The medical examination of the school child / by D.A. Carruthers.

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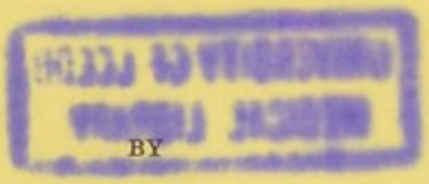

BY

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THE MEDICAL OFFICER

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PREFACE.

These articles, now published in book form, were written by request to summarize for the school medical inspector the conditions which should be noted by him when performing his work, and for that purpose the Schedule of Medical Inspection issued by the Board of Education is taken as a guide. School medical examinations and clinical examinations in a hospital are widely different, so much so that a special training is useful for the school medical officer; and so these pages may prove useful. Space permitted only outlines to be written, but the details can be filled in by any worker at his leisure.

The Author.

Aylesbury.

1st June, 1910.

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CHAPTER I.

Introductory.

The Education (Administrative Provisions) Act, 1907, came into force on the 1st January, 1908, and under the 13th Section of that Act it was necessary for local education authorities to make provision for the medical inspection of the children attending elementary schools to the satisfaction of the Board of Education. To assist local authorities in making this provision, a Circular (No. 582) was issued by the Board of Education on the 23rd January, 1908, to which was attached a schedule of medical inspection to be used as a model for the examination of children. Certain points in that circular are worthy of attention. The Board state that though asked to issue a complete set of forms for use in the work they prefer rather to leave the matter to experience, "and, for the present, the Board think it expedient to leave considerable latitude, subject to the considerations hereinafter set out, in regard to the particular forms or schedules to be used in different cases or circumstances."

"In the accompanying schedule the Board indicate the particulars, attention to which they regard as constituting the minimum of efficient medical inspection, and they consider that at least these particulars should be included in any other schedule which the local education authority may authorize for the use of their schools. It deliberately excludes many points of anthropometric or statistical interest which are worthy of attention, and which it is hoped may receive attention in suitable districts. Nor does it profess to lay down the lines of a clinical study or of a scientifically complete medical examination. It is intended to indicate the methods which, in the Board's opinion, should be followed and the particulars which should be attended to for the purpose of determining the fitness of the individual child for school life, to guide the authority in adapting education to the peculiarities or abnormalities of the child, and to prepare the way for measures for the amelioration of defects in the child or its environment."

"If this schedule is properly used, few cases of serious physical weakness or defect will escape detection. It is

considered that the inspection of each child should not occupy on the average more than a few minutes, and that the child need only, as a rule, have its clothes loosened or be partially undressed."

"With regard to items 17 to 24 of the schedule (dealing with the different systems of the body in the presence of any disease or deformity), while it is necessary that all indications of diseased or unsound conditions should be thoroughly investigated, needless medical examination of healthy children should, for obvious reasons, be avoided."

The Main Objects of Inspection.

In all practice, attention to these instructions materially assists the work of medical inspection. The main ideas to cover the examination of the child are suggested in this circular. Medical inspection of elementary school children does not consist in making a clinical examination of each child, but is rather made with the intention of summarizing the physical condition of the child and noting when it is necessary to keep the child under observation, or if there is no condition needing treatment, taking no notice of the child till the next inspection. All children that have defects calling for treatment should be noted, and on visiting the schools these children should be seen again, so that one may be assured that the defect has been removed, or that the attention of the parent may be more drastically drawn to the condition. On the other hand, children who have been found to possess no defect requiring this watchful or "control" method of treatment, need not be observed again until the next time that they are due for examination; but it is desirable to impress upon the teacher that if any of these children should, in the interval, suffer from a serious or acute illness, it is desirable that they be presented for inspection to the medical officer after such an attack of disease. While noticing the general health of the child examined, it is also necessary to take cognizance of the presence of any condition in the child which may be harmful to the other children attending schools (such as the presence of vermin and other skin parasites and all infectious disease) so that children attending school may be protected as far as possible. The third main object of medical inspection is to consider the physiological condition of the child, so that the teacher may be advised as to the necessity for any alterations in the curriculum, and may be consulted as to the best method of dealing with the child, so as to obtain the full educational possibility. It is necessary in making the examination to have these three primary objects well in view if the child is to obtain any benefit from a medical inspection.

Classifying Conditions Found.

It is impossible to consider the different headings of the schedule without also considering the method in which the schedule is to be completed. It is customary sometimes to define each of the items of the schedule in five terms. The average condition is taken as a base of the item and the condition is described as very good, or good, or very bad, or bad, with average condition in the middle of either. It does not matter whether this method is achieved by means of words, figures, or signs, it is extremely difficult to obtain, in the minds of different inspectors, standards which will give a uniform grouping to each partition of the condition. For practical purposes it is undesirable to be so particular in describing conditions.

In Germany it has been the practice in most of the towns where medical inspection is in force to describe the conditions as "good," "medium," or "bad," and in Frankfurt-on-Main one step further has been taken, and a proposal has been made to classify only as "good" and "not good." When we consider that the first object of the examination is to note defects existing in the child, and to see that these are dealt with, it is sufficient for our purpose simply to say that such and such a condition is not good or bad, is worthy of attention, and is sufficient to bring a child under control. If a child does not need attention it is sufficient to mark as good or average. There is not the slightest doubt that where there is plenty of time and a sufficient number of inspectors, the division of the items into five conditions is a more academic view to take, but one can achieve all that is necessary to make their work effective by simply using terms which are sufficient to control the condition of the child. Personally, although in the commencement examining with five signs, it soon became apparent, with the extent of the work, that it was unnecessary for mere usefulness to continue these, and now a sign to denote the average is used, and if the child has any defect needing attention a minus sign is used to denote the condition as bad. Occasionally a plus is used when the child is above the average, but it really does not matter because that child's basis is out of the sphere of practical politics, and children only come within the cognizance of the inspector owing to their bad or minus conditions.

Health a Relative Term.

It will thus be seen that in doing this work it is hardly necessary to have definite ideas as to the normal condition in each case. The inspector is endeavouring to find out defective conditions and remove them by treatment of defects, however small, to produce as healthy a condition as possible. It must not be forgotton that health is a very

relative term, that perfect health is a condition limited to very few, and what may be a healthy condition in one child might not be a healthy condition in another child. Health has been defined as a cone in which those who are strongest and best are at the apex, and mankind spreads down in various conditions towards the base; but this simile might be better conveyed by describing life in terms of a double cone with the bases applied, perfect life being at the top, and widening out in various stages of health, and then contracting later to an acute apex, where death occurs. To the medical inspector of school children it is not of importance as to whether there is a perfect standard of health or a perfect standard of what is normal. It is sufficient for him if he removes the defects present in each child, so that that child is able to attain as much health as is possible for it both at school and in after life.

Time Occupied in Examination.

One other point in the circular calls for comment as it has been so adversely criticized by many, viz: "Inspection of each child should not occupy on the average more than a few minutes, and the child need only as a rule have its clothes loosened or partially undressed." The time occupied in the examination depends largely on the extent of the previous history of the child which is obtained, and the length of time that is taken in obtaining this history. The extent to which a child is to be undressed to enable the inspector to state whether it requires further attention or not depends largely on the clinical experience and method of work of each medical examiner. The more thorough the routine of the examination the less will be the time occupied in doing it. Personally, each child comes in with a sheet detailing the affections from which it has suffered, so that at a glance one has a previous history which can be entered on the schedule. The eyes have been tested with Snellen's type by the teacher, and if normal no more is required. Teeth, throat, nose, and glands are examined, the ear if there is deafness or any history of otorrhœa, and the heart, and if necessary the lungs, but a child is not undressed unless in this primary examination something is detected which calls for further examination. The condition of the child is fully considered, and if there is any interference pointing to deflection from a healthy condition the child is not sent away until the cause of this error of health is discovered. If a child is healthy the examination is completed in a few minutes, but the examination of one child, if unhealthy, may take half-an-hour. It is a mere matter of custom and habit as to the necessity of stripping the child, and medical inspectors should adopt the method which they find most satisfactory for properly overtaking their work.

CHAPTER II.

The Schedule of the Board of Education.

Part I.—The items in this part of the schedule do not call for much comment. They consist of the name, address, and age of the child and the school where the child is attending. The arrangement might be improved, if the school were the first item and the others thereafter. It is to be noted that the age has to state not merely the year, but also the number of months, as with a child born on the 12th June, 1897, and examined on the 10th October, 1909, the age would be 12 4/12ths.

Part II.—Personal History.

Part II. of the schedule deals with the previous illnesses of the child, detailing the chief zymotic diseases of this country and other illnesses, and the family history, especially if, parent or member of the family has died from cancer, tubercular disease, or any other well-defined transmissable condition. It must not be forgotten that we cannot compel parents or friends to give the cause of death of relatives, but the information is not usually difficult to obtain in this age, when there is a tendency on the part of some people to be proud of their diseased conditions.

Much time may be wasted in asking parents or teachers questions regarding the history of the child, or even the child himself, and I submit a copy of a circular which has been in use for more than a year in this area and has met the difficulty. It is printed on the inside of a sheet of paper and is forwarded to the schools in time for the teacher to issue it the day before the examination. If any child appears without the paper he or she has to return and get it. Over five thousand circulars have been issued, and only six refusals were received from parents who declined to fill it in to the best of their ability. Two parents added jocular remarks which, while they may have amused the writers did not destroy the value of their returns. There are really two circulars, one for boys printed on grey paper, and one for girls printed on white paper, and the latter is here produced:—

BUCKS COUNTY EDUCATION COMMITTEE.

Circular to Parents on Medical Inspection of Children.

PRIVATE.

Dear Sir (or Madam),—It would materially assist me in forming an opinion on your child's health if you would let me know what illness she has had. It is sufficient if you put a cross against any mentioned opposite that she has had and fill in any omitted in the vacant space. If you have any information to give me I would be pleased to see you at the date of my visit, which will take place on.....at.....m.

Yours faithfully,
D. A. Carruthers, M.D., D.P.H.
County Education Medical Officer.

Infectious Diseases:

Diphtheria	Chicken pox or blisters .....
Scarlet fever.....	Small-pox .....
Measles	Influenza .....
German measles	Other .....
Typhoid	.....
Mumps	.....
Whooping cough.....	.....

In Infancy:

Bronchitis..... Fits..... Snuffles.....

Running from the ears.....	Cramp .....
Sore throat	Other stomach trouble.....
Pneumonia.....	Rheumatic fever .....
Bronchitis.....	Growing pains.....
Asthma	Brain fever.....
Croup.....	St. Vitus dance .....
Other lung trouble	Eczema .....
Diarrhœa	Ringworm.....
Peritonitis.....	Other skin trouble .....
Appendicitis.....	.....
Worms	.....

Any other disease.....

Is there any rupture?..... Is it attended to?.....

If a parent is dead, I would be obliged if you would state the cause of death.

Father died from..... Mother died from.....

Please place in the envelope and return to the Teacher.

D. A. Carruthers, M.D., D.P.H.

It will be noticed that as far as possible terms are used that can be understood, and in which the parent can betray any affection that may have a prejudicial effect on the health of the child. At first sight it might seem that diseases are mentioned that are unknown to the parent, but it is surprising the strides in medical nomenclature that have been made by the lay press, and if a child has had one of the diseases mentioned the parent knows about it, and if the child has not had the disease it does not matter whether the parent knows what is meant or not.

The advantages of this method of dealing with previous illnesses are many. The medical examiner is not hampered if the parent is not present by trying to get the child to remember what it has had. The parent has his attention drawn to the existence of illnesses that he may have forgotten the child has had, until he sees it mentioned in the circular. He takes an interest in the examination and wants to know what the doctor said; this is specially the case if the child is one of the unfortunates who has suffered much. Time is saved to the inspector, and the illnesses can be entered in a minute or two, and he also has a chance of recognizing what effects the different illnesses may have produced on the child. He is warned at the beginning of his examination of the conditions he has to remember in examining the child, as the possibility of cardiac affection after scarlet fever or rheumatic fever, the possibility of tuberculosis being hid in a history of continued ill-health, or the explanation of some obscure irritation which is the sequela of some former illness, and helps to produce other conditions requiring attention in the present.

Another benefit is the ease of acquiring information regarding infectious diseases which the child has had, and so in time compiling for each school a list of children who have suffered from the different zymotic complaints, so that when any outbreak occurs in the school it is possible to know the number of children who have had a previous attack of the disease and are more or less protected. In compiling these tables the conditions in the school are kept up to date by notifications received from teachers of the names of all children who are from time to time attacked by infectious disease.

Previous Illnesses.

In the model schedule of the Board of Education, measles, whooping-cough, chicken-pox, scarlet fever, and diphtheria are mentioned, and a space left for other illnesses. These other illnesses should include any other serious disorder

which must be taken into account as affecting directly or indirectly the health of the child, *e.g.*, rheumatism, tuberculosis, congenital syphilis, small-pox, enteric fever, meningitis, fits, mumps, &c. The effects of these if still traceable should be recorded. It will be noticed that the circular to parents covers most of these affections in as broad terms as possible. It is difficult to obtain information regarding congenital syphilis except by the teeth, or other well-marked sequelæ, but the query regarding "snuffles" in infancy frequently helps, though many parents are in doubt as to what "snuffles" really are.

There is also a query as to rupture, as it is important that the parent's attention should be drawn to this. Undescended testicle is frequently reported as rupture, and lately a case of a foreskin with a very tight meatus was reported as rupture; the parent knew that something was wrong and mentioned it so as not to take any risks.

Family History.

It will be noticed that the family history is also obtained from the circular. It was found so difficult to obtain reliable information otherwise, although teachers were only too willing to tell what they knew. So far very few parents have declined to enter the cause of death, and it is a matter for congratulation that no exception has been taken to the circular in this respect.

Family history is specially of value in tuberculosis, as it gives the inspector an opportunity of warning the child how to avoid the errors of the parent. A history of unstable mental conditions is also of importance in school life as a warning can be given to the teacher to be careful of the treatment of the child, and to report if there is any condition in the behaviour of the child which he considers worthy of mention.

Standard and Regularity of Attendance.

In filling up this part of the schedule the inspector is asked to note the backwardness of the child, but this is not as easy of accomplishment as it used to be, because standards are being gradually abolished in schools. In Scotland they have been abolished for some time, and the school is divided broadly into infant, junior, intermediate, and senior classes, with one or two classes in each section. I have been able, with the assistance of teachers in various areas, to compile the Tables I. and II. of standards in urban and rural areas, which may act as a guide to inspectors in completing this item.

In compiling these tables special schools were not selected, but an attempt was made to obtain approximate

numbers. Through the kindness of the Director of Education for Liverpool, Mr. J. G. Legge, I was able to compare these standards with those of Liverpool, and the ages were practically the same.

Clothing and Footgear.

It is necessary to note the insufficiency, need of repair, and uncleanliness of the clothing. The latter two defects are not necessarily the result of poverty, but may be due to illness or death of the mother, incapacity of the mother, who is more or less mentally defective, or alcoholism on her part. If the condition is bad, it is desirable to ascertain the cause, and, if possible, remedy it, but looking to the factors producing these conditions, any treatment is not hopeful.

TABLE I.—*Standards in Urban Districts.* (5,714 children).

Standards		I.	II.	III.	IV.	V.	VI.	Ex. VI.
Totals in each standard		993	950	974	921	872	601	403
Age variation		6—12	7—13	7—13	8—14	9—15	10—15	10—15
Mean ages with their percentages	1	7 51·66%	8 43·57%	9 40·75%	10 39·08%	11 38·87%	12 45·25%	13 55·83%
" " "	2	8 31·01%	9 30·94%	10 29·26%	11 29·20%	12 29·93%	13 35·10%	12 26·05%
" " "	3	9 8·35%	7 10·52%	11 11·70%	12 14·00%	13 15·48%	11 16·47%	14 13·39%
" " "	4	6 4·51%	10 10·21%	8 9·44%	9 10·64%	10 14·10%	14 2·16%	11 2·72%

TABLE II.—*Standards in Rural Districts.* (6,291 children).

Standards		I.	II.	III.	IV.	V.	VI.	Ex. VI.
Totals in each standard		1206	1154	1160	1009	925	576	261
Age variation		6—13	7—13	7—15	8·14	9—15	10—15	11—15
Mean ages with their percentages	1	7 50·57%	8 43·84%	9 36·03%	10 33·10%	12 41·75%	12 46·18%	13 62·83%
" " "	2	8 31·01%	9 31·97%	10 35·43%	11 32·70%	11 34·91%	13 37·52%	12 22·60%
" " "	3	9 9·86%	10 12·82%	11 14·82%	12 21·30%	13 16·64%	11 13·19%	14 12·64%
" " "	4	6 5·55%	7 5·54%	12 6·98%	13 7·03%	10 6·05%	14 2·77%	11 1·14%

CHAPTER III.

Height and Weight.

The height may be ascertained without boots, standing erect with feet together and the weight thrown on heels, and not on the toes or outside of the feet. The weight is taken without boots, but otherwise in ordinary clothes. The height and weight may be recorded in English measures if preferred, but in the annual report the final averages should be recorded in both English and metric measures. The instruction regarding the conversion of pounds and inches to kilogrammes and centimetres has not been always followed in the annual reports of the past year. A kilogramme is equivalent to 2·2046223 pounds, and for practical purposes may be regarded as 2·204 pounds. If, therefore, a child is four stone four pounds, or sixty pounds, the weight in kilogrammes may be obtained thus:— $\frac{60 \times 1000}{2{\cdot}204}$ =27·2 kilos. A centimetre is equal to ·3937 inches, and if a child be five feet, or sixty inches, the result in centimetres may be obtained thus:— $\frac{60 \times 10{,}000}{3937}$ =152·4 cms.

