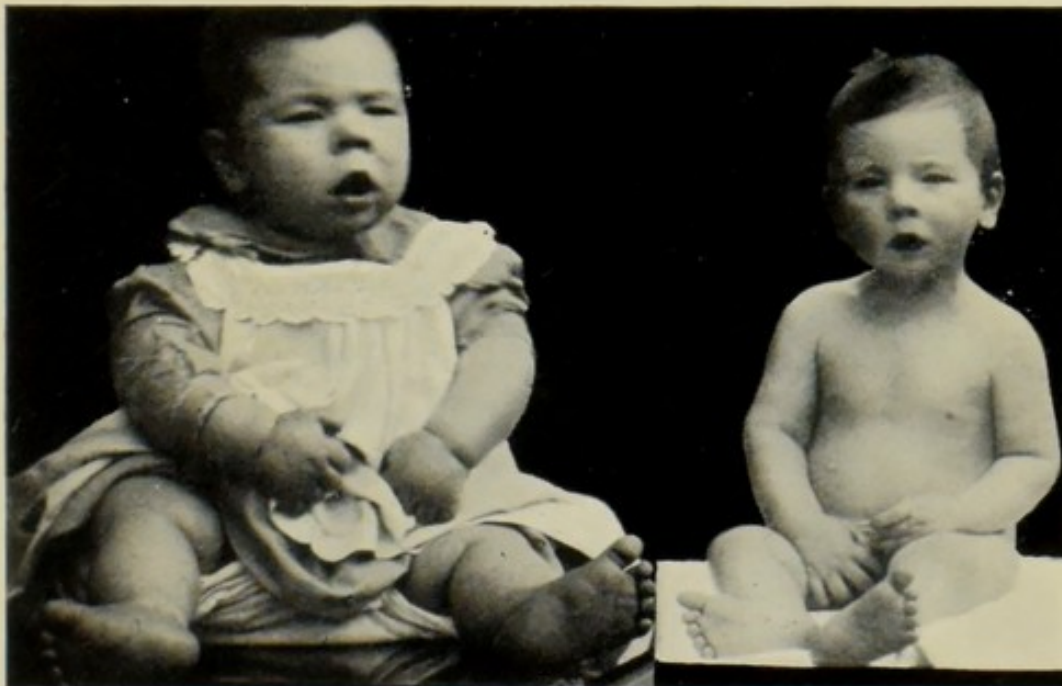


A piece of bowel showing intussusception in two places (X).

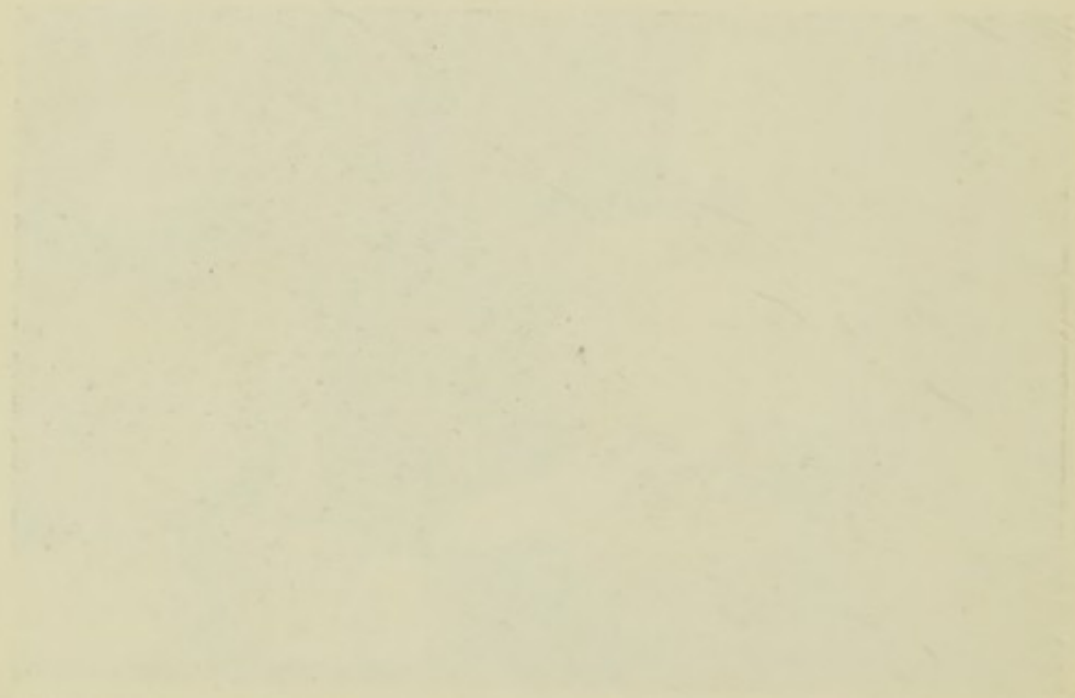
(a)

Fig. 22.