The initial expense in adopting medical inspection in educational areas was a serious item in the year's financial outlay owing to the methods adopted to ascertain the height and weight of children examined. In many areas a weighing-machine and measuring rod was supplied to each school, while in other areas machines were obtained which could be forwarded from one school to another. The choice of a weighing-machine is usually between a steel-yard or a spring-balance; the former takes a longer time to make the record, as weights have to be fitted to the child being weighed. The spring balance, though more rapid, is marked in quarters of pounds, and care has to be taken not to misread the weight. The spring balance can be more easily packed and transported from one school to another; but it is important that children be not allowed to jump off and on, and in all weighing, with any type of machine, it is beneficial to allow the strain to be taken without jerking.

It does not matter which form of weighing-machine is adopted, it is very essential that the machines should be tested from time to time if the records are to be at all accurate. In this county ten spring balances were obtained. They were packed in boxes and sent round the county from one school to another. On their return to the office, through the kindness of Mr. Kyle, the county inspector of weights and measures, they were tested, and any machine that was out of gear corrected. It is very necessary, if the machine is not meant to weigh beyond 10 stone, that teachers should be warned not to "try" their weight as soon as it is in position, or at any other time. If a machine is provided for each school, some kind of box should be supplied in which it can be locked when not in use, or it may be rendered valueless. The regular testing of machines supplied to each school, though a very necessary procedure if the records are to be accepted as reliable, will be more difficult of application than when the machines can be sent down to be tested in the course of their annual or biennial rounds.

There are many rods for measuring the height, and one caution is necessary if the rod is left in the school. The horizontal bar should not project when not in use, as it is dangerous in that position to those in the room. It was necessary to obtain some instrument that would be strong enough for rough usage, and at the same time capable of being packed in boxes for use in this area. A model submitted by Mr. James Jack, joiner, Perth, N.B., was adopted. It is a 72 inches long, but divided into four divisions of 18 inches each, which telescope into brass joints to allow of packing; it can be affixed to any door by means of drawing-pins, and the horizontal bar, which slides up and down without any interference from the joints, can be easily removed.

In many areas the weighing of the children is done by the school medical officer or his assistants, in other areas by nurses, while it is sometimes done by attendance officers or by teachers. It is a waste of the medical inspector's time to have to undertake such work as the mere mechanical weighing and measuring of children; it is sufficient for him that he knows what the height and weight of the child is when the examination is made. There is no objection to either the nurse or the attendance officer doing the work, except that it necessarily curtails the time they have for other duties. Many teachers are of opinion that the time so occupied (when they have to make these records) is a serious invasion of the time which they might more fruitfully occupy in teaching one or other of the multifarious

forms of knowledge of which the curriculum in the elementary school consists; but such an opinion simply means that the teacher has not grasped the trend of the latest education movement. It has just been legally recognized that the physical care of the child is the primary and principal step in education, and it is the first duty of the teacher—if he is to be a teacher and not a driver of the unwilling child—to know the physical possibilities of each child. The height and weight of each child in his class is a personal matter to him, as it is the easiest method of allowing him to judge whether the child is growing, or slipping into chronic illness; and the best way in which he can acquire this information is to supervise the work himself and so find out the condition of each child. Each teacher should have some table of heights and weights, drawn from a reliable source, so that he may be able to refer to it if he is anxious to find out about any special boy or girl.

Growth.

Height and weight are an index of the growth of the child, the former being the measurement of the skeleton, while the latter includes the growth of all the tissues, not merely by increase of size, but also by differentiation of the various cellular elements. Weight is chiefly due to increase of muscular tissue, and this again re-acts on the skeleton causing its growth. The growth of the child depends not merely on its parentage and the nation to which it belongs, but may be affected by certain conditions of environment such as food, housing and habits. A certain amount of food is required for a child to maintain a proper rate of growth; some children seem to have the power of making more of a defective food supply than other children, yet an excessive amount of food does not necessarily mean an increase in the weight of a child. There are some children who have a very limited supply of food, and are below the standard in weight and height, but who seem, without any appreciable improvement in their food supply, to be better able to assimilate what they get as food after their seventh or eighth year. It is in children under this age that most evidences are found of lack of nourishment interfering with height and weight. The housing of the child, if it is cramped, or if it entails a lack of proper supply of oxygen, interferes with the growth of the child, while dirty habits tend, by the production of disease, chiefly involving the alimentary canal, to interfere with the usual growth of the child.

Variations in Height and Weight.

It is customary for boys to be taller and heavier than girls until the beginning of puberty, when for a year or two the girl is usually both heavier and taller. There are also seasonal variations in height and weight; for while the former is most rapid from April to July, increase of weight is greatest from August to December. Height may be increased rapidly by acute illness, just as growth is retarded by chronic diseases such as rickets, tuberculosis, and nose and throat affections. Exercise of any kind tends to increase weight, provided that there are no other factors interfering with the nutrition of the child, but it is very necessary to remember that as exercises increase muscular tissue, and as muscular tissue increase is shown by an increase of weight, any child whose weight is not increasing and who may be suffering from lack of a sufficient food supply, should not be given physical exercises.

Necessity for Yearly Records of Height and Weight.

In the schedule for medical inspection provision is made for recording the height and weight at the three or four times when the child is inspected, according to the requirements of the Board of Education, but such a scanty record is of little value to the child, though it may be valuable for the collection of statistics regarding height and weight at various ages. To be able to use the height and weight as a guide and a safeguard to the teacher, it is necessary that measurements should be made at least once a year, and if possible twice a year. If the latter is done the teacher is then in a position to note any child that is not making progress, and to report such a child to the school medical officer; inquiry can then be made into the conditions producing the arrested growth, so that if possible they can be removed. The seasonal variations in weight have been mentioned, but it must not be forgotten that there are other factors which may more or less affect the weight of a child, such as the taking of the record immediately after a meal, or chronic constipation. It must also be remembered an increase of weight may be due to an increase of fatty tissue, and not necessarily be due to growth.

Standards of Height and Weight.

A table is given which has been adapted from the report of the Royal Commission on Physical Training (Scotland), showing the height and weight in girls and boys at the school ages, and also the yearly increase or gain. The height is given both in inches and centimetres, and the

weight in pounds and kilogrammes. It is very difficult to fix a standard of health merely according to height and weight, and it is a temptation that has to be resisted. There has been too long a tendency to gauge a child from its age, without remembering personal peculiarities. It is necessary to satisfy oneself that a child although under weight is not ill, and not to consider because it is under weight that it is necessarily ill. In the children examined last year there was, at the age of 12, a variation of about 60 lb. between the lightest and the heaviest both in boys and girls, and while the boy and girl at the top of the scale were both exceptionally strong, no specific disease could be discovered in the two at the foot of the scale, but they were suffering from the results of defective conditions of environment, which had been experienced in earlier years.

TABLE III.—*Height and Weight at different years of school life and Yearly Gain at each.*

Age.	Sex.	Inches.		Centimetres.		Pounds.		Kilogrammes.	
		Height.	Yearly Gain.	Height.	Yearly Gain.	Weight.	Yearly Gain.	Weight.	Yearly Gain.
5	Boys	41·0	2·5	104·2	6·5	39·9	2·6	18·1	1·1
	Girls	40·5	2·2	102·9	5·6	39·2	3·1	17·7	1·4
6	Boys	44·0	2·9	111·7	7·5	44·4	4·5	20·1	2·0
	Girls	42·8	2·3	108·9	5·9	41·7	2·5	18·9	1·1
7	Boys	45·9	1·9	116·7	5·0	49·7	5·3	22·5	2·4
	Girls	44·4	1·5	112·9	3·9	47·5	5·8	21·5	2·6
8	Boys	47·0	1·0	119·5	2·7	54·9	5·2	24·9	2·3
	Girls	46·6	2·1	118·3	5·4	52·1	4·6	23·6	2·0
9	Boys	49·7	2·6	126·2	6·7	60·4	5·5	27·4	2·4
	Girls	48·7	2·1	123·7	5·4	55·5	3·4	25·1	1·5
10	Boys	51·8	2·1	131·6	5·4	67·5	7·1	30·6	3·2
	Girls	51·0	2·3	129·6	5·8	62·0	6·5	28·1	2·9
11	Boys	53·5	1·6	135·8	4·2	72·0	4·5	32·6	2·0
	Girls	53·1	2·0	134·8	5·2	68·1	6·1	30·8	2·7
12	Boys	54·9	1·4	139·6	3·7	76·7	4·7	34·8	2·1
	Girls	55·6	2·5	141·3	6·5	76·4	8·3	34·6	3·7
13	Boys	56·9	1·9	144·5	4·8	82·6	5·9	37·4	2·6
	Girls	57·7	2·1	146·7	5·3	87·2	10·8	39·5	4·9
14	Boys	59·3	2·4	150·6	6·1	92·0	9·4	41·7	4·2
	Girls	59·8	2·0	151·8	5·1	96·7	9·5	43·8	4·3

Nutrition.—General nutrition is to be noted as distinct from muscular development or physique as such. It is necessary to state whether it is good, normal, below normal, or bad. Under-nourishment is the point to determine. The appearance of the skin and hair, the expression, and redness or pallor of mucous membrane are among the indications to act as guides in determining the condition. Under-nourishment, if present, has to be considered, because the local education authority, if necessary, should exercise its powers under the Education (Provision of Meals) Act, 1907. This Act is not difficult to administer in urban areas, but in rural areas there are many difficulties, although there are many cases which require attention. When children are presented whose nutrition is defective, inquiry should be made, after the exclusion of possible disease, as to the number in the family, and their ages, the wage of the parent, and the habits of the home. The defect may be remedied by altering the food, which may be wrong in character, but if conditions are present which cannot be corrected by conversation with the parent, it may be necessary to report to the local education authority. Many children are muscular but not well nourished, and this may be a family tendency, due to defective powers of absorption, in many cases aided by delayed development of the pancreas, or by the bad habit of bolting food. In considering nutrition, after excluding chronic disease, it is well to inquire into the habits of the child, both as regards work and sleep. In older children, working out of school hours, and the lack of games, conduces to malnutrition, while in younger children the lack of sufficient sleep frequently aids in hindering the child assimilating the food received. It ought to be impressed on teachers that these younger ill-nourished children ought to be encouraged to sleep, and not wakened to unnecessary educational activity, which is only ill-spent time. Teachers, as a rule, recognize this fact in the infant schools, but there are many children in upper schools too tired to work, and they need sleep, the possibility of which is frequently denied at home.

CHAPTER IV.

Cleanliness and Condition of Skin, Head, Body.

Cleanliness has to be defined under the heads of "clean, somewhat dirty, and dirty. It must be judged for the head and body separately. The skin of the body should be examined for cleanliness, vermin, etc., and the hair for scurf, nits, vermin, or sores. At the same time ringworm and other skin diseases should be looked for." It will be noticed that the head and the body are to be judged separately, both as regards cleanliness, and the healthy condition of the skin, with or without the presence of parasites. In the schedule there is no mention of the integumentary system among the other systems, so that it is considered under this heading. It is difficult to have an absolute standard of the three grades of cleanliness, but a child is clean, a child is somewhat dirty when the condition is passable, and dirty when it is necessary to take steps to remedy the condition; these conditions are quite apart from the presence of any verminous condition, which if present should be stated, so that the attention of parents be drawn to it with a view to its removal.

Causes of Uncleanliness.

Cleanliness in children is important as it is an evidence of self-respect, and a dirty child presupposes a dirty mother. Lack of cleanliness in a child may be due to the influence of the home, the school, or the teacher. If the home is dirty, the child tends to be dirty, and certain occupations of the parent, as the miner, may conduce to a disregard for washing. In rural districts a defective water supply may at certain seasons tend to produce a condition of uncleanliness which may not pass away with the removal of the scarcity of water. The habits of the teacher are very important in assisting the child to be clean, because if the teacher is cleanly in habit and careful in insisting in cleanliness in the child, much may be done to check the tendency to be unwashed. The school may also be responsible for the condition of the child, if no provision, or very slight, be made for lavatory basins.

The Building Regulations (Code 3571 of 1907) issued by the Board of Education under Article 17 of the Code says that "lavatory basins are needed. Girl's schools require a larger number than boys' or infants'" and the tendency of this regulation, while suggesting that work be kept clean, does not encourage personal cleanliness. More is being done in new schools to remedy this condition, and much good work has been done in late years in advocating the supply of spray baths to schools. Dr. Rose, assistant educational adviser to the London County Council, brought the matter prominently before the Congress of the Sanitary Institute at Cardiff in 1908. He showed that while much had been done on the Continent, very little had been done in this country, Bradford being the only town which had followed the German example, and introduced spray baths for cleansing purposes in schools.

In Cologne, Frankfort, and Weisbaden a sufficient number of baths are provided at the schools to enable every child to have a hot bath once a week throughout the year, and the practice of bathing is general for all children, unless they are medically certified as unfit. It is most important that spray baths should be provided in schools for children, but it is not always possible even in urban areas, owing to the cost, both in initial outlay, and in use. Where it cannot be done an arrangement might be made with public baths for a regular system of bathing the children: this method might be of advantage in later life, because on leaving school there would not be the same facilities for bathing, but, if children had been taken for years regularly to the public baths, they might continue the habit themselves after leaving school. The use of public baths in this manner does not refer to swimming lessons given at these places, as these lessons are primarily meant as physical exercises, and the swimming bath should not be entered until the swimmer is clean. In villages it is impossible, at present, to expect spray baths to be built in the schools, and every effort must be made to get mothers to give a weekly bath, when the water supply permits, and the parents of children, whose condition calls for comment, if not themselves present at the inspection, should receive a circular pointing out the value of the weekly bath and warning of the evil that may occur from neglecting it.

Verminous Children.

When, however, vermin are present, either as the louse or the flea, the dirty child becomes a positive evil, and a condition arises that presents many difficulties. What the

condition elsewhere is it is difficult to say, because dirty linen is not washed in public; but in this area there are, perhaps, more grants lost from non-attendance of children at school owing to their being suspended for their verminous condition by teachers, than from any other cause. In Article 53 of the Education Code the school medical officer can exclude children from school "(2) on the ground that their uncleanly or verminous condition is detrimental to other scholars, and the exclusion of such children shall be deemed, for the purposes of this Code, to be exclusion on reasonable grounds." After such exclusion, in many areas, the parents are prosecuted for the non-attendance of their children at school, and convictions are obtained, but not always, and the difficulty of obtaining these convictions places a premium on the cultivation of vermin. It seems to be a difficulty in the minds of some justices that the child has been excluded from school and, therefore, the local education authority has no right to proceed against the parent for non-attendance at school; but it was decided in the High Court, on appeal, in the case of Jones *versus* Rowland (80 L.T. 630), "neither does the parent cause his child to attend school within the meaning of the by-law when he sends his child to a school where he is aware that admission will be refused." This decision would appear to give a right of appeal in these cases where local justices decline to convict.

The Children's Act.

It was thought that Section 122 of the Children's Act which came into force on the first of April of this year would remove this difficulty, but the working of this section has not always been successful, and in some cases harm has resulted. By this section a local education authority may direct their medical officer, which means any officer appointed for the purposes of Section 13 of the Education (Administrative Provisions) Act, 1907, or any person authorized by this medical officer, to examine in a public elementary school of the authority, the person and clothing of any child in attendance, and if found verminous or in a foul and filthy condition, the local education authority may give notice in writing requiring the parent or guardian of the child to cleanse properly the person and clothing of the child within twenty-four hours after receipt of the notice. If this is not done, the medical officer or some person authorized by him may remove the child and cleanse its person and clothing in suitable premises and with suitable appliances, without any warrant other than this section. The examination and cleansing of girls under this section

can only be affected by a duly qualified medical practitioner or a woman duly authorized by the school medical officer. If the child lapses after being cleansed, the parent on summary conviction is liable to a fine not exceeding ten shillings. This section leaves the matter in the hands of the local education authority, but in rural districts it is difficult and expensive to provide means or places for cleansing, besides which it has been found in practice that the protests of the parents cannot be regarded with impunity by the person authorized to cleanse. An attempt has been made in some cases to proceed against the parent under Section 12 of this Act, in which any person who wilfully neglects any child or young person in a manner likely to cause such child or young person unnecessary suffering or injury to his health, is guilty of a misdemeanour and liable on conviction to a heavy fine or in default of payment to imprisonment for a maximum period of two years. As an education authority the great objection to this procedure is that either a board of guardians or the police have to prosecute, and it is not always possible to get another authority to act, and the failure of the education authority to follow up their own cases weakens their position: it has also to be remembered that it may be difficult to prove neglect producing unnecessary suffering or injury to health to the satisfaction of a bench of magistrates, as the inspectors of the National Society for the Prevention of Cruelty to Children have found in the past, when prosecuting under Section 1 of the Prevention of Cruelty to Children Act, 1904, which is repealed by the Children's Act.

Assistance from the Sanitary Authority.

Verminous children are not general in schools, but usually there are a few children who introduce the pests, and in spite of many cleansings these children are as dirty as ever in a few days; because their houses are in such a condition that it is impossible to expect them to keep clean. Much may be done to remedy this condition of affairs if the school nurse, or the attendance officer where no nurse is employed, visits the homes of children who are reported as verminous, and reports to the school medical officer. If the report confirms the suspicion that the house is partly to blame in producing the condition, the school medical officer can report to the medical officer of health of the district, who may, after satisfying himself as to the circumstances, get his authority to take proceedings under Section 46 of the Public Health Act, 1875, which says: "Where on the certificate of the medical or of any two medical practitioners (*a*) it appears to any local authority that any house or part

thereof is in such a filthy or unwholesome condition that the health of any person is affected or endangered thereby, or that the whitewashing cleansing, or purifying of any house or part thereof would tend to prevent or check infectious disease, the local authority shall give notice in writing (*b*) to the owner or occupier (*c*) of such house or part thereof to whitewash, cleanse, or purify the same, as the case may require."

If the person to whom the notice is so given fails to comply therewith within the time therein specified, he shall be liable to a penalty not exceeding 10/- for every day during which he continues to make default; and the local authority may, if they think fit, cause such house or part thereof to be whitewashed, cleansed, or purified, and may recover in a summary manner the expenses (*d*) incurred by them in so doing from the person in default (*e*)." By this means both the home and the child are attended to at the same time, and we may hope for more than a short temporary benefit. It is necessary to attack the house if any lasting good is to accrue in this class of cases, and even although the medical officer of health may not think it necessary to take any steps, his visit to the house is often sufficient to get the parents to make an endeavour to remove the stigma from their child.

The Need of Nurses.

Much may be done by reliance on legal methods, but the best method of dealing with verminous conditions in children is by the employment of school nurses. It is not always expedient to employ the district or village nurse, because whoever has to do with the extirpation of vermin is not regarded as a *persona grata* by the cultivators of the insect. Tact is essentially necessary for the nurse in her work if she is to succeed. Her duties do not consist so much in examining heads, treating verminous conditions, and re-examinations, as in visiting the homes and assisting the parents to make the effort to keep the children clean. Verminous children come chiefly from homes where there is not much sense of respectability, but where there is a great assumption of it, and susceptibilities are very tender. The moral tone is low, and it is difficult to raise it, as the parent is usually more or less mentally deficient or addicted to alcoholism. The nurse may, however, be of great assistance to the old grandmother or young elder sister who replaces the dead mother, and she may also help in cases where the mother has not been able temporarily to attend to her children, owing to sickness or a large family. It needs great perseverance and patience on the nurse's part to

enable her to successfully cope with this difficult and also distasteful problem of school life.

Condition of the Skin.

After noting the cleanliness of the skin, and the presence or absence of vermin, attention must be paid to the presence or absence of skin disease. In school life it is very necessary to note the contagious diseases, not merely for the sake of the sufferer, but for the protection of the healthy children. In this area all children suffering from itch, ringworm, or impetigo contagiosa, are excluded from school (under Article 53 of the Code), and are not allowed to return until they bring a certificate from a medical practitioner stating that they can return to school without danger to the other children. For each certificate the practitioner is paid a sum of 2s. by the local education authority, and in cases of ringworm an examination of the hair is made, and a report sent to the doctor on his request. In many other districts it might be as well to include favus in this category, but it is so rare here that the occasion has not arisen. Teachers are instructed to suspend children suffering from eczema where there is any discharge, as it might produce septic wounds in other children. The exclusion of children for these contagious diseases and the lack of treatment of these illnesses are responsible for many lost attendance grants, and it would repay any authority to consider the treatment of such affections.

The Board of Education in their first circular on medical inspection No. 576, issued in November, 1907, said: "The aim of the Act is practical and it is important that local education authorities should keep in view the desirability of ultimately formulating and submitting to the Board, for their approval under Section 13 (1) (*b*) of the Act schemes for the amelioration of the evils revealed by medical inspection, including, in centres where it appears desirable, the establishment of school surgeries or clinics, such as exist in some cities of Europe, for further medical examination, or the specialized treatment of ringworm, dental caries, or diseases of the eye, the ear, or the skin." In Circular 596 issued in August, 1908, the school nurse is referred to as having the treatment of sores and minor skin diseases within the scope of her work, but it is pointed out that while she may be appointed to assist in medical inspection, her appointment for the purpose of treatment of these affections has to be sanctioned by the Board as an "arrangement" for attending to the health and physical condition of the children. In the same circular the establishment of school clinics is referred to and the Board

require, before sanctioning the establishment of a school clinic as an arrangement under Section 13 (1) (*b*), to be informed as to the methods and scope of the work which it is proposed to do, particularly, "(1) what precautions the local education authority will take to secure that only those children shall be treated in a school clinic for whose treatment adequate provision cannot otherwise be made, whether by the parents or by voluntary associations or institutions, such as hospitals, or through the agency of the Poor Law; (2) what precise defects and diseases will be treated; (3) by whom and on what terms and conditions the treatment will be carried out and what will be its extent; (4) what is the estimated cost of the clinic in respect of buildings and equipment, maintenance and administration, and treatment, and how it is proposed to meet this cost, out of the rates or otherwise." With these conditions, school clinics will be limited to certain areas where centres of population and lack of sufficient voluntary medical aid permit, and the local education authority desires such an establishment, but they are not suitable for rural districts, and the work in such areas has to be performed by nurses, and any other method of dealing with such conditions can only be regarded as spasmodic and unsatisfactory.

Schools for Ringworm and Favus.

In certain areas the loss of attendance owing to the prevalence of ringworm and favus has been so great that it has been necessary to form special schools where children suffering from these conditions can attend, but the provision of such schools is necessarily limited by the number of cases being sufficient to justify such a procedure. Great care would need to be taken at such schools to hinder continual re-infection of the children, and after attending to the individual requirements of each case, a daily disinfection of the seats and desks with a cloth damped in a sufficiently strong solution of some disinfectant might help to hinder such a possibility.

CHAPTER V.

Teeth.

The general condition and cleanliness of the temporary and permanent teeth have to be noted, as well as the amount of decay. If there are any exceptional features, such as the presence of Hutchinsonian teeth, they should also be noted, and the presence or absence of oral sepsis.

These are the directions supplied by the Board of Education for the inspecting officer, and it is desirable in estimating the character and importanceof the teeth that they be borne in mind; but from the school point of view, the cleanliness of the teeth is the first matter for consideration. It is necessary and advisable, if teeth are to be saved, that the teacher should take an interest in the cleanliness of the teeth of those children in his or her class; he or she is in daily contact with the child, and can inspire a longing after cleanliness by taking an interest in the teeth, and while it is too much to expect any teacher to give an opinion on the condition of the teeth, every teacher should know whether the teeth are clean or not. An opinion may be very easily obtained by a teacher as to the cleanliness of the teeth by merely lifting the upper lip. If the teeth are dirty in a child, the dirt is best observed on the middle incisors of the upper jaw; if the incisors are clean in the upper jaw, other teeth may be diseased, but as a rule an attempt is made to clean them more or less successfully. In the adult it is rather the rule to find the upper jaw more clean than the lower one, and the difference between the two conditions is not merely due to the increased mobility of the upper lip in the adult, but also to the upper teeth being more easily self-cleaned.

The Attitude of Some Medical Practitioners.

To many, medical inspection is still a "fad," and one of the mistakes of the present Government, and in this matter of the cleanliness of children's teeth there are some medical practitioners who consider it is a mistake to clean the teeth of children in elementary schools or to give them directions for so doing. There are many causes for this position,

some of which may be personal, but the chief reason may be ascribed to the disassociation of medicine and dentistry, and their mutual jealousy. While the dental student has to learn some of the details of anatomy and something of physiology, it would materially improve the practical value of medical practioners if they had attended to advantage even a three months course of dentistry. The value of care of the teeth cannot be over-estimated if the functions of the alimentary canal are to be duly performed, and the body not invaded by the toxins of germs, whose growth has flourished because of imperfect mastication. There would frequently be no occasion to strive to bolster up the dyspeptic weakling, if the dogs that guard the portals of the alimentary canal had not long before ceased to bite.

Cleanliness of the Teeth.

It is well for the medical inspector to push up the upper lip in estimating the cleanliness of the teeth, as he may otherwise find after doing so that teeth that he thought were clean are really dirty. There are many causes of uncleanliness in teeth. The teeth themselves may be to blame, as they may be soft in texture, easily eroded, and quick to accumulate dirt. One frequently meets with children who, one is sure, never clean their teeth, but yet they are bright and polished, and very strong. Food helps to clean the teeth in some cases, as most proteids, while sweets tend to cling about the teeth. Dr. Hall, of Leeds, is strong in his advocacy of a fish diet for keeping the teeth clean. The position of the teeth may conduce to uncleanliness by their very irregularity, allowing of the gathering of waste products between the teeth. The shape of the mouth or a too large tongue may assist the development of unclean teeth by hindering the possibility of proper mastication. Certain conditions of the stomach, as acidity, or the presence of acute illness, also tend to make the teeth unclean.

The Treatment of Uncleanliness.

The teacher may do much to help the child to develop habits of cleanliness by taking an interest in the state of the child's teeth. In some schools tooth brush drill is an institution, and a very useful one, but every teacher cannot find time for it, but he can now and again inquire into the condition of the child's mouth and impress the advisability of regular brushing. It is important to tell parents not to indulge in the biscuit or sweet as the child is going to bed, as some particles lie about the mouth of the sleepy child all night and tend to produce disease. Where it is impossible to get the child to have a tooth brush it is necessary to see

that eating is properly performed, and the child should be urged to use a small piece of stick with which to rub the teeth. There are many materials to be used in brushing the teeth, and while pastes should be avoided, common chalk or whiting, if clean, does all that is necessary to preserve cleanliness.

Condition of the Teeth.

In estimating the condition of the teeth of a child it is necessary to bear in mind the date of eruption of the permanent teeth—a matter of some difficulty, as there is considerable variation in the eruption of the different teeth. The age for school attendance begins on attaining five years, but some children go to school after three. It is possible in many that the milk teeth may all have erupted before that date, while on the other hand there are some children who have very few teeth at that age. The first molars, which are usually the first teeth to appear in the permanent set, generally are erupted in the seventh year; and in children from the age of seven to the age of ten it is difficult, without care—especially if there is extensive caries of the teeth—to arrive at a conclusion as to what the condition of the teeth is. On looking into the mouth it is necessary to note first of all if caries be present, and, if so, whether the teeth attacked are milk or permanent teeth. A child at eleven years of age may have several persistent milk teeth, in more or less advanced stages of decay, but so far all the permanent teeth in the mouth may be strong and healthy, and one would not be justified in marking the condition of such teeth as bad, because it is merely due to the fact that the milk teeth have persisted longer than is customary, and have not been withdrawn when they became useless.

Hardly a day passes in the examination of children when it is not necessary to push one or other milk tooth away from the exposed permanent tooth, which it is crowning in a more or less disastrous manner, disastrous in that the persistence of the milk tooth at such a time tends to cause the eruption of the permanent tooth anywhere but in its proper site. In these cases, if there is disease in the milk teeth, and if nothing is done to arrest its progress—and the more fragmentary in character the teeth are, the more dangerous are they as potential causes of disease—there is every tendency to caries being started in the permanent teeth, so that it is desirable to remove milk teeth when their condition is such as to interfere with the general well-being of the child. There are some who recommend that milk teeth be left for fear of interfering with the proper

development of the jaw, but if the milk teeth have got diseased so early as to make such a contingency possible, it would be much wiser to increase the nutrition of the child by all available means, and so strengthen the growth of the permanent teeth in their sockets, than to allow the child to get gradually weaker from decaying teeth, and so produce, as a natural consequence, a weaker permanent tooth, and a weaker jaw.

Transition Periods in Dentition.

The condition of the teeth is most important in school life, because many conditions occur owing to the variation in the stages of dentition. A child should start school more or less with a good set of milk teeth, but not long after school life commences the milk teeth begin to go. The child tends to develop symptoms of gastro-intestinal irritation, such as nervousness, night terrors or even chorea, and the condition is ascribed to the rigorous routine of school life, whereas much of it is due to the fact that with the gradual spread of caries in the milk teeth, and the loss of the power of the teeth to bite and chew, owing to their tender condition, much of the food is improperly masticated, and what is swallowed is mingled with the products and accompaniments of carious teeth, so that there is every opportunity for a gastro-intestinal sepsis, which largely helps to produce the condition of nerve irritability sometimes present in school children. It is true that one may meet, and one frequently does meet, with children who suffer from starts in their sleep, night terrors, and are even somnambulists, who have a perfect or almost perfect set of teeth, but it will be found, if inquiry be made, that such children never masticate their food properly, taking it into their mouth, crushing it with one or two bites, and swallowing it; in this condition the insistence on proper mastication of food, the attention to the relief of the constipation which has arisen owing to the upset in the alimentary canal, is sufficient to relieve and improve the condition present. It is necessary also to inquire as to the amount of salt taken with or without food, as it will often be found that children so afflicted tend to consume too much salt.

Eruption of the Permanent Teeth.

A table is submitted, based on statistics furnished by Dietlen, showing the teeth that are present at different ages. In compiling the table one side only of the jaw is shown, so for a full set it is necessary to multiply the figures by two. Although it is said that the original table was compiled from over 7,000 cases, yet it is only relatively correct, as there is great variation in eruption of teeth, without

abnormality; this may, however, be due to lack of a sufficiently large standard. It is customary for the teeth in the upper jaw to appear before the corresponding teeth in the lower jaw, with the exception of the first molar, the first premolar, and the canine. It is worthy of notice that all the teeth, with the exception of the third molars, should be in place by the thirteenth year, though I have frequently seen this occur before the twelfth year, and the teeth be strong, hard, and no taint of a neurotic condition observable.

ERUPTION OF PERMANENT TEETH.

—	Incisors.	Canines.	Premolars.	Molars.
7 years	—	—	—	$\frac{0}{1}$
8 years	$\frac{1}{1}$	—	—	$\frac{1}{1}$
9 and 10 years ..	$\frac{2}{2}$	—	—	$\frac{1}{1}$
11 years	$\frac{2}{2}$	$\frac{-}{1}$	$\frac{1}{1}$	$\frac{1}{1}$
12 years	$\frac{2}{2}$	$\frac{1}{1}$	$\frac{2}{1}$	$\frac{1}{1}$
13 years	$\frac{2}{2}$	$\frac{1}{1}$	$\frac{2}{2}$	$\frac{2}{2}$

IRREGULARITY OF THE TEETH.

It is important to notice the position of the teeth, whether they are in line, or in rows, or have appeared at the inside or outside of their respective proper positions. Persistent milk teeth may help displacement, but the chief cause seems to be the narrow palate, unduly arched, and it is most important in these cases that every effort should be made to, if possible, save every tooth, for this is necessary not merely for the physical well-being of the child, but frequently for the improvement of his mental condition. In the social class, above that of elementary school children and their parents, it is customary to wear many contrivances in the endeavour to widen the palate and gain more room for the permanent teeth, and teeth that have appeared out of place or at wrong angle are twisted back into place. At present this procedure is beyond the pocket of most of the parents with whom we have to deal, but if the child

can be interested in the condition of his mouth and told what steps to take with the fingers, much may be done to remedy the condition. Exercises are given with the fingers to press apart the sides of the narrow palate and the wrongly placed tooth is worked gradually into position, by pressure as much as possible on the base of the tooth or over the gum. Much may be done in this way, and with patience the results are gratifying; but it is necessary that the child understand at the beginning what is the object of the movements that it is asked to do.

Caries of the Teeth.

It is necessary to notice how many teeth are diseased, and whether they can be saved, or have to be removed. At present most of school dentistry consists in removal, but in time, with more attention to cleanliness, disease may be more readily seen in the early stages and teeth saved. If caries be present, it is advisable to try and find out the cause, and it usually goes hand in hand with uncleanliness, as what produces the one is apt to produce the other. It used to be thought that a deficiency in lime salts was responsible for the caries of the teeth, but recently it has been said that some carious teeth contain a larger proportion of lime salts than sound teeth. Other factors have to be taken into consideration, for with teeth, as with all things, the greater the strength, the more reckless the use. Some teeth seem to be soft and easily eroded, and their disease can only be prevented with great difficulty and spotless cleanliness. Certain conditions tend to produce caries, as illness, and teeth frequently begin to decay after an attack of infectious disease, if of a severe character. Diet also helps to keep the teeth sound if fleshy in character, and nuts also are useful, but care must be taken that the teeth can grind them. Soft farinaceous food is bad, and the better ground the meal the worse it is for the child from the point of view of its teeth. Caries of the teeth reacts on the stomach, for while, from difficulty in chewing with diseased and painful teeth, indigestion frequently occurs, the resulting acidity of the stomach tends to further destroy the teeth.

Oral Sepsis.

Frequently the caries of the teeth is so far advanced that the mouth is full of diseased and putrid roots, and many organisms. It is hard to realize how long these cases exist before their owners can make up their minds to have something done for their condition. The foul breath and tainted food might be sufficient to obtain treatment, but it seems hard to begin to treat the condition. There is more

or less headache, anæmia, and constipation, if nothing worse, but the recovery is wonderful, when the condition has been attended to by free removal of the diseased teeth and roots.

Hutchinsonian Teeth.

It is required to note the presence of Hutchinsonian teeth, which is an easily recognized disease of form occurring in permanent syphilitic teeth and which are best described in the words of Mr. Jonathan Hutchinson, with whose name they are associated.

"At or after the age of puberty the recognition of the subject of inherited syphilis may sometimes be made with great certainty: at other times it is surrounded by difficulties. Our most valuable aids are the evidences of past disease, more especially of inflammations which may have occurred in infancy. A sunken bridge of the nose caused by long-continued swelling of the nasal mucous membrane when the bones were soft, a skin marked by little pits and linear scars, especially near the angles of the mouth, the relics of an ulcerating eruption, and protuberant frontal eminences, consequent upon infantile periostitis, are amongst the points which go to make up what we recognize as a heredito-syphilitic physiognomy. Added to them we have very valuable aid furnished by the shape of the incisor teeth. In these patients it is very common to find all the incisor teeth dwarfed and malformed. Sometimes the canines are affected also. These teeth are often narrow, rounded, and peg-like; their edges are jagged and notched. Owing to their smallness the sides do not touch, and interspaces are left. It is, however, the upper incisors which are the most trustworthy for purposes of diagnosis. When the other teeth are affected these very rarely escape; very often they are malformed when all the others are of fairly good shape. The characteristic malformation of the upper central incisors consists in a dwarfing of the tooth, which is usually both narrow and short, and in the atrophy of its middle lobe. This atrophy leaves a single broad notch (vertical) in the edge of the tooth; and sometimes from this notch a shallow furrow passes upwards on both anterior and posterior surfaces nearly to the gum. This notching is usually symmetrical. It may vary much in degree in different cases; sometimes the teeth diverge, and at others they slant towards each other. . . . In a considerable number of cases of heredito-syphilis the teeth show no deviation whatever from the normal standard . . . . and it is only in the permanent set that any peculiarities are observed. The first set are liable to premature decay, but are not malformed."

CHAPTER VI.

Nose and Throat.