(b)



A cretin (a) before treatment ; (b) the same child after treatment for two months with a preparation of thyroid gland. (Dr Melville Dunlop's Case.)



THE
ATLANTIC

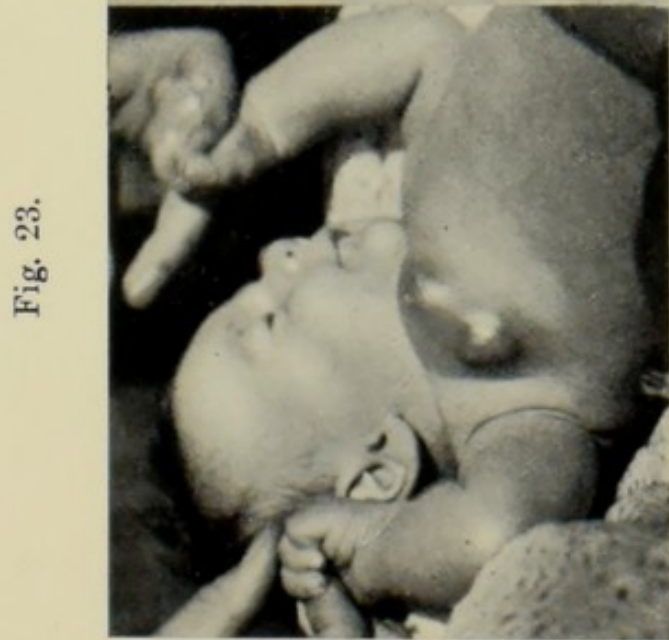


Fig. 23.



Fig. 24.



Fig. 25.

23. Breast abscess in a very young baby. (Dr Fowler's Case.)
 24. A baby suffering from meningitis who has marked retraction of the head. (Dr Simpson's case.)

X-ray photograph of the hand of a child. (Rotch.) It shows tuberculous disease of two of the bones (marked by small arrows).