The following are the directions given by the Board of Education: "The presence or absence of obstruction in the naso-pharynx is the chief point to note. Observation should include mouth-breathing, inflammation, enlargement or suppuration of tonsils, probable or obvious presence of adenoids, polypi, specific or other nasal discharge, catarrh, malformation (palate), &c." The first point that strikes one in the examination of the child is the facial expression and the presence or absence of mouth-breathing. It is well to remember that though the child may keep its mouth open throughout the day, it often shuts it at night, but if the condition is allowed to continue then the child sleeps with the mouth open. The facial expression with marked nasal obstruction is distinct, as the mouth is kept open, the lips are dry, the naso-labial folds are drawn down, and the eyes are dull and heavy, so that the child looks stupid, tired, and unable for any exertion, mental or otherwise. The nasal openings are more or less narrow slits, and do not move with respiration, and if the child is asked to expire they tend to flap against the septum, so revealing the presence of adenoids. When the condition is well-marked it is not difficult of diagnosis, but there are many half-way conditions which are perplexing. In making the examination it is better to begin with the mouth and throat and finish with the nose, after the first cursory glance at the facial expression.

The Palate.

The first thing to notice in the condition of the mouth is the shape of the palate, and whether there is any malformation, as this is most important to consider when dealing with treatment. Finkelstein, in describing the diseases of the tonsils and pharynx, says in relation to adenoids that "deformities of the bones, particularly of the superior maxiliary, consisting in a highly-arched palate and pointed alveolar process, also result from interference with nasal breathing," but it might be more true to say that adenoids

frequently result from a very arched palate. The high palate is very prevalent wherever there is lack of nutrition in the ante-natal state; this lack of nutrition may be due not merely to lack of food for the mother, but to incapacity on the part of the mother to absorb the food provided in sufficient quantity for herself and offspring. Even when the child is born with an arched palate, the condition may improve, and the better the nutrition of the child, the earlier the improvement. If the child is well-nourished, as a rule the palate has altered materially between the sixth and the eighth year, but in cases where there is a deficient condition of nourishment, and a slow development of the permanent teeth in consequence, the palate may not alter until the 13th year; or the teeth may be allowed to come in in such a fashion that no change or very little takes place. It will be found that where the palate is very arched there may be mouth-breathing with no tonsillar enlargement, no deafness, and no presupposition to adenoids, provided the teeth are good; but these cases are rare, as the teeth are usually defective with this malformation. Many cases may be seen with enlarged tonsils and a more or less obstructed condition of the nasal passage in which the palate alters in shape during the year, and as it broadens out the passage into the pharynx also increases, with a diminution of the symptoms of nasal obstruction. It is well, therefore, in these cases to note the character of the middle incisors in the upper jaw, if permanent, as if they are large there is every possibility of the condition improving when the other incisors and canines appear, if not gradually disappearing. The child has then to be cured of the habit of mouth-breathing which it has formed, and if this be done there may be no need for an operation. If the child is taught to assist the broadening of the palate by pressure with the fingers against the side, the resolution of the palate may be aided; if the middle incisors are prominent, they should also be pressed back to bite on the under jaw, and care must be taken to push the other front teeth into place as they come. The presence of malformation of the palate is important in deciding on operation for tonsils and adenoids, for if it be arched and not ready to resolve, with every care after operation and persistence in teaching and doing of proper full nasal breathing, there is a strong tendency for the condition to return and discredit is brought on the operation, and frequently on the operator.

The Condition of the Mouth.

While noting the state of the palate, the presence or absence of malformation in it, it is well, especially in

localities where infectious disease is prevalent, to notice the condition of the mouth. It is easier at this time to consider the condition of the tongue than later. In scarlet fever the tongue is first coated with white fur, with the prominent papillæ projecting through the coating (this condition more or less marked is very prevalent in blackberry seasons); later from the third to the sixth day of the fever the tongue peels, leaving a raw-looking deep red colour with the translucent papillæ very prominent, exhibiting the "strawberry tongue," which some regard as pathognomonic of scarlet fever; the tongue slowly recovers, the colour fading and the papillæ receding in size. It is the last appearance which is of importance to the medical inspector, as it may be all that is left to point to possible desquamation in an undetected mild case of scarlet fever.

Where scarlet fever comes and goes in a school, it is well to look at all the tongues, and if any are found to be cleaner than others and with well-marked papillæ further search may reveal desquamation, more or less marked; in these cases with slight desquamation it is difficult to assert what the condition is, but it is as well to remove the child from school and report to the M.O.H. for the district. In cases where measles are prevalent, it is necessary to remember to look for possible Koplik's spots, as these appear from three to six days before the rash, and the exclusion of children so affected controls the spread of the infection. These spots are small bluish white or yellowish white in colour, with a small surrounding area of reddened mucosa, "which has the appearance of a general reddening with a small white point upon it." The spots are most numerous on the cheeks and on the reflections of the gums, and are less frequently seen on the inner surface of the lips; but they seem to be limited to certain epidemics of measles, or to be more common in America than here, as though I have examined the mouths of many children, who developed measles within three days of the examination, I have only seen the spots five times, and one of these cases, whom I excluded from school, did not take measles.

The Throat.

In examining the throat, most time is saved by the assurance of the child. If the child is afraid, it may be necessary to do other parts of the examination first, to remove the fear, so that when one wants to look at the throat, the child willingly does what it is told. Some children have a difficulty in controlling the tongue, as it tends to rise, and this may most readily be overcome by asking them to show their "sweet smile," as it usually becomes a laugh which

makes the examination all the easier. It is necessary to remember to hold the head on one side as a child cannot always keep from coughing when its throat is touched, and the results are not pleasant in these circumstances if sitting immediately opposite.

In examining the throat it is well to bear in mind the possibility of the presence of diphtheria, scarlet fever, or any tonsilitis which requires the exclusion of the child under Article 53 of the Code. Children may be seen in such a condition whose presence is a menace to the health of other scholars, and they have been sent to school because of parental carelessness, or their own anxiety to be present.

The chief condition to notice in the throat—and one that bulks largely in all reports of school medical officers—is the presence or absence of tonsils. Three varieties of chronically inflamed or enlarged tonsils are described. Chronic lacunar tonsilitis is of note, because of the irregular surface produced by the inflammation, as this helps the possessor of it to act in many cases as a diphtheria carrier as the crypts form a suitable nidus for the accommodation of the Klebs-Loeffler bacillus. The fibrotic and the lymphoid enlargements are not of such importance; though the variation in the size of the latter is interesting, as very large slabs of tonsils may be seen in those districts which are low lying, and where defective sewage arrangements in a damp atmosphere seem to assist in producing these slabs. The causation of enlarged and enlarging tonsils is uncertain. We are told that "it is better to consider tonsillar hyperplasia as an expression of an increased tendency to the formation of lymphoid tissue during childhood," but why the tendency? Septic conditions of the saliva, whether from decayed teeth in the mouth or from its mixture with polluted air, seems to assist the development, and the rapid increase of cities may help to explain this tendency, quite as much as the rheumatic and tubercular diatheses which are accredited with causing these enlargements, while the part played by the badly arched palate and narrow throat must be remembered.

Removal of the Tonsils.

It is easy for the medical inspector to recommend the parent of the child to consult the medical attendant because there is some defect in the throat, but the medical inspector, unless the child is taken to a specialist, may find that nothing has been done to remedy the condition when he receives his report on treatment of the children, and with the same medical attendant he may find either that the doctor is giving some treatment to dissolve the tonsil

or has told the parents that it is unnecessary to do anything. The parent accepts the opinion of the medical attendant, and the school medical officer is discredited. In spite of the widespread idea that certain operations are fashionable, there are many parents that are only too pleased to avoid operative interference with their children, and gladly accept any opinion which is against operation. It is necessary, therefore, for the medical inspector, while recognizing the beneficial results which accrue from the removal of enlarged tonsils and adenoids, to consider many possibilities, unless he has an opportunity of explaining the condition to the parent, and does not merely send a recommendation. Many fatalities have occurred during the operation, and as they have been duly retailed in the daily papers, parents are beginning to avoid the operation if they can. It is necessary to consider the condition of the mouth with a view to the result of the operation, because if the palate has not begun to resolve, although the operation will be strikingly beneficial for a time, the tonsils will probably return, and the parent should be advised of this. Apart from the mere size of the tonsils, the presence of certain other affections in many children calls for operative interference. The presence of pigeon breast is a very important indication, and every effort should be made to give such children a sufficient supply of pure air by the removal of all obstructions in the nose and throat. A child who is always taking cold should have the operation performed to hinder a later development of tuberculosis. Enlarged tonsils or adenoids in children who suffer from chorea, nightmare, sleep-walking, or nocturnal incontinence of urine, should be removed, and their presence with asthma, laryngismus stridulus, or epilepsy calls for treatment. In stammering and stuttering, beneficial results are obtained for these if the operation is performed. The presence of deafness, and especially ear discharge, in cases of adenoids and enlarged tonsils necessitates the removal of the obstructions, though here it is necessary to be cautious in promising brilliant results for the operation, especially if the condition is longstanding. If the patient is seen by the school medical officer, he can explain the necessity for the operation, but in other cases he can only recommend what is best, and trust to his recommendation being carried out.

Examination of the Nasal Passages.

Medical inspection in elementary schools does not lend itself to a thorough examination of the nasal passages. It is necessary to draw one's conclusions from what one

sees and not from what one feels, because if one began making post-nasal examinations parents as well as children would object; rhinoscopic examinations have also been found to be impracticable. One notices therefore the character of the face, its listlessness and other signs already described. It is well to remember that the bridge of the nose is broad and flattened in ozæna, while it may be sunken in tertiary syphilis. The nose is sometimes thickened in tubercular nasal disease, while redness of the tip and alæ is suspicious of intra-nasal irritation. Congenital occlusion of one posterior naris produces an irregularity of the two sides of the face, while the bulging of one superior maxilla suggests disease of the antrum. Suspected cases of nasal obstruction should be made to breathe with the mouth shut, and one nostril may be closed with the thumb while the fulness of the breathing through the other nostril is gauged by the sound that is made.

Submaxillary and Cervical Glands.

The condition of the glands have to be noted, as to enlargement, inflammation, or suppuration. The question of their removal in an advanced condition of disease has also to be considered. The recuperative power of the glands is great, and it must not be forgotten that they are only symptoms of disease and cure cannot be expected unless the cause of the enlargement be removed, whether it be caries of the teeth, enlargement of the tonsil, adenoid vegetations or other post-nasal irritations, disease of the ear, or affection of the scalp. In all conditions of enlarged glands it is important to recommend the treatment of the condition producing the enlargement, if a possible tubercular condition, arising from their continued inflammation, is to be avoided.

CHAPTER VII.

External Eye Disease.

In Circular 582, issued by the Board of Education, and detailing the methods of filling up the different items of the schedule, attention is called under this heading to the presence or absence of blepharitis, conjunctivitis, diseases of the cornea and lens, and muscular defects such as squints, nystagmus, and twitchings of the face. The Chief Medical Officer of the Board of Education, in his annual report for 1908, points out that about 3 per cent. of the children who were examined during that year suffered from inflammatory affections of the cornea or conjunctiva, and there were not many less sufferers in rural than in urban areas. He insists on the importance of early and persistent treatment in these cases; but it is difficult to make the parents realize the potential evil of these affections, and frequently no notice is taken until there is a permanent defect present in an eye, and it is too late to cure the condition.

Appearance of the Eye.

In examination, note is first taken of the general appearance of the eye, whether it is full or sunken. Fulness of the eye, with tachycardia and slight enlargement of the thyroid, may be present, suggesting the initial stage of exophthalmic goitre; but this condition, though it may be noticed during puberty, seems to subside in the next few years, as severe cases are not so often seen later, to judge from the result of inquiries among practitioners. Tachycardia and slight enlargement of the thyroid are more common than the fulness of the eye. An eye which is rather full and which is associated with the tacking down of the inner edge of the upper eyelid so as to give the Mongolian or Tartar look to the face should be noted, as this type of face is associated with a form of genetous idiocy. The cranium is usually malformed as well, but even with both conditions and marked deformity of the skull the mental condition may be bright in early years.

Ptosis or drooping of the eyelids may be present, being

congenital or acquired; it is not of importance unless it is so severe as to interfere materially with vision, when operation may be recommended; in severe cases an attempt is made to assist vision by holding back the head when walking.

A puffy condition of the face below the eyes is important, as with a previous history of scarlet fever, it is very suspicious of renal incompetence.

Muscular Affections.

Involuntary spasms of muscles may affect the eyeball, the eyelids, or the tissues around the eye. These conditions are of importance, not merely in drawing attention to the condition of the eye, but also as they denote an asthenic condition; these defects are present more when a child is run down than when it is in good health.

Squint or strabismus is the most important of these conditions. One eye may turn inwards more than another. When the squint is convergent there is usually some refractive error, commonly hypermetropia, and hypermetropic astigmatism. One eye may turn outwards, when it is divergent, as in myopia, or as there is a tendency for blind eyes to do. One eye may squint at one time and the other eye at another time when the squint is said to be alternating, as may occur without any refractive error in neuropathic cases. Squints, if well marked, are easily noticed, but there may be cases so slight as to escape the teacher, and as this condition is common in young children, it may be difficult to diagnose. To examine such a child, get it to look at a distant object, and impress on it the necessity of continuing to look even if you cover one eye. Then cover one eye and note whether the eye which is visible moves, and if it does not, there is no squint in that eye; the other eye may then be tested in the same manner. Squinting is usually seen in young children or in any asthenic condition, as after illness; it may follow diphtheria, but it is not then likely to be permanent. Improvement in health may cure the squint, but it is important that it should be attended to when noticed, as the eye that squints is apt to deteriorate and become blind. Many cases of marked difference in eyesight found in older children are due to the existence of a squint being present in early life. In an infant school with deficient lighting squints are very apt to occur, especially if in kindergarten work the children are made to use small objects which they have to bring close to the eye when they are working with them; it is always safest to insist on large objects being used in kindergarten work to hinder the possibility

of such an occurrence. The deficient lighting in infant-rooms might also be ascribed to the fact that it was thought that as the infants did little or no reading it did not matter so much whether they could see well or not. The fact that infants earned a smaller grant also helped to excuse the provision of any kind of room for them. This year, however, the Board of Education have offered the same grants for children who are five years of age as for those in upper departments. The grant is reduced for infants under five, as the Board evidently do not consider that schools are the proper places to perform the duties of crêches or day nurseries. It is most important that in building new schools attention should be paid to the needs of the infant children, essentially in the lighting of the rooms, for so many of the cases of defective eyesight owe their origin in school life to unhygienic conditions which in the past have prevailed in infant schools; for from the age of four to that of seven is the usual time for these faulty conditions to arise in the eye of a child.

Nystagmus or oscillation of the eyeball may be present. It may be congenital or come on in infancy as the result of any condition affecting a diminution in the acuteness of vision. It is seen in albinos. Treatment is not of much avail, but the movement may abate as the child gets older and improves in health.

Blepharospasm, twitching or winking of the eyelids, may be present owing to some defective condition of the lids or conjunctiva, or some error in refraction; if the cause is attended to, the condition usually disappears. Twitching may involve many of the muscles around the eye, being more complete than blepharospasm, and if the error in refraction which is usually present is not rectified, a very disagreeable habit may be formed, and one which it is difficult to eradicate later in life; such twitchings of the face may also occur in excited cerebral conditions, and the cause should always be carefully investigated.

Examination of the Eye.

In examining eyes the school medical officer has to estimate (1) the effect of any present disease on the child examined; (2) the effect of any condition which may be found on any other children in the class or school; and (3) any defects present in the eye.

A child may be seen with old disease so affecting the eye that it is impossible for the child to read the ordinary school books, which constitutes a "blind" child according to the Elementary Education (Blind and Deaf Children) Act, 1893, and such a child ought to be sent to a school

for blind children, and not be kept in a public elementary school. There are many children on the border line of blindness that are very difficult to deal with, and have to be judged largely according to the actual circumstances of each case. Some large urban areas have day schools for the blind, but as much of the blindness found in elementary school children is due to neglected disease, it is frequently most important in treating these blind children to remove them from parental influence, and residential schools are undoubtedly the best for these children.

Children may be seen with inflammatory conditions of the conjunctiva, varying from a slight catarrhal to a marked granular state like trachoma; but all these conditions may be contagious in character, so that, for the safety of the other children, a child suffering in this manner ought to be excluded from school until cured. Sometimes the condition is very slight but very infective, probably influenzic in type, and if not promptly treated spreads rapidly through the school.

The defect present in the eye has to be also considered with a view to recommendation as to treatment.

Inflammatory Conditions of the Eye.

Inflammatory conditions may affect the eyelids or the different parts of the eye itself, and the following are most frequently met with in school work. They are all more or less due to defective nutrition, and in chronic and obstinate cases it is well to look for evidences of inherited syphilis.

Blepharitis, or inflammation of the eyelids, "sore or red eyes," is common among the poorer school children, and is usually associated with neglect on the part of the parent. Cleanliness is essential to its cure, and, if any error of refraction be present and is treated, the condition can with a little care be removed.

Hordeolum, stye or "west," as it is called in this area, is another condition associated with malnutrition, and often occurs in children suffering also from some defect in vision.

Conjunctivitis occurs in severe forms and in slight forms, in acute stages or in chronic stages, and care has to be taken that it is not allowed to spread throughout the school. It is also associated with asthenic conditions and defective vision.

Corneal ulcers may be present or their scars "nebulae," the latter interfering with vision to a great or slight extent, and care has to be taken to estimate the degree of loss of sight present.

These are the chief inflammatory conditions affecting the eye with which the medical inspector has to deal. They

are usually the result of malnutrition, and are often accompanied by some defect in vision which, when treated, tends to cure the condition, but the neglect and dirt at back of the affection has also to be considered.

Vision.

The directions issued by the Board of Education with regard to vision are as follows: "To be tested by Snellen's test types at 20 feet distance (= 6 metres.) Result to be recorded in the usual way, *e.g.*, normal V=$\frac{6}{6}$. Examination of each eye (R. and L.) should, as a rule, be undertaken separately. If the V. be worse than $\frac{6}{9}$, or if there be signs of eye strain or headache, fuller examination should be made subsequently. Omit vision testing of children under six years of age."

Preliminary Testing.

It is usually the custom in most areas for the school medical officer to do all the testing of the eyes himself, but in this area the teachers have from the beginning ascertained what line in Snellen's types the child could read and have recorded the fact on the schedule. There are three chief reasons for this action on the part of the local education authority: (1) any teacher or other intelligent person should be quite able to do this, (2) it is to the advantage of the teacher to know which children cannot see well, and (3) it is a great saving of the time of the school medical officer. Directions were issued to the teachers, and where it was found that teachers did not understand what was meant, a practical demonstration of the methods to be used were given, with the directions at hand for the teacher's reference. An eyesheet was obtained with the number of metres at which the type should be read by the normal eye printed below the letters, and the following directions were issued:—

"Children who cannot read cannot be fully tested for sight, but if teachers have any suspicion of such a child it should be recorded in the schedule.

To obtain a correct record in eye-testing the sheet should never be exposed when not in use, and the following suggestions to save time in doing this work may be of use:—

(1) It is very desirable that the testing should be in as good a light and on as clear a day as possible.

(2) The children should stand 20 feet from where the card is placed.

(3) They should stand in a line with their backs to the card, each child turning to face the card in turn.

(4) The eye not in use should be covered with a piece of cardboard, such as an ordinary postcard, but it is essential that the unused eye should not be pressed upon, but kept open behind the card. The fingers should never be used to shut the eye.

(5) Pointing to the top line the child is asked to read a letter, and if this is done, a letter in the next line is taken, and so on, until a letter is reached which the child takes time to decipher. Another letter is tried, and if there is still difficulty the child is asked to read the letters in the line above; if that is done easily the lower line can again be tried, but any child reading the majority of letters in a line is supposed to read that line.

(6) Any child wearing glasses should have these on when being tested.

(7) At 20 feet the line marked with the figure 6 should be read, and a child reading it is marked $\frac{6}{6}$, but if only the line marked 9 can be read at 20 feet, the card is marked $\frac{6}{9}$, and if only line 12, it is marked $\frac{6}{12}$, and so on. If no line is read fill in a O."

Difficulties with Medical Practitioners.

When the preliminary investigation is undertaken by the teacher it is not necessary to examine further any children who are marked as normal unless there is some evidence of eye strain. In some areas the further examination of other children is done by the school medical officers, but this, though desirable, is not always possible. So children have to be referred to their medical man. Cases have occurred where such children have been told that there is nothing the matter with the eyes, and this may be explained in some instances by the fact that the light in the school is not always the best, or children are more attentive when tested by the doctor, or not so tired, or some slight inflammatory affection of the eye that was present when the test was made in the school has passed off. In other cases children with defective vision in one eye have been referred for examination and been told that as the sight is quite good in the one eye it is not worth while troubling about the other, and as no child wishes to wear spectacles the verdict is frankly and thankfully accepted irrespective of the consequences. I was informed that, by looking at the eyes, it was possible to tell children, who were markedly myopic, that there was no affection of their eyesight.

Conditions Causing Defects in Vision.

There are three variations from the normal in eyes which may produce difficulty in accommodation or interfere with

acuteness of vision: hypermetropia, myopia, and astigmatism.

Hypermetropia is the most frequent error of refraction. It is congenital and often hereditary. In good health and with plenty of exercise there may be no symptoms of hypermetropia, but with asthenic conditions the hypermetropia is shown by headaches, usually frontal, but sometimes occipital or elsewhere in the cranium, conjunctivitis or blepharitis, blinking, and burning sensation in the lids. There may also be in young children a convergent squint.

Myopia, or short-sightedness, is usually acquired in early childhood, when the eyes are used excessively or work is held too near. In slight degrees there may be no symptoms except indistinct vision at a distance, but in marked cases there is often pain in the eyes after use, and the eyes tire easily, and there are black spots before the eyes or sometimes bright flashes of light. Divergent squint may occur. The smallest print can be read, but at a shorter distance than normally. The condition should be treated, as it may become progressive and even go on to blindness.

Astigmatism is due to a fault in the curvature of the cornea, or more rarely of the crystalline lens; in it there is difference in the degree of refraction in different meridians, so that each of the principal meridians has a different focus. It may be congenital or acquired, owing to changes in the cornea as from inflammation. There is always eye strain with astigmatism, and in looking at any lines those at right angles to the meridian that is out of focus are always blurred; but the condition may vary in extent and regularity.

All these conditions are emphasized by bad health, so it is important that attention should be paid to the eyesight of children who have been absent from school with severe illness or infectious disease, especially measles, as this so affects the eyes in its onset. Such children and all asthenic children should be cautioned against reading or sewing at night, and should not have evening lessons to do. Any errors of refraction found on examination at school should be corrected to hinder stooping and unnecessary convergence of the eyes at work.

School Life and Eyesight.

Posture at school is important to hinder too great distance between the seat and the desk, or too little, but so far it is only possible to seat the children of corresponding size together, as according to the building regulations of the Board of Education "single desks are not necessary in elementary schools." It is necessary to see that books are

well printed and also leaded type used to obtain a proper lineage or spacing between the lines. Upright writing also aids to hinder strain on the eyes, as the eyes see vertical and horizontal lines easier than oblique lines. Children should not be made to sit too long, as movement improves the circulation. It is also important that tasks that involve a certain strain on the eyes, as sewing, should be done when there is the best light in the day, and not left to the end of the day; in our winter days the best light in the school day is from eleven to twelve in the forenoon, and it rapidly gets worse in the afternoon.

The lighting of the school is most important. At present it is necessary to accept schools as they are, unless the conditions are such as to be too injurious to be allowed to continue. The worst form of illumination for a schoolroom is to have windows in front and behind the pupils. It is bad both for the children and the teacher, and every effort should be made to turn the desks so as to obtain the illumination from the side. In buildings of more than one storey there seems evidence that the light in rooms on the ground floor is not as good as in those of the upper storey, and as girls are more apt to suffer from defective eyesight than boys it is advisable that they should have the upper rooms. Windows should be large, going well up to the roof, and with as small and as few divisions as possible so as to avoid shadows.

There a tendency on the part of the public to repudiate the possibility of school life injuriously affecting the eyesight of children, but it must be remembered that a child in school is more or less a fixed object, with tardy circulation, and the eyes engaged in more or less near work, while at home or outside movement is not restricted, and there is not the same need or tendency to strain the eyes, but we know that those who do, as by home reading in defective light, as firelight, are very apt to produce defective conditions in the eyes.

CHAPTER VIII.

Ear Disease.

Ear disease, according to the Board of Education, includes suppuration and obstruction of the meatus principally, but other conditions may be present, though not so important. More attention used to be paid to the shape of and proportions of the ear, as stigmata of mental or moral degeneration, than is conceded to these conditions in the present day. Such deviations from the normal in the shape and size of the ear being due to defects in development were considered important in assessing the mental condition of the child. The large outstanding ear, liable to chilblains, had frequently more attention paid to it in these studies of defective cerebral conditions than it required.

Obstruction of the meatus may be due to any foreign body in the canal, and the foreign bodies which may be present in the ear are very various, as if there is any aural irritation the tendency is for the child to work with its ear, and shove pieces of paper, bits of bread, or any other small object which it may be holding. Such foreign bodies may be present for a considerable length of time, and produce little or no irritation. On the other hand, there may be considerable irritation; and persistent cough and giddiness, followed by vomiting, should always suggest the advisability of examining the ear to see that the presence of a foreign body may not be responsible for these conditions. Wax may also obstruct the canal, and one's attention is drawn to the condition especially if the channel is more narrow than usual, as it is therefore more easily occluded by the natural secretion. Buzzing, singing and rushing sounds in the ear are frequently associated with the presence of obstruction, and also more or less defective hearing. The canal may also be occluded by the presence of a polypus.

Otorrhœa.

The discharge from the ear may be thin serous fluid, as with eczematous conditions, but it is usually more or less purulent. If streaked or tinged with blood it suggests polypus or granulations. The presence of a discharge may

frequently be denied even when a history is given of long standing discharge, but it is well to examine the ear to see that there is no dampness present, and the discharge cannot be regarded as absent until the canal has been swabbed with some absorbent cotton wool to which on withdrawal no disagreeable odour is attached or dampness is present. The disagreeable odour so characteristic of middle ear suppuration is frequently so bad that it is necessary to exclude from school the child who is suffering from such a condition.

Otorrhœa is one of the conditions which specially proclaims the necessity for medical inspection. It is so common, and frequently makes its appearance in the course of one or other of the exanthemata, which are regarded in many places as belonging to the necessary evils of life, so that any new complication, unless likely to prove fatal to life, is not regarded as worthy of attention. The patient recovers from the infectious disease, but the discharge persists, and—especially if there are adenoids—may continue for many years. If the adenoids are removed, the discharge will most likely cease, but it is wise, while advising the treatment of the adenoids, not to promise the cure of the otorrhœa. In many cases the position of the perforation in the tympanum, if high, might be a guide in advising operation for the treatment of the condition in chronic ear disease, but it is very difficult to impress parents with the serious nature of the condition.

The tendency for middle ear disease to terminate fatally in cerebral abcess and in general pyæmia is so rare that parents are inclined to consider that the medical man is making more of the condition that is warranted by "custom," but school doctors ought always to impress upon parents the possibility of such a contingency arising. The hope of the removal of otorrhœa from its common position in the affections of children must always be regarded as remote until the school nurse becomes a recognized factor in medical inspection. With her advent and influence on the parent, those cases which prove intractable may have something done to them by the parent if they are told a way of curing the disease, and by the nurse impressing on the parent the serious nature of the ailment; but until that time otorrhœa with its consequent defects will always have to be regarded as one of the outstanding conditions requiring treatment in school life.

Hearing.

"If hearing be abnormal or such as interferes with classwork, subsequent examination of each ear should be under-

taken separately. Apply tests only in a general way in cases of children under six years of age."

Interference with hearing may be regarded as one of the chief causes of backwardness in children. The child that is long in speaking frequently has some defect of hearing, if there is not marked mental deficiency. The child who in school is regarded by the teacher as inattentive frequently cannot hear what is being said, and so ceases to take an interest in what is going on in the class. One's attention may be drawn to these children in class by their tendency to push the head forward and turn it slightly to the side in order to assist in hearing anything that is said. On the other hand, the child who is very deaf is noticed by the lack ot expression in the face, the want of interest in its environment, and a general listless attitude. The aid of the teacher should be obtained in informing the school doctor of those cases in which deafness has been noticed in school work; or a parent may send a message stating that the child is becoming deaf. If the deafness has come on suddenly, one may be suspicious that it is due to the accumulation of wax. If it tends to come with the damp weather, and to improve in dry and warm weather, one may be suspicious that it is catarrhal and associated with adenoids.

Test for Hearing.

There does not seem to be any satisfactory test for hearing which can be applied to school work. All that the school medical officer can do is to advise that a child who is found deficient in hearing be recommended for further examination. The voice may be used to gauge the capacity of the child under examination, but one has to remember that the child may find it difficult, especially if accustomed to a more or less pronounced dialect, to understand what the inspector is saying. On the other hand, it is always possible to find out how far the watch can be heard, so that for the rough purposes of testing hearing in medical inspection the watch seems to be the most convenient method to use. Of course in urban areas where there is a possibility of an aural surgeon being appointed to deal with cases of defective hearing, it is possible to have more reliable tests.

Deaf Children.

It is necessary to consider what is to be done with children who are so deaf as not to be capable of receiving benefit from the instruction given in elementary schools. According to the Elementary Education (Blind and Deaf Children) Act, 1893, such children ought to be sent to a

special school for the deaf, and the ages at which children attend these special schools are from seven to sixteen. It is necessary, however, to differentiate between deafness due to the loss of power of hearing, and deafness due to mental deficiency, and a history of deafness in the family, or its collateral branches, will frequently point to the latter condition; and in these cases the child should be sent to a school for deaf and defective children. There are many cases of children who are slightly deaf, and not quite able to benefit materially from school teaching, who require special consideration, but such cases should be dealt with according to their special circumstances. It must not be forgotten that deaf conditions, which are acquired, are frequently the result of neglect, and so such children, as in the case of blind children, are much better treated in residential homes than in special day schools.

Speech.

In considering speech, it is necessary to notice defects of articulation and the presence of lisping or stammering. Defective articulation may be due to the presence of adenoids obstructing the nasal passage, or enlarged tonsils causing a thickening of the speech and loss of distinctness in articulation, or the presence of a high arched palate interfering with the proper apposition of the tongue. The two former conditions can be recommended for treatment, but in the last condition it is necessary to wait the resolution of the palate, and to see that when that occurs the defective habit of speech which was the result of mal-development, does not continue when the condition producing it has passed away. It is necessary also in defects of speech, such as lisping, to consider the condition of the teeth, and see that conditions which arise from temporary absence of teeth are not allowed to persist when the vacancy in the set is filled up by the new teeth.

Stammering.

Stammering is a condition more or less nervous in origin, and aided by the presence of adenoids in the naso-pharynx, intestinal worms, the eruption of a permanent molar tooth, or a tight prepuce. The irritation from these may produce a tendency to stammer, or the habit of imitating another child with a stammer may end in the development of one in the imitator. It will be found that constipation always tends to accentuate the condition. In many cases benefit may be derived from the treatment, especially in those cases where there is a tendency for the child to endeavour to speak with an empty thorax, so it is well to teach such a child to take a full inspiration, to speak while the air is

escaping, and always to insist that speech be stopped as soon as inspiration begins. It is not advisable to put stammerers together in a class for fear of their imitating one another; and if a child is very bad it might be better to see the parent and explain the treatment and then exclude the child for some months to give a chance of recovery.

CHAPTER IX.

Mental Condition.

The consideration of the mental condition of a child should be materially aided by the school medical officer, as school teachers are not able to gauge the position of the child in development nor take into consideration certain facts dealing with the construction and evolution of the brain from infancy to adult life; nor are teachers capable of accurately weighing the effect which lack of nutrition or maldevelopment or disease may have on retarding, arresting or even altering the mental condition. Certain facts stand out as important from the mere point of growth in judging the mental condition of a child. The fact that the head is a quarter of the size of the body in the infant and only one eighth of the size in the adult or that the head has diminished a half in proportion to the growth of the individual has to be constantly borne in mind as well as the remembrance that during this period of change from infancy to adult life the brain has diminished proportionately three and a half times.

The difficulty in judging the mental condition consists not merely in the size of the brain, but also in the complexity of its structure, which alters year by year, so that it is necessary not merely to remember the great necessity which this organ has for nutrition from its size, but also not to forget that, besides size, there is a material alteration of structure calling for proper nutrition. While the brain may be more or less normal in structure, its possibility of growth may be interfered with externally by pressure of the skull, hindering its increase, or internally by effusion of liquid into the ventricles. Pressure in both of these ways tends to arrest development, and though there are definite standards as to a microcephalic and a hydrocephalic head, yet it would appear that there are border lines for these conditions so that development may be partially arrested by a slight condition of either form, and it is the gauging of the extent of these slight conditions and the summation of the points for consideration which make the work of the

medical inspector so useful in aiding the teacher in arriving at an idea of the mental condition of the child.

The value of the general nutrition in improving the condition of the brain must always be taken into account, because, while hydrocephalic children improve mentally with improved nutritive conditions, there is not the same possibility of improvement in microcephalic cases, as the area of increase of the skull diminishes relatively to the increase of the brain with every year of growth. It is also necessary in considering the mental condition, to estimate the effect of maldevelopment on brain, and in this respect the alteration of the palate from a high arched palate to a broad normal palate, which frequently occurs if the second dentition is healthily established, is most important. Dr. Ireland does not consider that the high arch of the palate can have much effect in contracting the base of the brain, but in the majority of his cases the arch is persistent more or less through life, but there are many children who lose this arched condition with the development of their second teeth, and teachers can usually point to a marked improvement in the mental condition which has occurred after this change. In examining children I have frequently been able to foretell an improvement in the mental condition, simply by recognizing the resolution of the palate, and in many cases the improvement is so very marked as to point to the broadening of the palate also tending to the broadening of the lower part of the cranium.

Directions of the Board of Education.

To estimate the mental condition of the child, the Board of Education require a consideration of the proportions of attention and response, and the noticing of any signs of over-strain. The general intelligence may be regarded under the following heads—(*a*) Bright, fair, dull, and backward; (*b*) mentally defective; (*c*) imbecile. The mental capacity of children under six years of age is not to be tested. The remarks by the Chief Medical Officer of the Board of Education, in his annual report for 1908, amplify these directions so clearly and so forcibly for the school medical officer that to quote them may prove of value.

"In conducting the examination for mental defect, the school medical inspector should, of course, recognize three definite conditions of mind which call for distinct modes of educational treatment. In the first class are included children who are merely dull and backward, and who do not require special educational provision beyond what is possible within the limits of the ordinary elementary school curriculum, or at most the inclusion of a larger proportion

of handwork than is usually allocated. In the second class fall the educable feeble-minded who suffer from some minor defect in mental power, which still leaves the child able to profit by training in special schools under conditions where small classes prevail with a minimum of literary instruction and a maximum of manual work in the curriculum. The third class includes the non-educable feeble-minded, for whom school training of any kind is in vain. Medical inspection being for the present confined to 'entrants' and 'leavers,' offers considerable difficulty in any diagnosis of mental defect likely to be useful for school purposes. It is not easy to make a reliable statement in the case of entrants, and it is, in fact, unwise generally to begin any examination for mental deficiency before the age of seven years. It would be better, therefore, as a rule, to refer all backward children (including deaf mutes) to special medical examination later in school life, relying for presentation to the inspector on the watchfulness of the teacher. Another reason for dealing with mental defect at a special examination is that the usual routine examination is too short to allow a sufficient time to enter into all the factors which go to determine a diagnosis of feeble-mindedness."