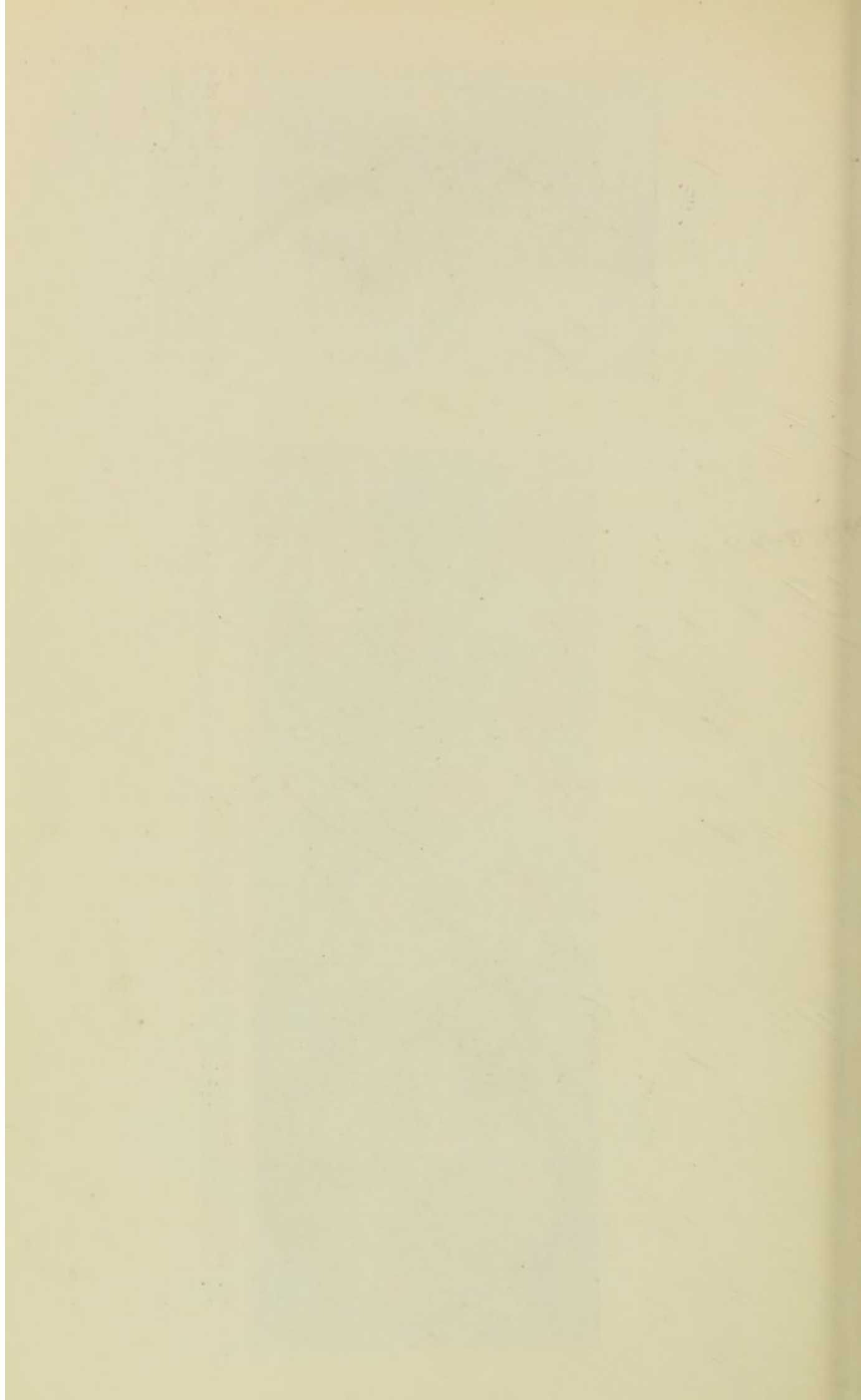


Fig. 26.



Fig. 27.



Fig. 28.



Fig. 29.



A case of disease of the brain. Note the expression of astonishment. (Dr J. W. Simpson's Case.)

26. Meningitis. Note the half-closed eyes, the slight squint, and the general expression of mental detachment. (Dr J. W. Simpson's Case.)
 27. A very sick child. Note the expression of terror. (Dr J. S. Fowler's Case.)
 28. Pneumonia. Note the felled appearance.