Bright and Fair Children.

It is difficult to assess the stage of development of the child in relation to age in elementary schools, and this difficulty will continue until the individual child is regarded from its own standpoint, and not merely as a member of a class of children, but under the present conditions it is necessary to have some standard for judging whether a child is above the average intelligence, or whether it is merely average, and the easiest method of acquiring this standard is by taking the average ages in the respective standards, and classing the child whose age is less than these averages as bright, and a child whose age is the same as the average as fair or average. The tendency in the present day to abolish standards, and to deal with classes in two or three groups, may prevent these standards, but where classes are arranged in this manner it is easy to acquire average ages on which to base one's data; but it will also be found that the arrangement of these classes still agree more or less with the ages existing in the standards.

The following table gives the ages of children in the different standards in urban and rural areas, and shows what the age of the child ought to be when in these standards. It will be noticed that there is a gradual gradation from seven to 13, in the urban areas, but in the rural areas, in

standard five, there are more children 12 years of age than 11 years, and therefore there is a slight difference in the average age in the fifth standard in these areas, pointing to the fact that development is slower in the rural areas than in the town, and this retardation of development is probably due to defective nutrition, owing to the lower scale of wages for rural employment, and larger families being more in evidence than in the urban areas.

Standards.	Average Ages. Urban.	Rural.
I.	7—8	7—8
II.	8—9	8—9
III.	9—10	9—10
IV.	10—11	10—11
V.	11—12	12—11
VI.	12—13	12—13
Ex.-VI.	13—12	13—12

Backward Children.

If one takes this standard of age, it is easy to classify children that are backward or dull, as those who are not in the standards corresponding to their age, or whose age is greater than the average age of the standard to which they ought to belong. Backwardness in a child is the result of some physical interference with the education of the child which has prevented regular attendance at school, or through ill-health has created an inability to profit by the education which has been supplied. The number of backward children in a school varies largely with the class to which the children's parents belong, as if the parents are not in a position to have the child attended to when it is ill there is apt to be a chronic condition of ill-health established with the child. It will therefore be seen that while acute illnesses interfere with the education of the child, they may not necessarily make the child backward unless they have sequelæ, as during acute illness the possibility of a fatal termination makes it necessary for the parent to have advice for the child. Of these backward children, tubercular disease, in its multiform appearances in school life, produces the largest number in the upper classes, but in the lower classes rickets, or other forms of malnutrition, has greater effect in producing backward children.

The problem of dealing with backward children can be solved in large urban areas by the establishment of open air schools, as the attendance of children at school in such surroundings, and the daily provision of a sufficient meal for the nutritive wants of the child, materially tends to remove the condition, so that the child returns to its proper

place in the school curriculum. If there is not a proper provision for the nutrition of these children, such special schools will be rather apt to produce a condition of nervous strain in the child rather than prove advantageous in improving its mental condition. In rural areas with small schools, and especially if there is defective nutrition, which the parents cannot remedy, it is difficult to know how to treat these children, but the school medical officer has to consider each child and the special circumstances of each case, and, if he considers it advantageous, exclude for certain periods with a view to the improvement of the child's condition.

Dull Children.

Dull children may find their way into such a category from mental or physical causes, and it is doubtful whether they should not all be classified as "physical," because in many conditions the slow mental development is produced more from lack of proper food or defective conditions of the child's environment interfering with the proper nutrition of the brain, than with any primary fault in the brain itself. These dull children often develop later in school life, and they are specially to be noticed in rural areas, as having been dull from the age of six to that of 10 or even 12, and then the short period of school life which is left is not sufficient to allow the education of the child properly to commence. In urban areas such children may be dealt with by special classes, with an increased amount of manual work in the curriculum, but there is not a sufficiently large number in rural areas, with small schools, to make this treatment possible.

It would seem that there are only two possible ways of meeting the difficulty, one being to increase materially the amount of manual instruction necessary in the lower standards, and not have the curriculum arranged as at present with the largest number of hours devoted to manual instruction set apart for the upper standards of the school. The other method of dealing with the difficulty would be to raise the age for leaving schools to 16 years in rural areas, and after the age of 14, to arrange for attendance at school in the morning while the scholar works in the afternoon; but it would be very necessary to provide that the scholar be not allowed to work in the morning before going to school. This practice at present is one of the chief reasons for the apathy and difficulty of education of upper children, especially boys, in rural areas.

In urban areas dull children should be classed in small special classes, and where the urban area is small and it is

not possible to provide such classes for any one school, pupils might be entered from various schools in the area to form such a class. Local education authorities who adopt such methods of dealing with this difficulty will be satisfied with the result of the arrangement; but it is very necessary that attention be paid to the nutrition of such children, and also the circumstances of the home must be controlled as far as possible, so that lack of sleep and other unhygienic conditions which tend to produce strain in the child are avoided.

Other Tests.

The test of the ages in standards, while a rough and ready one, is sufficiently reliable as far as the public elementary schools are concerned, for dull and backward children, but suggestions have been made to supply tests for different ages in the form of questions, or by judging the result of certain actions which the child is asked to do, or listening to the child reading. If such a test were to be adopted, each medical inspector would have to form the data of the test for his own area, as educational methods, training, and dialect vary so considerably in passing from one local authority to another. In classifying a child as dull, it is always necessary to eliminate the possibility of such dulness being due either to defective vision or hearing, especially if either condition is amenable to treatment. Stupidity and slowness of "grasp" on the part of a child are frequently merely the result of slight deafness which causes such an effort to hear what the teacher is saying that the strain becomes too great, and the child lapses into apathy. If the vision and hearing were perfect in our schools the number of dull children would be materially reduced, but as long as conditions of neglect produce defects in these senses, so long (or until medical inspection is more thoroughly organized) will the dull child be misjudged in the school, and be slow in response and apt to lack attention by inability to see or comprehend what is happening.

The mental condition of the child is to be judged by its response to questions or problems submitted, and in considering the value of response as a test of this condition, one should take an opportunity of watching the methods employed by the teacher when at work, for children who are badgered by an excitable over-strained teacher are apt to lose the power of response or to respond in an automatic manner, which is not a mental response. One has also to be careful that the children understand what the inspector is saying, or children may be thought dull who simply do

not understand a dialect different from the one to which they are accustomed. The sudden response, the anxiety to answer frequently, portrays the presence of nerve strain, and is not necessarily evidence of a bright mental condition.

Attention may be judged as in the case of response in the most easy manner by watching a class of children during an object lesson. If the child whose mental condition is to be considered is among the scholars, one can arrive at an estimate, both of response and attention, without allowing the child to know that special attention is to be paid to him or her. In these circumstances one also notices children who tend to keep their eyes fixed and move the head in watching the teacher, rather than to keep their head still and follow the movements of the teacher with the eyes. This lack of movement in the eyes and excess of movement in the head was pointed out by Dr. Warner as a common sign in children with defective mental condition.

Nerve Strain.

It is very necessary to estimate the condition of nervous strain present in children, as it is most important that teachers should be warned which children require care. Among the younger children in the infant schools, and in the first two standards, it is most important that all hydrocephalic children should not be encouraged to take too great an interest in their work, as it is so easy in these children to produce a relapse in the condition. It is important also that children with choreic movements, whether of the body or merely of the face, with muscular twitchings, however slight in character, should be protected from strain by not taking their school work too seriously. It is also important that children with a history of night terrors or somnambulism or nightmare, should be made to work as easily as possible at school. Children with *petit-mal*, or slight cases of epilepsy, should also be hindered from taking too serious a view of education. It should be impressed upon the teacher that these children are not to be corrected but merely hindered from becoming nuisances in the class through uncontrollable habits. If it is found impossible to control such children without constant correction, it would be better to exclude them from school. At the same time it should be recognized that in cases of children with epileptic tendencies, it is advisable, except for a day or two immediately round the attack, that they should be at school. In all these cases it will be found that an improvement takes place in the condition if the children accept the advice of wearing a cholera-band during the winter months, masticate slowly and thoroughly, avoid salt in their food, take as little meat as possible, and keep the bowels regular.

Imbeciles.

The imbecile children belong to the third class of children mentioned by Dr. Newman, which includes the non-educable feeble-minded for whom school training of any kind is in vain. There are many of them scattered up and down the country in public elementary schools, but they should not be allowed to be there because their presence is bad for the other children, as imitation is the strongest force in nature; and their presence is also bad for the teacher, whose nerve tension is unnecessarily increased by having to waste time in controlling such a child. Such children should be excluded from school and given a probation period in one of the special institutions which are certified for the purpose of training the feeble-minded; but when the authorities of these institutions report the child as non-educable, removal to the imbecile ward of an asylum is the proper method of dealing with the condition.

The classification of imbeciles is difficult, as so many conditions are responsible for imbecility. It may be produced by constraining pressure of the skull, intracranial pressure of fluid, undeveloped condition of brain tissue, lack of special nutrition, the effects of heredity, the last of which ought probably to be classified as nutritive, or the effects of disease. Certain types are well recognized, and the following may be met with during school years.

Microcephalic, or small-headed imbeciles, are so termed if the circumference of the head does not exceed seventeen inches, but they may occur with a larger circumference. The forehead is narrow and passes up to a high vertex, while the back of the head is usually flattened. Large bright eyes, brought close together by the narrow forehead, and a long nose, present the typical "bird-like" look, a characteristic which is suggestive of feeble-mindedness, even in children with bigger heads than seventeen inches in circumference.

Porencephalic imbeciles, due to a deformation of the brain by the lateral ventricles communicating with the surface of the hemisphere, and consequently associated with the one-sided paralysis, are sometimes seen; this imbecility may be accompanied by an asymmetrical condition of the skull, owing to a flattening of the one or the other frontal region.

Hydrocephalic, or large-headed imbeciles, are perhaps the cases most frequently met with in school life. They owe their origin to congenital or acquired effusion of fluid in the lateral ventricles, which by pressure produce a more or less atrophic condition. The head looked at from above

is obovate, and globular in appearance when looked at from the front. There is bulging of the temples and the eyeballs may have depressed axes. The mental condition does not always depend upon the increase in the size of the skull, as there may be considerable impairment of the mind with a comparatively small increase. The circumference may vary from 22 to 37 inches in diameter.

Mongoloid imbeciles are so called from their appearance resembling the Mongolian caste of face. The head is broad and there is flattening of the occiput; frequently there are "bosses" or bony accretions at different parts of the cranium. The eyes, almond-shaped or Chinese, are obliquely set, and the upper lids slope upwards and outwards. The nose is usually short and spread; the mouth tends to stay open and a broad shaped tongue with transverse furrows is usually easily seen. The palate is often high and narrow, and the fingers are thick and short.

Cretinoid imbeciles owe their condition to the arrest of the development of the thyroid gland, and in the early stages resemble mongoloids in appearance, except that there is no obliquity of the eyes. The nose is broad and the face seems foreshortened, like a pug's; the lips are thick and coarse, and the tongue projects as if it were too big for the mouth. The teeth are usually very bad, but the palate is not usually narrow but broad. The hands are spade-shaped, short and broad. Such children are very slow in response, and tend to do nothing, while the Mongolian type of child is very apt to attempt to mimic sounds or movements.

Neurotic imbeciles are the production of a neurotic inheritance. They show nervous irritability, sleeplessness, convulsions, want of power of attention; and sometimes attention is drawn to the condition only by the presence of moral perversion. The palate is high and narrow, but the nerve signs are most important, such as frowning, twitching of face or fingers, and the drooping of the hands at the wrist, as described by Dr. Warner, the palm being contracted and arched on the top, while the thumb is bent back and each finger is bent back at its knuckle bone.

Eclampsic and epileptic imbeciles occur, the former as a result of convulsions when teething, and the latter associated with epilepsy and suffering from the deterioration which occurs with the progressive epileptic condition; usually the earlier the epilepsy appears, the more serious is the mental condition, as in such cases epilepsy is due to an inherited unstable condition of the brain.

Syphilitic cases occur, but very rarely, though Dr. Clouston has described a juvenile general paralysis which occurs

about puberty. Such children show no signs of mental deficiency till the onset of puberty, when they gradually degenerate, forget all that they have learnt, and finally dementia and paralysis cause death.

Traumatic imbecility produced by injuries of the brain, either at birth or later, may occur, and the condition is usually associated with some paralytic affection. There may also be rigidity, and muscular spasms affecting the limbs and interfering with walking. Speech is usually also affected, and the mental condition is noticed by attention being drawn to the physical defects.

Post febrile imbecility may occur in cases where there has been meningitis or cerebral inflammation during the attacks of scarlet or enteric fevers or whooping-cough. In these conditions the paralytic effect interferes with the nutrition of the brain, and draws attention to the alteration in the mental position of the child.

Feeble-Mindedness.

Recognized forms of imbecility have been described before considering what class of children are to be regarded as feeble-minded, because the wide extent of mental condition, which stretches on the one hand from the merely dull or backward child to the evident imbecile on the other hand, constitutes the more or less feeble-minded child. In the Elementary Education (Defective and Epileptic Children) Act, 1899, they are defined as children who "not being imbecile, and not merely dull and backward are by reason of mental or physical defects incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable, by reason of such defect, of receiving benefit from instruction in such classes in schools which are in this Act mentioned," and though the definition seems to lack point, yet it practically covers all the gradations which go to form a feeble-minded child.

It is necessary in certifying a child under the above Act to consider not merely its positive feeble-mindedness, but also its lack of mental characteristics which, while unduly appropriating too much of the teacher's time in an unequal struggle to make the child proceed on a level with other children, holds out no hope of improvement in the child's condition, if left in the school, but rather a steady deterioration greatly to the prejudice of the children with whom it is in contact. It is too much to expect from any training or any course of feeding or hygienic environment to make a feeble-minded child evolve from its feeble-mindedness, but it may be possible by training to make some of these children capable of passing through life,

doing some work to enable them to justify their existence as members of the community. If, however, something is to be done to improve such a child, it is necessary to remove it from the education given in elementary schools, so that it may have the full benefit for as many years as possible of the special training provided in certified schools for such children. The problem of the after life of the feeble-minded, while of vital interest to the State, both as regards the present and the future, and in spite of the valuable report of the Commission on the Care and Control of the Feeble-Minded, is not likely to be dealt with by statesmen without full deliberation, as the condition is one that needs drastic treatment, which is largely out of sympathy with the sensitive ideas prevalent with the neurotic and uneducated masses of the community.

The school medical officer, under Article 53 of the Code, has to exclude children who, from mental and physical defects, are incapable of receiving proper benefit from the education in the school, and as the parent usually objects to such exclusion of his child, and further objects if the child has to be removed to a special school, it is necessary that the medical inspector should have definite grounds for considering a child feeble-minded. While there are many cases with imbecile characteristics so marked and so evident that there is little ground for dispute, yet there are other children whom it may be necessary to observe for a considerable time before taking any steps for their exclusion, in order to avoid unnecessary odium being placed on the school medical officer for the discharge of these necessary duties. It is essential in doubtful cases to consider the following points in arriving at a conclusion as to the mental condition of the child.

Family History.

As heredity plays an important part in the production of imbecility and feeble-mindedness, an endeavour should be made as far as possible to obtain the history of children with weak intellects present in collateral branches of the family, or a history of deaf and blind children in such branches. The prevalence of insanity in uncles, aunts, or grandparents also assists in determining the possible condition of the child.

The Personal History

of the child is also important, especially if there is any history of previous injury to the skull or of any alteration in the mental condition of the child after acute illness or acute infectious disease in which there was some conjecture of brain trouble. It is also important to learn, if possible,

whether the child was a quick child as an infant and walked early, or was late in walking, as delayed muscular power is not so easily judged in regard to the upper limbs, but from the fact that the lower limbs are necessary for progression, lack of power in the muscles of these limbs show themselves by a delay in the power to walk. The parent may also be able to tell whether the child has always been restless and hard to control, or rather tending to sit still, do nothing and take little or no interest in what is going on around him ; these two conditions of restlessness and inactivity, though so diverse, are marked phenomena of different forms of feeble-mindedness.

A history of moral peculiarities, such as lying, thieving, tendency to destructiveness, frequently is given with such children, and many of them seem to have a fatal fascination for playing with fire, and cannot resist the temptation to strike matches and set a light to the nearest object whenever such an opportunity occurs to them. It is well to ascertain whether there are any dirty habits present in the child, and also whether there is lack of control of the bladder or rectum, as while these habits may be produced by the lack of training yet their presence may help to suggest feeble-mindedness. It is necessary also to obtain some idea of the up-bringing of the child and the possibility of the home environment helping to produce or increase the feeble-minded condition which may be present. In considering the personal history, one has also, in the interests of the child, to assess the value of the education which it has received, as owing to illness, other causes of irregular attendance, or disappointment on the part of the teacher, little or no attempt may have been made to improve what mental potential condition may be present.

It is also desirable to obtain a report from the teacher as to whether the child is amenable to discipline or hard to control, as sullenness, outbursts of temper and acts of uncontrollable cruelty are frequently phenomena which occur with lack of mental power.

Present Condition.

In examining the child for mental deficiency and in estimating its present condition, there are certain points which have to be weighed.

General Appearance.—The general appearance of the child is noticed, its attitude, the lack of movement and general suggestion of inertness on the one hand, or the evidence of over-muscular excitement on the other hand, noticed by continued restlessness and frowning, twitchings of the face or twitchings of the hands. One notices the

presence or absence of mongoloid or cretinoid characteristics in the face or eyes, estimates the general nutrition of the child, and notices whether it is well fed or the opposite; the expression of the face, whether intelligent or stupid, apathetic or frightened, should also be noticed. It is well also to exclude the presence of adenoids, so seriously interfering with the general health as to reduce the child to a state of feeble-mindedness from maldevelopment.

Special Senses.—One inquires into the conditions of sense of hearing and of sight, as sometimes the listlessness and apathy of a child have been produced by its inability to see or hear what is going on around, so that it tends to drift back into its undeveloped consciousness.

Appearance of the Head.—The circumference of the head is important in estimating the presence of microcephalic or hydrocephalic conditions. Flattening of any part of the cranium is also important, as if the occiputal region comes straight up from the neck without protruding, one is almost certain to have a condition of feeble-mindedness; and the difficulty of judging the full effects of such flattenings of the skull in different parts of the cranium materially increases the uncertainty of adjudicating on the mental condition of the child under examination. I have always noticed in children with moral perversion, with more or less lack of mental efficiency, that there is a shortening of the frontal bone, and a tendency to flattening of the upper frontal region. The presence of "bosses" on different parts of the cranium projecting outward from the skull, and giving a marked asymmetrical appearance to the head, helps to form the diagnosis, as these "bosses" occur frequently in imbecility. One notices the condition of the palate, whether it is high, narrow or malformed, and also the condition of the teeth as showing where one may expect any improvement in the shape of the palate when the second dentition is established. Children in lower standards who are brought to one without well-marked signs of mental degeneration, except the arched palate, may be judged by examining the condition of the palate in older members of the family if there are any such in the school, and one may arrive at a conclusion of possible improvement if the palate in the older children has improved with the second dentition.

Mental Condition.—One notices the method of speech of the child, whether it is according to its age or still "baby-like," considering in this respect whether any attempt has been made to educate it out of its defective speech condition, and whether such attempt has failed. The power of attention of the child is also noticed, and its readiness or

lack of response, as these two conditions are most important in estimating the mental condition. There is also frequently present a lack of purpose on the part of the child, as well as a want of power of concentration. In estimating the power of attention, head movement in place of eye movement, the physical sign described by Dr. Warner as present in so many cases of defective children, is important in aiding the diagnosis. The power of memory is also ascertained because it is usually very deficient, but there are many conditions of feeble-mindedness in which the child is capable of repeating scraps of poetry perhaps because of the jingle of the rhyme, but not able to contain any other items of information.

The above are the main points which have to be considered in arriving at a decision regarding the mental deficiency of a child, and the school medical officer should make a careful note of the results of all these inquiries, for while under the Education (Administrative Provisions) Act, 1909, a certificate from the school medical officer is sufficient evidence of mental deficiency in a court of law, yet he may be called as a witness and have to declare the reasons for his certificates, and it is advisable that he should safeguard himself by being able to refer to all the data bearing on the case.

CHAPTER X.

Heart and Circulation.

The consideration of the heart and circulation includes the heart signs, the position of the apex beat, anæmia, etc., in case of anything abnormal, or requiring modification of school conditions or exercises. These are the directions given by the Board of Education in Circular 582 to guide the school medical officer in the discharge of his duties, but no reference is made in the annual report of the Chief Medical Officer to the heart and circulation. It is, perhaps, a matter for regret that such a prominent place is given to anæmia by these directions, because the term is so relative and depends so largely on the standard of the school medical officer. If an absolute standard were made of a hæmocyte count and the percentage of hæmoglobin, it might be possible to state when children were suffering from anæmia and when they were not; but at present children who are affected by transient conditions owing to sleeplessness, gastric disturbances, temporary over-exertion, may in many cases be entered as suffering from anæmia, and two days after the inspector's visit the same medical officer might class them as healthy. It is well in judging anæmia, therefore, to exclude any temporary conditions and also any underlying disease which may have produced the anæmia, and not to classify the child as anæmic unless the disease is very marked, and not the product of some other disease.

The Heart in School Life.

It is important to know the children who are suffering from organic heart disease, to avoid their being forced to undergo undue physical exertion at drill or other forms of physical exercises, such as Morris dancing or during play, but it is more important to know the children who are suffering from dilatation of the heart, produced by underfed children doing these exercises. In this connection the value of regularly obtaining a record of the height and weight of the child, and noting the natural progressive increase, or lack of it, cannot be under-estimated as an easy guide to teachers in dealing with this condition. Although

the elasticity of the heart is very great in childhood, and recovery frequently occurs in cases who have suffered from some severe endocardial condition, still it is unwise to put unnecessary strain on these underfed children with heart tending to dilate. Morris dancing is now largely adopted as a part of the physical curriculum of the schools, and there can be no doubt that the children welcome this form of recreation, yet care should be taken to warn teachers that it is important that dances are not allowed to continue too long, and adequate rest should be provided between the dances; the children themselves enjoying the performance are quite willing to go on, but any breathlessness on the part of one of those engaged in the dance should be a sign to the teacher that the dance has been too prolonged; and the children who evince the breathlessness should be noted and brought to the attention of the school medical officer on the occasion of his next visit.

Many children attend school whose parents are aware that they have some affection of the heart, and the teacher is requested to see that they are not allowed to do any drill, with the result that they slouch through their school life and are never fit for a good day's work in after life. This may be justified if the lesion is severe, but in many of these cases there is a very slight lesion or one which may have cleared up altogether. In many of these cases the children would be benefitted by mild physical drill and the teacher could be told exactly what form of exercise to give and what exercises to avoid. It is doubtful whether some of the new exercises added to the manual of physical drill, issued by the Board of Education in 1909, might not with advantage have been omitted, as they cause such a strain that children need to be in a very good condition of health and well fed before they can perform such exercises with perfect safety, and the type of children that go to many of our elementary schools do not permit of such a classification, and it would be injurious for a teacher to give certain exercises to some children and not to others unless the latter were definitely ordered by a doctor not to have such exercises.

Examination of the Circulatory System.

In considering the circulatory system of a child, the face is not to be forgotten, and it will already have been noticed whether there is any pallor, or any clearly defined flush on the cheeks; the latter condition is more important, and great care should be taken in such children to thoroughly explore the heart and exclude any possibility of organic disease.

The pulse rate is of importance in considering the condition of the heart, and an increased pulse rate or tachycardia is more apt to occur than any other form or departure from the normal, as the child is frequently nervous, and one has to wait until the fear of the stethoscope has passed and the heart has returned to its normal rate of beating. In this area many cases of tachycardia are seen among the older girls, always associated with some thyroid enlargement, but it must not be forgotten that the occurrence of tachycardia in early school life may be due to the enlargement of the bronchial glands interfering with the vagus, and so producing an increase of the heart beat.

It is important to notice where the relation of the respiration to the pulse, of one in four, is maintained, as it is one of the safest guides to abnormalities in either heart or lungs. Slowing of the pulse is also important, as it is usually a sign of disease of the brain or that the child is suffering from some form of chronic poisoning.

Examination of the Heart.

The previous history of the child in many cases should be a guide to the school medical officer in warning him of the necessity of carefully examining the area of heart dullness, and noting the cardiac sounds, because rheumatic fever is such a frequent cause of organic cardiac lesions in children; chorea, scarlet fever, measles and diphtheria in the order in which they are mentioned, also act as factors in producing endocardial affections which might leave a defective condition of the heart. In all these cases it is usually the mitral valve which is affected. Congenital affections of the heart are also very important in school life, and enforce the necessity of noting in all cases of doubt, both the area of cardiac dullness as well as the character of the cardiac sounds.

Treatment.—The treatment of organic affections of the heart in school children is not very hopeful; one can only palliate in almost all cases and not remove. It is necessary to avoid anything which might increase the conditions, and frequently periods of exclusion are the only means of dealing with these children. If there is an open-air school, such children should always be in attendance at it, but otherwise every case has to be treated in accordance to its own circumstances.

The action of tobacco on the heart of the boy is important, and a history of smoking may help to clear up many cases of lassitude. Two cases of sudden death, one while at play and the other while at drill, in which I had to give a cause of death, could only be ascribed to the effect of tobacco in boys between the age of 10 and 13.

CHAPTER XI.

Lungs.

In the notes for the inspecting officer accompanying Circular 582, he is asked to include physical and clinical signs of the condition of the lungs. It is very rare that acute affections involving the respiratory system are seen in the medical inspection of school children, because the interference with the general condition is so severe that very few parents are so neglectful as not to notice that something is wrong with the child, and something so bad as to necessitate the child being kept at home, even if nothing further is done for the alleviation of the complaint. Many chronic conditions occur, especially in the winter months of inspection, and it is necessary to carefully discover all cases of tubercular affections of the lungs, so that such children can be excluded from school until the condition permits of their returning to school with safety to the other children. The history of previous diseases of the lungs, such as bronchitis, pleurisy, or congestion of the lungs, occurring more than once in the child life, are always suggestive of the need of a thorough examination to exclude the possibility of such conditions having become tubercular. It is not always possible, at present, to diagnose without doubt when children are suffering from tubercular disease, as there are many suspicious cases on the border line, but such cases must be watched until one is certain whether they are tubercular or not. If it is possible to send them to open-air schools, it gives the best chance of the condition clearing up, but without this advantage it is necessary in inclement seasons to consider the conditions of home, as well as school, before coming to a conclusion as to the best course to take in the interest of the child, and also of the other children in the school.

Examination of the Lungs.

In proceeding to the examination of the respiratory system, one notices the shape of the chest, whether it is flat, long and narrow, as in tubercular conditions, or pigeon shaped, as in those conditions where there has been some

interference with inspiration in early child life. There may be also some alteration in the shape of the chest owing to deformities affecting the spinal column.

The breathing does not usually draw one's notice, unless in cases of asthma or chronic bronchitis, where the moist sounds may be heard, and the prolonged expiration in the former condition. Deep sighing may occur, but it is not of much importance, although it does occur as a prodroma of tubercular meningitis. Frequently the parents give a history of snoring in the sleep, usually produced by enlarged tonsils or the presence of adenoids in the nasal pharynx. Respiration occurs in a ratio of one to four in relation to the pulse, and is only of importance in connection with the prolonged expiration in all cases of asthma. There may be slowing of the respiration in conditions affecting the brain, such as tumour, or alterations in the circulation in the brain, as in hydrocephalus.

Cough.

The presence of cough is important because it draws the attention of the parent more fully to the condition of the child than anything else. The persistent cough following measles or whooping cough or after pneumonia or congestion of the lungs, should always be investigated to satisfy oneself that there is no tubercular condition producing it. Parents may complain of a cough during the night after the child has been asleep for some time, occurring in short paroxysms, with or without wakening the child. Such a cough is usually nervous in character, and needs careful regulation of the intestinal arrangements. The cough may occur in the morning, when it is more apt to be associated with chronic bronchitis. There may be a short light cough occurring at night with an endeavour to bring up some expectoration, which is very seldom satisfied; this type of cough is usually associated with tonsillar or adenoid enlargement, and also with elongation of the uvula, so that in many cases it rests on the child's tongue, and the child spends many an effort in an endeavour to cough up the uvula. The cough may be short, dry and painful, and if associated with herpes of the face or any other disturbance, it is very desirable to send the child home with a note, as there is a possibility of pneumonia; but, on the other hand, it may be moist and abundant, occurring with an easy release of sputum as in advanced tubercular conditions of the lungs. If in school there is vomiting with the cough it may be associated with whooping cough, influenza, or enlarged tonsils, and if the last are not present it is desirable for the teacher to immediately exclude the child.

In percussion it is necessary to remember, especially in younger children, the difference in the note that may occur with the increased growth of muscles on the right side, so that care must be taken not to attach too much importance to the effects of slight dullness on that side, unless fully borne out by auscultation.

Treatment.—The treatment of the conditions involving the lungs in children, depend largely on whether there is an open-air school in the area or not. These children always are benefited by attendance at such an institution, but in rural areas the exclusion of the child in summer months is beneficial, but the value of exclusion during the winter months in some cases is very doubtful, and a careful scrutiny of the circumstances has to be made before anything is done. It is necessary, however, to point out that in schools with defective heating apparatus, it is frequently customary for the teacher in self-defence to keep all the windows shut, and exclude ventilation as much as possible in order to raise the temperature of the school, and as is natural, such proceedings are very harmful for all cases of respiratory disease, and steps should be taken to hinder the necessity for such a course being adopted by any teacher.

Another important point to remember is that the use of stoves in schools frequently dries the air to such an extent that it becomes an irritant, and in asthenic children may produce pulmonary complications, so that it is advisable that where stoves are used, provision should be made for keeping the air of the room moist, either by placing receptacles with water or damp cloths beside the stove. In children in infant schools, especially young children, it is very necessary to point out to mothers the disadvantages of allowing such children to go about with the knees bare during the winter months, as exposure of the limbs in this manner is frequently the cause of a chill occurring, which may produce chronic ill-health affecting the respiratory system.

CHAPTER XII.

The Nervous System.

Affections of the nervous system cause many breaks in the attendance of children at school. The anxiety of the parents is reflected on the medical attendant, and school life is frequently blamed for the conditions which arise. The great majority of these affections of the nervous system are, however, due to a weak nervous inheritance, with some exciting factor, or auto-intoxication, usually intestinal in character. The period of school life from 5 to 15 years is particularly liable to alimentary disturbances owing to the transition character of dentition. The child of five has just begun to lose the first set of teeth, and a good working permanent set is not arrived at until between the 13th and 14th year; consequently there is more or less difficulty in mastication, and the fear of toothache frequently hinders the child from chewing its food as it should. Other conditions which tend to increase dyspepsia, are the hurried meal in the morning, the heavy meal at night, which is frequently the principal meal of the day, as the father has then returned to the home, and the hurried manner in which the mid-day meal has to be eaten if the child has first of all to convey the meals of the father who is not working near home. This last condition, where children hurry with the meal to the parent who is working in some factory, and cannot take the trouble to go home, reflects very severely on the health of the child. It is difficult to deal with these conditions because parents are so convinced that the school, and the school alone, is to blame for the condition produced in the child; but if they can be induced to remove the irritation which may be present, such as enlarged tonsils, adenoids or intestinal parasites, and make the child adhere rigidly to certain simple rules of eating, a great improvement may occur in the child. It is necessary to impress on the parent the desirability of the taking as little salt as possible with food, of its avoiding meat, chewing slowly and thoroughly, and not being allowed to drink until the meal is finished, so that mastication may be more thorough with only the aid of the saliva to complete the mastication of the food in the mouth.

The Examination of the Nervous System.

The examination of the nervous system should take note, if they are present, of chorea, epilepsy, paralyses, and nervous strains and disorders.

With nervous strains it is advisable to warn the teacher of the condition of the child, and to inquire into the home surroundings, the number of hours of sleep, the habits of the parent, and the possibility of lack of food, as these may be responsible for the condition which is present. There may be headache, with or without vomiting, shown by the wrinkling of the eyebrows, or the pulling of the hair in the infant departments, twitching of the face or tremors of the body, uncertain muscular movements, lack of co-ordination, with a history of night terrors, somnambulism, and urinary incontinence, but all these conditions may accompany the presence of intestinal parasites, or dyspepsia, or be the precursor of whooping cough or chorea. One should endeavour to get the parent to attend to the conditions producing the nervous strain, and not to regard the nervous strain as a disease.

In chorea the child should be excluded and treatment insisted on, special attention being paid to the teeth of the child and to the tonsils if the latter are enlarged. There should be no hurry in re-admitting the child to school, as it is important to strengthen the constitution by a slow and certain convalescence.

In epilepsy the period of origin is important, as the earlier the attacks occur the worse is the prognosis. Frequently there are attacks about puberty in girls, and it is desirable that in these cases, while the child is excluded, the attention of the mother should also be drawn to the necessity of paying strict attention to keeping the bowels regular, especially at the menstrual periods.

In cases where attacks occur at rare intervals, while the child is excluded at the time of the attack, when the effects have passed off the sooner the return to school occurs the better for the child; because there is a tendency for these children to lack control, and especially in home surroundings the discipline exercised is bound to be very slight, so that the child is better at school. Children who are subject to severe or frequent epileptic attacks should be excluded from school and sent to a school for such children, according to the Elementary Education (Defective and Epileptic Children) Act of 1899, if the Act has been adopted in the area.

Paralysis may be congenital, eclampsic, or infantile in origin. It is frequently impossible to do anything to benefit the condition, and one can only advise the mother to adopt simple rules of life which will hinder as far as possible any further nervous breakdown on the part of the child.

CHAPTER XIII.

Tuberculosis.

In connection with tuberculosis the Board of Education require the notification of glandular, osseous, pulmonary or other forms. Tuberculosis is perhaps the most discussed disease of the present day, and, since medical inspection was enforced in England, more attention has been drawn to its prevalence among children, as was to be expected. It is not necessary, however, to imagine that there has been any sudden increase of tuberculosis among children, but there is every reason to believe that for the past ten years there has been a decrease, at least in the amount of tuberculosis which was sufficient to produce death. It has been recognized by those who were engaged in hospital work, that the diseases, from which the children who occupied the beds in hospitals suffered, were largely one or other of the many manifestations of tuberculosis. These cases were usually those that were so far advanced that the percentage of those who recovered was not as great as they might have been if the cause of the disease had been recognized earlier. The symptoms of tuberculosis were pronounced, and the parent recognized that the child was dying from some form of "consumption," and nowadays the two words tuberculosis and "consumption" are interchangeable in the public mind. The consequence is that so many cases of tubercle in the early stages have been recognized and described since medical inspection began—and one may expect that the great majority of these cases will recover—with the result that the parent, who in the past has always associated tuberculosis and death together, will be apt to regard the medical inspector as merely crying "Wolf," and not pay any attention to the information which is given. It is necessary to impress upon the parent that the condition is commencing, that it is curable, and can in all probability be cured, but to obtain such a result there must be no neglect.

Tubercular infection is very prevalent, but many of the cases that are infected are never known, as the condition resolves itself into cure, and the patient may never be

aware of the danger that has been averted; later in life an outbreak may occur during some stress in health, and it may be difficult to account for the origin of such an attack. It was customary to talk of the tubercular diathesis, but as has been pointed out by Dr. Leslie Mackenzie, what was regarded as a diathesis was in all probability merely a preliminary invasion of the bacillus producing the phenomena which went to form the diathesis.

The Tubercular Child.