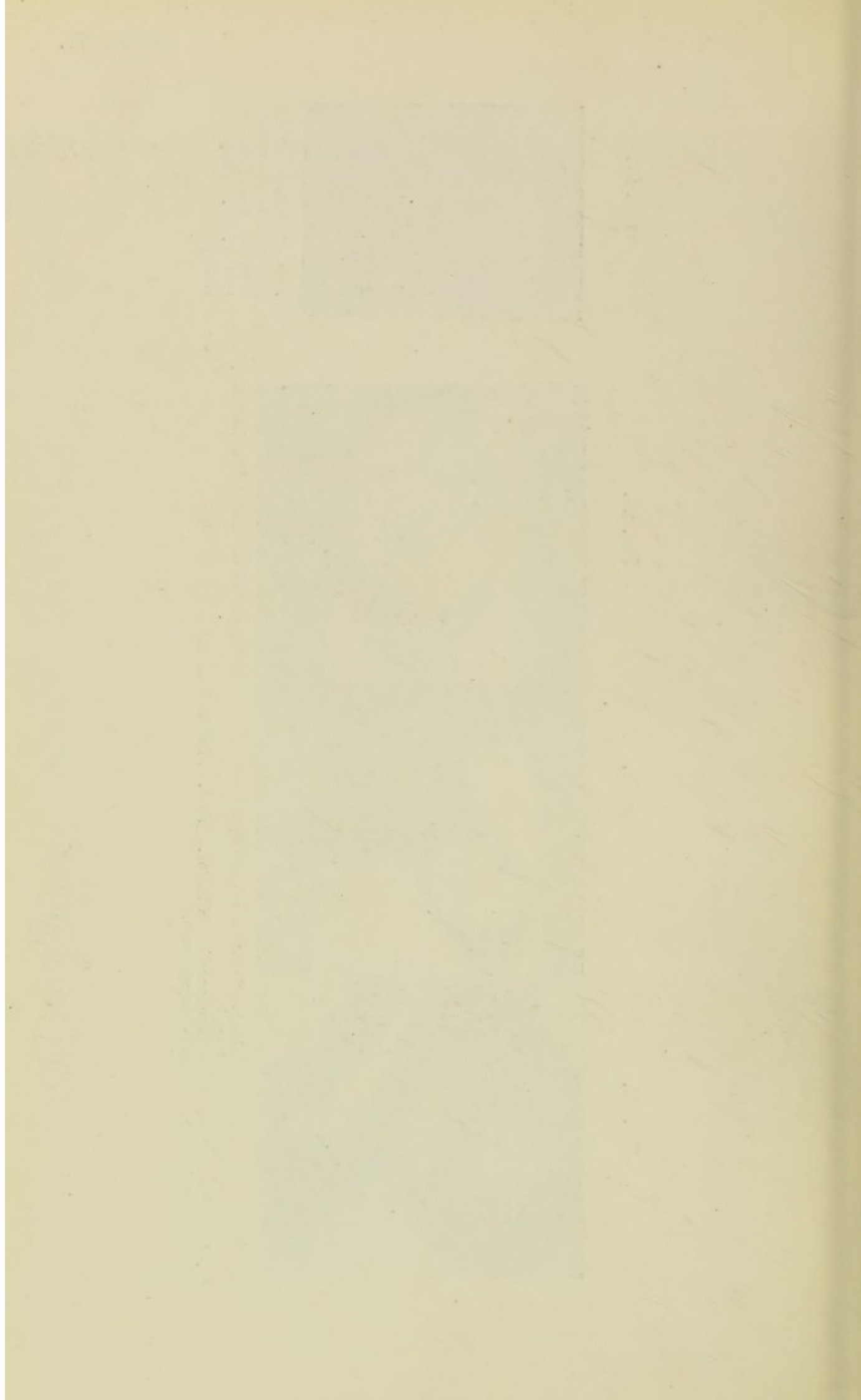


Fig. 30.

Fig. 31.

Fig. 32.



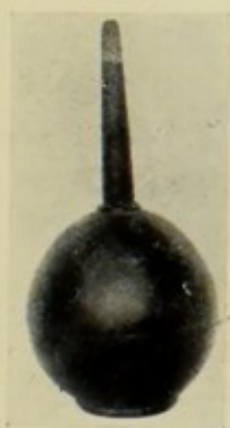
- . A Mongol. Note obliquity of eyes and protrusion of tongue. (See also plate IV., fig. 2.)
 . A child suffering from rickets. Note the narrow chest and sinking in of the ribs.
 . Tuberculous disease of the spine (with pigeon breast). Note the sharp-pointed projection in the spine. (Dr Fowler's Case). (Cp. plate III., fig. 16).

Fig. 33.

Fig. 34.

Fig. 35.

Fig. 36.



The ball rubber syringe.



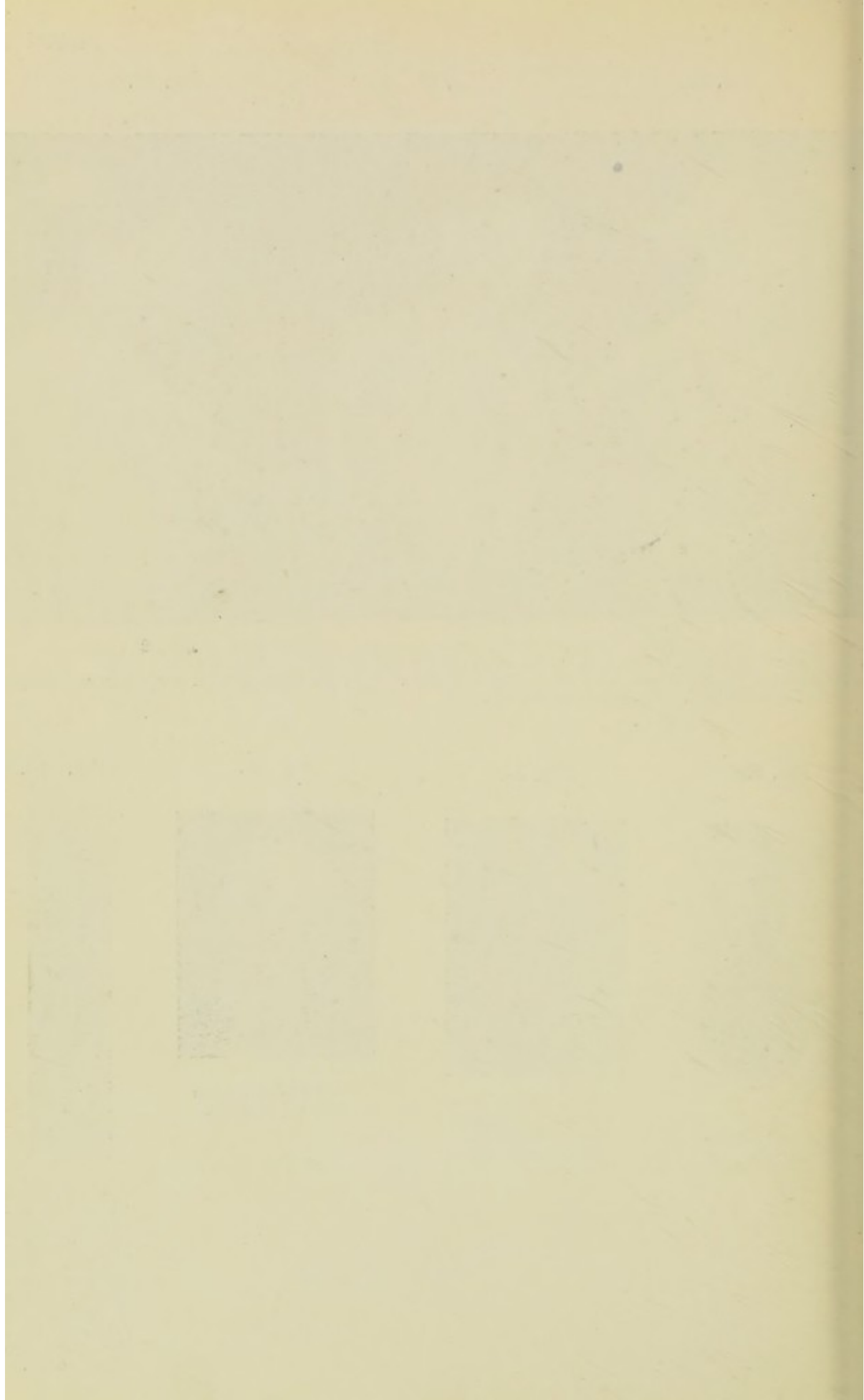
A baby dying from severe diarrhoea. Note sunken appearance and vacant stare.