The outstanding type of the condition is very pronounced, having a long flat chest with prominent ribs, and shoulders bent forwards; the neck, arms, and legs are long, weak muscularly and thin; the child seems tall owing to the narrowness of the chest; the skin is dry, covered more or less with down, becoming especially hairy between the shoulder blades. The eyelashes are long. There is frequently chronic enlargement of the lymphatic glands, which are tender to the touch, only if an acute phase is in progress. There is a history of general debility, loss of strength, more or less weakness, and after a period of malnutrition, either from illness, lack of food or sleep, the hectic condition arises, and the phenomena of tuberculosis become evident. In the school there are two types of children who tend to become tubercular, and they are types that are very different in appearance. The one child is bright and intelligent, willing to do anything, anxious to try anything, always restless in the endeavour to be doing, always inclined to be good looking, with a bright skin, prettily flushed cheeks, and fine soft hair; in such cases there is always the danger of some acute tubercular condition producing death more or less suddenly. On the other hand, the child may be dull, with thick lips and coarse skin, no definite colour to hair, always more or less tired, and necessarily ill-nourished, with a tendency to sink into a chronic tubercular condition.

Methods of Attack.

In considering the methods of the onset of tuberculosis too much attention cannot be paid to the fact that the neglect of an inflammatory condition, originally produced by injury or chill, is the most frequent cause of the production of tuberculosis. The danger of infection is always present, but only rarely sufficiently virulent to produce the condition in a healthy person. It is the many re-infections occurring in every-day life and attacking an organ that has suffered from some neglected condition that most frequently produces the tuberculosis that is fatal. If parents could be induced to recognize that departure from health, however

simple in character, should never be allowed to persist for a longer period than fourteen days without treatment, then the number of cases of children suffering from tuberculosis would be very small indeed.

The infection of tuberculosis may be inhaled or swallowed, and it would appear that both methods of attack claim their victims, the tendency being for the effects of swallowed material to tell more easily in young children than those from particles inhaled. The infection of food with dust particles which may contain the bacillus demands attention, and although special attention has been paid to milk, it is also necessary to remember the possibility of infection by other food materials, even with young children. The necessity of cleanliness in the preparation of food, as well as the care of the food before it is prepared, is too often neglected in the life of the housewife; and as all particles of dust which may fall on uncovered food may be means of conveying infection, it is necessary that proper precautions should be taken. The action of dust in the schoolroom in spreading disease in this manner is so evident that it is safer in all cases where there has been any history of possible infection from tuberculosis that the schoolroom should be daily disinfected—as by sprinkling with a germicide before sweeping each afternoon. As regards this one point, there can be no doubt of the urgency of this daily disinfection of schoolrooms. It must not be forgotten that one of the deadliest methods of attack is by the kiss of the child or adult who sufters from tuberculosis, and it is therefore desirable as far as possible to watch such children, and forbid those that are infected ever to kiss other children, and the inculcation of such a precept cannot do much harm, as an over-abundance of sentiment in school life is always prejudicial.

Points of Attack.

Tuberculosis may be present either in the glands, the bones, the lungs, or other internal organs.

Glands.—The most common site of infection in the glands are those in the cervical area, and they may become affected either through the teeth or, as is more frequent, through the tonsils. In both cases the infection is through the food that is swallowed, and not through inhalation. The infection spreads from the glands down into the bronchial glands or to the lungs, and there may be a considerable enlargement of the bronchial glands, and also some difficulty in diagnosing the condition. It may be difficult by percussion or auscultation to definitely make out the condition, and one has to rely on the recent history of the child.

There has been a gradual loss of appetite, and increasing pallor with loss of weight, and the impossibility of finding any cause to which to ascribe the breakdown suggests tuberculosis of the bronchial glands, especially if there is a paroxysmal cough like whooping cough, but without mucus or vomiting, or regularity in the time of the paroxysms.

Bones.—Disease of the bones, which usually involve the nearest joint, and produce a secondary inflammation of the joint, are also common in children. The condition usually follows an injury that in many cases has been forgotten long ago. The joints of the lower limbs are more frequently attacked than those of the upper, as their use is more continuous, and in children the hip and knee joints are frequently the sites of attack, and, if the hip joint is attacked, there is frequently some affection of the spine. Affection of the joints is easily detected if one remembers that it does not matter how slight the attack, full extension or full flexion of the joints always produces pain, and can only be done with difficulty. Such a condition is one that all teachers should note, as frequently during physical drill, the inability of a child to completely perform evolutions involving the arm or leg, is often regarded as malingering, and the child is encouraged to forcibly flex or extend the limb, greatly to the injury of the part. In all cases of tubercular affections in joints, in which there is slight ankylosis, it is most important that such children should not by physical drill have a chance of straining such joints, and so restarting the tuberculosis that has become latent.

Lungs.—Tuberculosis, when a disease of the lungs, is very difficult to diagnose in the incipient stages. The right lung is more frequently attacked than the left, and the apex of the lung, except until about the period of puberty, is not so likely to be infected as in older people. The flattened chest, loss of weight, and history of night perspiration tend to point to the condition, especially if there is a history of chronic bronchitis or cough persisting after infectious disease. Areas of dullness or tympanites may be found, and catarrhal sounds may be heard in the morning, but it is as well to examine the child more than once, and see if the sounds are always to be heard in the same area. In advanced conditions, or where there is any sputum, it is not difficult to diagnose the condition, and although children usually swallow the sputum, the swabbing of the throat after a cough may reveal the presence of the tubercular bacillus in the material that is removed.

Other Organs.—Tubercular meningitis and tubercular peritonitis are also seen in school life. The former, in the slowly developed cases, does occasionally occur, and may

not be noticed until the child becomes comatose at home; but as a rule, occurring as it does in young children, the condition is much more often apt to be comparatively rapid in its course and accompanied by pneumonia. The child receives some shock, is absent from school for a day or two, and the teacher learns that it is suffering from "brain fever."

Tubercular peritonitis is not often seen in school, and when it is seen it is usually in the incipient condition when the diagnosis is difficult, and depends more on the family and personal history than the results of examination.

Aids to Diagnosis.

In arriving at a diagnosis of tuberculosis in all children more or less on the border line of health, it is necessary to always consider the family and the personal histories. The family history of tubercle is always important because the repeated infections from neglect of the control of tubercle in the home are often the causes of tuberculosis in children. It may be said that if the parents and older members of the family could be removed from the home when suffering from tubercle, the death rate from tuberculosis in children would be very much decreased. Scars on the child's neck may point to a former attack of tubercle, or scars on any part of the body if large and bluish in colour may suggest a former tubercular wound. Any history of enlargement of glands or transient cough, recurring with each winter, or even of hæmoptysis, may aid in the diagnosis.

Treatment.—If a child is tubercular it is necessary to exclude it from school. If there is an open-air school, such child may be in attendance at such a school, but it is important that it should be properly fed. In rural areas the child can be excluded until it has recovered, but it is desirable that it should report itself regularly to the school medical officer, that he may see that the parent is doing what is possible to remedy the condition. When public health administration has advanced a little further it may be possible to make arrangements for every child who has a reaction of tubercle, to be properly controlled and treated, but at present it is only possible to safeguard the health of other children by excluding the diseased ones.

CHAPTER XIV.

Rickets.

Rickets is a disease which appears in certain localities or towns, and produces deformed conditions, which while specially affecting early school life, also impress their mark on the latter school life of the child by a delayed mental and physical development. Rickets occur with a weakened inheritance, being more common in the younger members of a family than in the older. The condition is produced by gastric and intestinal sepsis, and therefore associated with convulsions in infancy, and the results in consequence are manifold. Unhealthy surroundings, improper food, bad life conditions, all help in promoting the production of rickets. The child has usually suffered from the acute stage of the disease before it comes to school, but there is a late form of rickets which may occur during middle school life, the symptoms of which are nightly perspiration, pains in the bones—usually classed as growing pains—fatigue after slight exertion, and gradual enlargement of the epiphyses of the long bones, especially in the lower limbs, while the muscles are weak, tending to produce muscular deformities, such as lateral curvature or flat foot. Again, the disease may begin about puberty, and show itself in a waddling gait, bending of the legs, and enlargement of the epiphyses in the joints of the ankle, knee, wrist, elbow, or shoulders.

Phenomena of Rickets.

Rickets may be recognized by certain deformities occurring in the bones in different parts of the body, while the Board of Education requires the school medical officer to state the particular form, especially in younger children.

Head.—The head is large and square and out of proportion to the stunted limbs. It is usually flattened in the middle of the vertex, and may also be flattened behind if there has been much rubbing of the back of the head on the pillow in infancy through the irritation of the disease.

Dentition.—The dentition is usually delayed, and the teeth are very apt to be carious. It is extremely difficult to

do much to hinder the decay and disappearance of the teeth, and frequently very difficult to hinder the permanent dentition having also a tendency to rapid decay.

Chest.—The chest, while it may be pigeon-chested, is not truly so, as the condition is produced by a weakness of the cartilages at the junction of the ribs and the sternum, so that the sternum is pressed forwards, and there tends to be a sinking in at its outward edges, and a thickening of the bones entering into the intercosto-sternal joints, producing what is called the ricketty rosary. This effect is usually seen, especially at the junctions of the cartilages and the sternum from the fourth to the ninth ribs. There is often, as a result, a grooved appearance on both sides of the sternum.

Limbs.—The limbs have the normal curvatures exaggerated. There is usually an inward bending of the tibia and fibula in the lower thirds. If a child supports itself on the arms when sitting, the bones of the arm and forearm will also be bent outwards, as is also the case with the femur. The epiphyses are enlarged in the bones of the ankle and wrist joints; and there is knock-knee usually present, with a tendency to flat feet and curvature of the spine from weakness of the muscles and ligaments.

Treatment.

As regards school life, it is most important that the postures which a ricketty child assumes at school should be controlled, so as to guard against any increase in the deformed condition. In the early and severe cases, exclusion is the only course to adopt, unless there are open-air schools. It is necessary that the child should have as much of an open-air life as possible, and a diet with plenty of milk and a proper proportion of fat. The mother should be impressed with the necessity of providing clean and proper food. Every attention should be given to the teeth to try and preserve them, and the deformities should be treated according to the stage in which they are.

Deformities, Spinal Disease, Etc.

Deformities include defects of head, trunk and limbs, spinal curvature, bone disease, deformed chest, shortened limbs, etc. In school life these deformed conditions are chiefly of interest if produced by disease, and so explain the backwardness of a child; but there may be many deformities which will always persist, and be more or less unimportant from a school point of view, such as congenital dislocations of joints or multiple conditions like supernumerary thumbs. Of deformed conditions curvatures of

the spine are the most important, and lateral curvature in older children may be regarded as the most common. It is necessary with these curvatures of the spine to notice that the child is not confined to a desk and seat, which tends to make the disease worse, and the teacher's attention should be drawn to the condition so that the child may not be unnecessary fatigued. Ankylosed conditions of joints are important, especially if they are the result of tubercular disease, and care must be taken not to make the tubercular condition break out anew. The deformities existing with hemiplegic conditions are important, as they are so frequently associated more or less with mental weakness, and it is important that the teacher should not unduly press such a child. A cleft palate calls for treatment if the child is in the mixed school, and every endeavour should be made to get the parent to attend to the condition. Harelip is not so important, because, owing to the disfigurement of the face, the parent usually attends to the condition, but as a cleft palate cannot be seen sometimes nothing is done to remedy the condition. The high, arched palate is important, as it is so often associated with mental deficiency.

Treatment.—The treatment of deformities depends on the condition producing the deformity, and unfortunately little can be done to remedy most of the deformed conditions prevalent in school children, as these conditions are frequently the result of disease that has run its course unchecked and untreated ; but the improvements in surgery of children within the past ten years suggest a hope that it may be possible in the future to relieve many conditions, which, in the past, have been severely left alone for the fear of stirring up latent disease.

CHAPTER XV.

Infectious or Contagious Disease.

The infectious or contagious diseases include any present infectious, parasitical, or contagious disease. The Board of Education also states that at each inspection the occurrence of any such disease since the last inspection should be noted. It is not common to meet with infectious disease in the ordinary routine of medical inspection, as such children are usually excluded by the teachers in spite of the fact that such exclusion penalizes the teacher. It is necessary, however, for the school medical officer always to remember the possibility of mild cases of infectious disease occurring in the ordinary course of medical inspection, and one may meet diphtheria, scarlet fever, measles, German measles, chicken-pox, whooping cough, or influenza at any time. In their incipient stages, and in mild cases, it is frequently difficult to diagnose the condition, and one may often have to exclude for a few days children of whom one is doubtful, with instructions that they are not to be admitted until they have been seen by a doctor, or again seen by oneself. Ringworm, scabies and impetigo are also usually excluded from school if the teacher is aware of their presence, but while ringworm is commonly recognized, itch and impetigo are not so well known, but the characteristic scratching of the former frequently raises suspicions in the teacher's mind as to the condition, and the child is excluded until certified as able to return to school, or until seen by the school medical officer.

In dealing with the schedule of medical inspection, the control of infectious and contagious disease cannot be considered, as they are part of the routine administration of medical inspection. When found in the course of inspecting a school, the children suffering from them have to be excluded until they are certified free from infection and able to return to school.

Other Diseases or Defects.

"Other diseases or defects include any weakness, defect, or disease not included above (as ruptures), especially

unfitting children for ordinary school life, or school drill, or requiring exemption from special branches of instruction or particular training." The possibility of other diseases or defects which may be of importance in school life, depend largely upon the thoroughness with which the preceding part of the schedule has been overtaken, and as the alimentary and genito-urinary systems are the only two which are not grasped in the schedule, it necessarily follows that such defects must pertain to these systems. The most important, therefore, of these are the different forms of hernia which are found in the course of inspection; and it is important that one should impress on the parent the advisability of having such conditions treated before the end of school life, by pointing out that as long as a hernia is present, the child is unfitted for serious muscular exertion, but if operated on (and the earlier in life the operation is performed, the better) there is no reason why the child should not be able for a hard day's work in after life. As long as the hernia is untreated or treated by merely wearing a truss, it is necessary to warn the teacher of the condition, and to impress on them the necessity that such children should not have physical exercises involving extreme flexion at the hip, nor sudden jumping or jerking, but only exercises involving the upper limbs.

There are other conditions such as phimosis to which one's attention may be drawn by the anxious parent, but for which it is not advisable to advise treatment, unless general symptoms are present, which may be ascribed to the condition; if, however, such symptoms exist, one cannot be too urgent in advising the treatment of the condition.

The presence of intestinal parasites may be entered under this heading, and one has frequently to impress upon parents the advisability of seeing a medical man, and having the condition properly treated, than of depending on the efficiency of a powder from a chemist. So many conditions occur which are influenced by the intestinal irritation due to the presence of parasites that parents should be cautioned against neglecting the condition; they should also be informed as to the best means of hindering autoinfection by the child or reinfection after the disease is cured.

In this area enlargement of the thyroid amounts to a condition of sufficient importance to justify its being included under this heading, but although the enlargement does occur, it is very seldom that one sees it sufficiently urgent to necessitate the consideration of it as incompatible with school life. It is desirable, however, that in all these incipient cases the attention of the parent should be drawn to the necessity of having medical advice.

General Observations.

The general observations form the summing up of the condition of the child, a matter which depends chiefly on the personal equation of the inspector and the diseased conditions which appeal to him most strongly. It might be better, however, to sum up the child as of good health, average health, and bad health, and to regard the average condition as that which would allow the child attaining the age of 65 if not interfered with by further disease or accident. Bad lives would be those who could not be expected to live beyond the commencement of middle life, if they were fortunate enough to attain as far as that. Such a summation would give a standard for general observations which would be of use in estimating a possible future strength of the nation, and would be of greater national importance than a detailed criticism of the outstanding features in the physique of a child.

Directions to Parents.

It is important for the medical officer in giving or issuing directions to parents to avoid trenching on the prerogative of the family doctor. In many cases it is merely sufficient to state what the condition is and advise a medical consultation; but it is usually inadvisable and improper to suggest what would be the proper treatment, as that is a matter for the medical man himself to decide. There are, however, many minor ailments that are untreated, because they are not regarded as of sufficient importance to necessitate the consultation with the doctor. Of such conditions the hair hanging down over the forehead and tending to produce a squint in young children is one; the presence of blepharitis is another, and others are the verminous condition of the body and of the head, in which no treatment may be sought for fear of exposure, or, as is unfortunately often the case, in which treatment is not desired by the parent of the child who is the unfortunate host of such parasites. One may also in certain cases give to parents certain rules of life to assist in the growth and development of the child, stating also what diet it may be better for the child to avoid; but it is necessary to be careful to find out whether any suggestions have been made by the family doctor in such a connection, before outlining any treatment, and no treatment should be suggested if the child is under medical care.

Directions to Teacher.

The directions to the teacher, besides suggesting the advisability of placing children with defective hearing and defective sight in the front seats, are largely comprised of

suggestions with regard to drill—as to which children should be exempt from drill, and the amount of drill which children should have. If a child is not fit to perform any evolution properly, it is much better for that child not to try it at all than to have to perform the evolution in a slovenly manner, which is bad for itself and all the other children in the class.

One ought also to point out to the teacher the children that it is necessary to avoid making too eager about their work, and to point out those who would be better for an increased amount of manual instruction in their curriculum. These directions are given in connection with the children who are medically inspected, as "control" of a child in school life can only be efficiently maintained through the aid and intelligence and with the help of the teacher.

Instructions for cleansing heads

as recommended by

THOMAS DUTTON, M.D., M.R.C.P.

and approved and adopted by leading County Councils.

Regular attention should be paid to the hair of school children, as even the cleanest children are liable to be infested with vermin. The presence of vermin causes sores of the scalp and enlargement of the glands. All vermin, including nits, may be easily removed by carrying out the following simple directions :—

For removing vermin.

The hair should be well washed every other night for a week with the following lotion :—One tablespoonful of Cyllin Soft Soap to one pint of hot water.

The hair should be well rubbed with this lotion for five minutes, then rinsed with warm water.

For keeping the hair free from vermin.

Girls' hair should be worn tied behind in a pigtail. Boys' hair should be cut very short. All children's heads should be washed once a week with the above lotion, as it improves the hair and prevents unsatisfactory conditions.