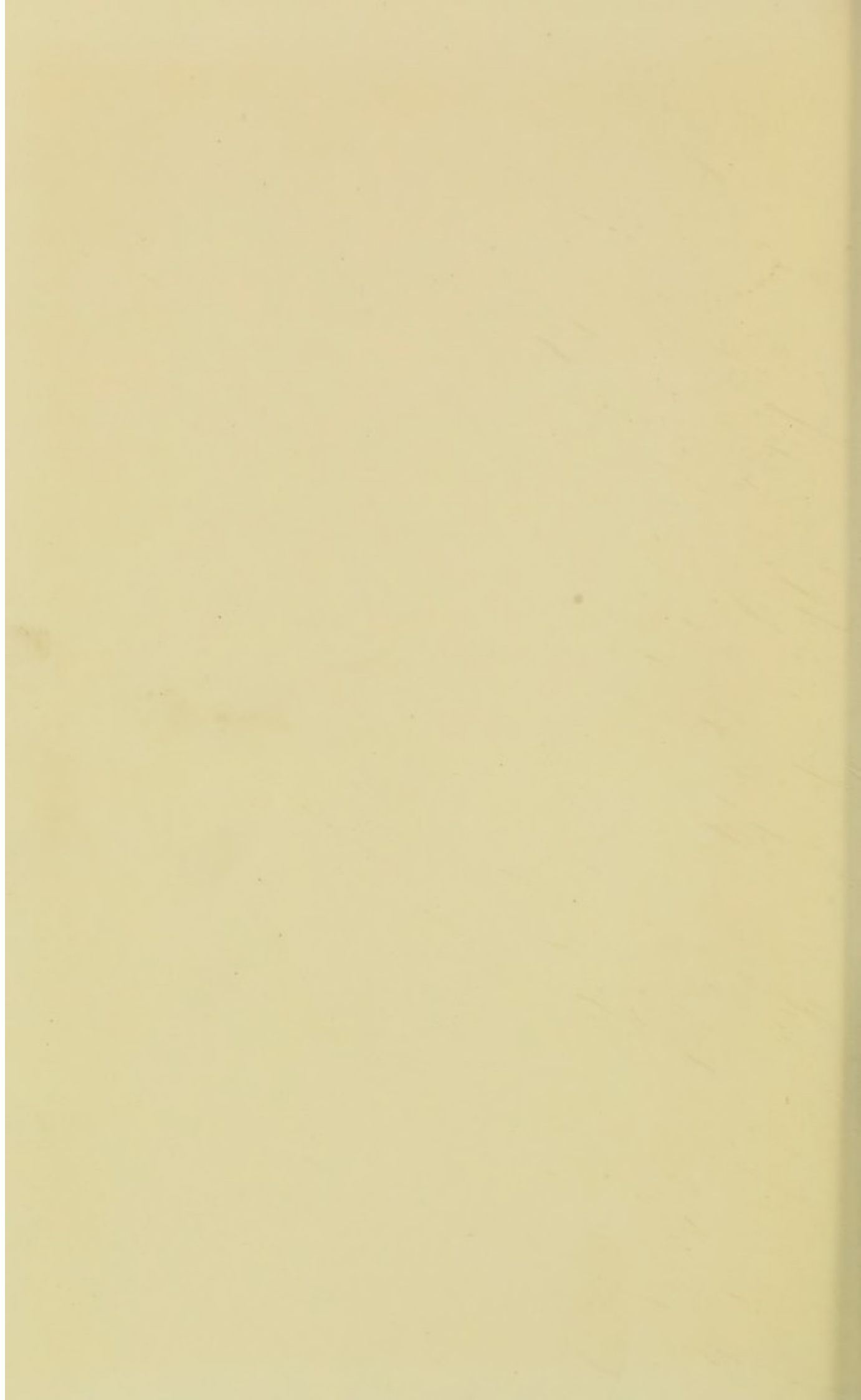
A boy suffering from adenoid growths.



A syringe which is frequently useful for cleansing the ear. Care must be taken that no injury is caused by pressure from the hard syringe nozzle.







By the term incubation is meant the period between the time when infection was conveyed to the child, and the time when symptoms begin to show themselves. Thus it may be twelve or even twenty-one days after a child is infected with chicken-pox before he shows any symptoms, and this is the period of incubation. The time during which a child who may possibly be infected must be kept from mixing with other children is rather over this incubation period—for example, twenty-two days in cases of chicken-pox, as up till that time it is not possible to be sure that he will not develop the disease.

By the term infectivity is meant the period of time that the patient himself is infectious.

Diphtheria may attack the nose, throat, or wind-pipe of the child, and it is extremely important that he should be seen at the earliest possible moment by a doctor, as the sooner he gets an injection of diphtheria antitoxin the better are his chances of good recovery. Under the headings Quarantine and Infectivity has been noted—swab. It is not possible to lay down laws as to the length of these periods, and the only method of judging whether a person is infectious or not, is to remove some of the secretion from the back of the throat with a swab, and examine this for diphtheria bacilli.

Measles and whooping-cough are often not very

serious diseases in themselves, but it is extremely important that both conditions should be carefully treated, as many cases of pneumonia and tuberculosis are due to lack of this care in children so affected.

LECTURE IX

THE WORK OF A HEALTH VISITOR AMONG CHILDREN

WHAT are we to understand by the term health visitor? What is the object of health visiting? What is the scope of the work of a health visitor?

A health visitor is a person who visits a house to enquire and observe regarding the health of the inmates; whose object is to assist them by advice and example in the preservation of their health. The scope of the work is, consequently, wide, for the factors militating against the continued health of an individual are many and various. Medicine is, at all times, a broad term, and in this connection particularly so.

This work must be done under medical supervision, but, included in the proper execution of it, there is much that is commonly associated with the work of the church and of charity, and much that is of value to the community at large in fostering co-ordination of effort, prevention of overlapping of philanthropic and charitable enterprises, and many peculiar opportunities of education in its broadest sense.

To carry out the work efficiently can be no easy task. To the qualities of kindness, discrimination, and tact, must be joined a sense of justice and a certain fund of knowledge. The object of these lectures is instruction in elementary medical information. Such knowledge is essential. But this knowledge must be tempered with a due sense of proportion. Medicine is not an exact science, and it is a truism that the individual is a law unto himself. Medical men become expert in the treatment of individual patients only after many years of hard study and experience. It is folly on the part of an imperfectly trained person to arrogate to herself duties for which she is unfit.

It is always wise, in any difficulty, to refrain from giving advice, and call for the assistance of a physician.

In the book on "New Ideals in Healing," by Ray Stannard Baker, we find the following:—

"Dr Richard C. Cabot of Boston, in his first Annual Report of the Social Service Department of the Massachusetts General Hospital, quotes from 'Alice in Wonderland':"

"'Have some wine,' said the Hatter.

"'I don't see any wine,' said Alice.

"'There isn't any,' said the Hatter.

"Dr Cabot says that scenes suggesting this conversation between Alice and the Hatter have been enacted many times every week in the Out-patient Department of the Massachusetts General Hospital. A patient comes to be

examined ; after looking him over the doctor says, 'Take a vacation.' 'Get a lighter job.' 'Buy a set of teeth.' But among most of the patients who swarm the clinics of that great hospital, the doctor might as well say, 'Get the moon,' or 'Have a star'—for they are too poor to afford the remedies prescribed, or too ignorant to use them.

"A man who visits the hospital suffering from no other debility than hunger—and this is an actual case—is advised that he needs a tonic. A poor woman comes in suffering with tuberculosis. The doctor says, 'You must stop work ; you must sleep out-of-doors ; you must have especially nutritious food.' But, like Alice, she doesn't see any ; and there isn't any. She has no money to provide for sleeping quarters out-of-doors, or for extra food, or knowledge how to employ such remedies properly even if she had them ; and if she stops work, she starves. A woman with a large family of children is advised that her life depends upon having a certain operation performed. But for some reason she does not return to the hospital to have it performed. When the doctor hunts her up and scolds her for not doing the right thing, she says : 'But what about the children ?'

"Where the Hospitals Fail.

"At this point the machinery of the hospital breaks down and goes to pieces. Its science is unavailing ; it cannot cure this woman because she has diseases not set down in medical works—the disease of poverty, the disease of dependent children. What shall be done with the consumptive ? Give her the best and costliest of scientific advice, which she cannot possibly follow, and let her go out, not only to die, but to spread the infection of her disease ? What shall be done with the poverty-stricken

woman and her children? And what shall be done with the hungry man? Give him a tonic and turn him out to die?

"Changing Viewpoints of the Doctor."

"Newly awakened to these profoundly human aspects of disease, the doctor, like the clergyman, feels his inadequacy, his futility; and he, also, sees visions of new spheres of usefulness to mankind. Indeed, not only the practice, but the whole point of view of the medical profession is changing, and not less radically than that of the church.

"It is my present purpose to deal with Dr Cabot's remarkable efforts at the Massachusetts General Hospital to meet the broader needs of men. As the Emmanuel Movement is only one of many efforts or experiments of the church to place itself in the currents of the new idealistic thought, so Dr Cabot's work is only one of many extraordinary new activities of the medical profession.

"Two great avenues of new activity are opening to the medical profession. The first proceeds from the growing conviction that most, if not all, diseases are not merely *individual*, but social. At the root of the great destroyers, tuberculosis, typhoid fever, children's diseases, in no small measure lie malnutrition, hunger, wretched housing conditions, dirty streets—in other words, poverty and social neglect. Yellow fever, smallpox, diphtheria and pneumonia, when they strike, strike not merely an isolated individual; they endanger the city or the State. Diseases of vice are usually diseases of poverty, ignorance, and evil environment, which can never be effectually reached by any mere medication of the individual man or woman. Medicine is thus seen to be intimately bound up with all sorts of new sociological, political, ethical and economic problems.

"The second great avenue of activity proceeds from an awakening to the fact that man is not only a physical and material animal, but that he is also a thinking animal, a religious animal, that the mind has a vital influence over the body, that religion may also be a powerful agency in healing disease. To this discovery the medical profession is being driven by the work of the new school of experimental psychologists, and by the spread of popular healing cults like Christian Science, the Emmanuel Movement, Mind Cure, and the New Thought. Up to the present year no medical college in the world gave a course in psycho-therapeutics or in psychology; now several strong courses have been established.

"In short, just as the church is beginning to discover that man has a body as well as a soul, the medical profession is beginning to discover that man has a soul as well as a body. *The whole man must be treated*; and he must be treated not merely as an individual and unrelated sick man, but as a component and essential part of our close-knit social life, where one man who is sick endangers the whole city in which he lives."

In his book on Social Service and the Art of Healing, Dr Cabot says:—

"The shortsightedness of our hospitals in this respect is really marvellous. They will take into the wards a baby whose digestion is upset, give it free treatment, which costs the hospital twenty dollars, send it out again without any inquiry into the way the mother feeds it, or the air it breathes, or the clothes it wears. A month later the baby is back again, as sick as before, and from just the same causes. The hospital takes it again, spends another twenty

dollars in getting it well, and so on. I followed up a case like this recently, and found that the mother was grossly ignorant of the first principles of feeding and caring for a baby, though perfectly capable of being taught. Even in terms of dollars and cents. the hospital is losing by its blindness to backgrounds. The same ailments in the same patients are treated again and again, with a wisdom equal to that of the sage who dipped up water with a sieve."

Here is a great sphere of usefulness for the expert social worker. Acting in co-operation with the hospital physician she removes this "gross ignorance of the first principles of feeding and caring for a baby." But, as Holt says, when speaking of the reduction of infant mortality:—

"The work of distribution of milk should be supplemented by instruction not only in matters of feeding, but in many other questions of infant hygiene, clothing, fresh air, etc. This requires a large staff of visitors, who are not only tactful in the management of patients, but who possess the special knowledge and training which qualifies them for this work. *These teachers must themselves be properly instructed if results are to follow.*"

Mrs Sydney Webb, speaking of Health Visitors, says: *—

"A striking development of the the Local Health Authorities' work is the organisation, in a hundred towns, of a staff of Health Visitors. The Local Health Authority

* How the minority report deals with the rich, the infirm, and the infants.

found the bulk of the poor mothers—those in receipt of Outdoor Relief no less than the others—totally unaware how to rear their babies in health. They were both unable and unwilling to pay for the private practitioner's advice, at any rate so long as the babies were not actually ill, and the Destitution Authority provided no instruction even for the mothers whom it was relieving. The result has been the creation of a remarkable organisation, partly paid and partly voluntary, by which the Medical Officer of Health attempts to keep under observation, during the whole of the first year of life, all the babies born in the poorer families, including those who are on the outdoor pauper roll of the Destitution Authority, and those among them who are actually under the attendance of the District Medical Officer. This organisation has already gone very far. At the present time in the poorer districts of many towns of Great Britain, every house at which a birth occurs, or at which a child under two years has died (even those at which the District Medical Officer is in attendance), is visited by an officer from the Medical Officer of Health's Department—in some places by a lady volunteer, in others by a semi-philanthropic paid agent, in others again by a trained professional Health Visitor, qualified by a sanitary certificate or a nurse's experience. Including the organised volunteers, there are already more Health Visitors than there are Relieving Officers in England and Wales.

“In a dozen towns (St Helens since 1899 ; also Liverpool, Battersea, Finsbury, Lambeth, Woolwich, Glasgow, Leicester), the Health Authority has gone a step further. It provides a municipal milk depôt, or rather a ‘milk dispensary,’ at which babies requiring artificial feeding are supplied with pure milk (and hygienic feeding teats) on payment of a small sum.”

Good milk is very important for young children, and there have recently been prepared, by the Joint Committee on Milk of the National Health Society and the National League for Physical Education and Improvement, three leaflets of instructions for ensuring the supply of clean milk. These leaflets are published by the League at 4 Tavistock Square, W.C., and cost 6d. per dozen. Leaflet "A," is to "Farmers and other Milk Producers"; leaflet "B," to "Distributors and Retailers of Milk"; and leaflet "C," to "Housewives and all Consumers of Milk."

In connection with many medical institutions, health visiting, in its widest sense, is being undertaken.

A prominent medical journal comments thus on one such undertaking:—*

"Outside, where help appears to be wanted, the aid of the clergy, of the Invalid Children's Aid Association, of the Charity Organisation Society, and of similar institutions, as well as that of sympathetic individual volunteers, is invoked, the home is visited, and its conditions are thoroughly enquired into, after which, assistance is given or withheld in accordance with the needs of the case. These, of course, vary widely both in nature and in the extent to which pecuniary or personal influences may be required for their alleviation. A little tactful persuasion may have to be applied in order that a workman's situation may be kept open for him until his recovery; a home may have to be visited in order to see that the children are being cared

**Lancet*, 24th December 1910.

for during their mother's absence ; material aid, instruction, and supervision may be wanted in order that a phthisical patient may carry out, at home, advice which the physician can give but cannot enforce. In a large number of obstetrical cases, besides such help and counsel as may be needed in order that the physical welfare of the patient may be protected, there is obviously an opportunity for the sympathetic adviser and friend, almost unlimited in its extent and in the variety of its demands, upon the helper's resources. It is only necessary, however, to indicate the nature of the work in order to point out that its extension must depend upon the number and zeal of those who are willing to assist, and upon the resources which the generosity of the charitable may place at their disposal. It is not a question of regulating the almsgiving of a benevolent institution, and of increasing its power to bestow money upon the poor, but of distributing, in the most practical way, help which may take the form of money, or of money's worth, but which may, in other instances, be equally effective for good without the expenditure of a shilling. It is the holding out of a helping hand which will be grasped gratefully for the sympathy and aid that it brings—a hand which will supplement and render complete the work of the hospital, but which the hospital cannot extend, because its energies, and the funds which sustain them, have to be devoted to definite purposes of a particular and limited nature.

“ Our hospitals open their doors to the poor when stricken down by disease or by injury, and, so far as it lies in their power, minimise, by medical and surgical treatment, the weight of the blow which disease or injury inflicts upon those whose health, and consequent ability

to earn a living by their daily toil, are often their only assets. It is not possible for hospitals to carry the work further than the healing of the physical disability, but they may well become the source and centre of charitable endeavour to avert the otherwise inevitable consequences of incapacity from falling upon the patient and his or her dependents. They should thus be able to inspire and guide the operations of voluntary layworkers in the cause of charity, thereby strengthening and widening their own influence to the advantage of the community."

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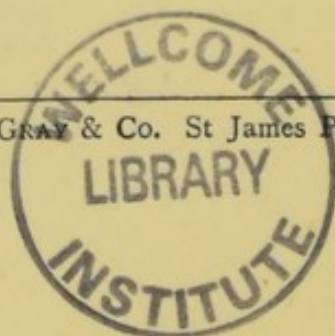
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