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STAFFORDSHIRE COUNTY COUNCIL.

ANNUAL REPORT

OF THE

SCHOOL MEDICAL OFFICER,

INCLUDING

REPORT OF THE SENIOR SCHOOL MEDICAL INSPECTOR,

FOR THE YEAR 1909.

Stafford :

*J. & C. Mort, Ltd., Printers, 39, Greengate Street.
1910.*



TELEGRAPHIC ADDRESS:

"BALFOUR, TECHNICAL, STAFFORD."

STAFFORDSHIRE COUNTY COUNCIL.
EDUCATION COMMITTEE.

ALL COMMUNICATIONS SHOULD BE ADDRESSED TO
GRAHAM BALFOUR, M.A.,
COUNTY EDUCATION OFFICER,
STAFFORD.

Medical Inspection.

All Letters relating to this subject should be written on foolscap paper, and all the Envelopes marked
MEDICAL INSPECTION. Postage must be prepaid.
Communications relating to any other Subjects must be made on separate sheets.

9th September, 1910.

Dear Mr. Yearsley,

on Adenoid!
Your papers in the British Journal of Children's
Diseases were so helpful to me when writing our Report, that
I venture to ask you to accept a copy of the latter.

Ever sincerely yours,

John Pringle
2

Dr. M. Yearsley,

10, Upper Wimpole Street,

London. W.

E.B.



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Medical Inspecting Staff.

SCHOOL MEDICAL OFFICER :

George Reid, M.D., D.P.H.,
County Medical Officer.

SENIOR SCHOOL MEDICAL INSPECTOR :

John Priestley, M.R.C.S.

ASSISTANT SCHOOL MEDICAL INSPECTORS :

Lila S. Greig, M.B., D.P.H.
Myra Mackenzie, M.B.
Alice W. Maclean, M.B.
Elizabeth J. Moffett, M.D., B.Sc.

Table of Contents.

	PAGE.
Preface by the School Medical Officer	1
Report of the Senior School Medical Inspector:	5
A.—Sanitary condition of schools	5
B.—Method of medical inspection	6
Co-operation of parents in securing treatment	9
C.—Extent of medical inspection during 1909.. ..	15
Analysis of children inspected	18
Grand total of all children inspected	19
Average time of inspection per child	20
D.—Record of the ailments disclosed:	21
Meaning of the statistics	22
Previous illnesses	23
Family medical history	24
Height and weight	25
Clothing and Footgear	27
Skin ailments	29
Ringworm	33
Eye ailments	42
Association of defects of sight	45
Ear ailments	48
Association of defects of hearing	51
Teeth defects	52
Caries and uncleanness of teeth	55
Nose and throat ailments	59
Connection of nose and throat diseases	64
Heart ailments	67
Lung ailments.. ..	70
Kidney diseases	73
Nervous ailments	73
Mental conditions	75
Anæmia	77

CONTENTS—continued.

	PAGE
Speech defects	79
Tuberculosis	81
Rheumatism	84
Rickets	84
Deformities	88
Other diseases.. .. .	90
Nutrition	90
Cases specially presented	92
<i>E.</i> —Home circumstances and industrial conditions ..	94
<i>F.</i> —Methods available for treatment	95
<i>G.</i> —Notification of infectious diseases and exclusion of scholars	95
<i>H.</i> —Blind and deaf children, and children mentally defective and epileptic	95
<i>I.</i> —Hygiene and physical exercises	97
<i>J.</i> —Examination of pupil teachers and exhibitioners ..	98



STAFFORDSHIRE
COUNTY EDUCATION COMMITTEE.

MEDICAL INSPECTION.

REPORT FOR THE YEAR 1909.

PREFACE BY SCHOOL MEDICAL OFFICER.

This report, which is the second submitted to the Education Committee since the institution of medical inspection, has, like the previous one, with the exception of the sections dealing with the sanitary condition of schools, for which I am responsible, been prepared by Mr. Priestley, the Senior Medical Inspector. The report is framed on the lines of the first one, the statistical figures being introduced in their appropriate places in the text instead of in appendices, an arrangement which will be appreciated by the busy reader, to whom conciseness and simplicity in detail is of importance.

It will be noticed that some of the conclusions which, owing to paucity of data, were somewhat hesitatingly advanced by Mr. Priestley a year ago, are confirmed and strengthened by the extended records, and, year by year, as the work of medical inspection proceeds, the statistical material will become more and more valuable as an index of progress or otherwise. The report speaks for itself, and there is no need for me to refer specially to any matters with which it deals.

The Assistant Inspectors, at my request, have again been good enough to prepare reports setting forth the opinions and impressions they have formed as the outcome of another year's work. These reports, containing as they do the considered opinions of medical experts who are daily engaged in work which affords them unique opportunities of judging

of the general hygienic conditions of school life, are very valuable, and they all contain comments and suggestions which will prove most helpful to me, especially in advising the Committee from time to time as occasion arises regarding improvements in the administrative control of schools from that point of view.

It would seem that the condition of the children as regards general cleanliness has decidedly improved, a result which is attributed to the energetic action of the teachers. For example, Dr. Alice Maclean states that certain teachers make it a practice each morning to examine the hair of the scholars, with excellent results as regards cleanliness and tidiness. Dr. Lila S. Greig also calls attention to the good work done by teachers in this direction.

As the outcome of the medical examinations, it is stated that many children have been medically treated with very great benefit. This is specially noted as regards adenoids and enlarged tonsils which have been operated upon. Many children also are now wearing glasses, with, as Dr. Elizabeth Moffett states, advantage to their school work and relief of headache, the result of eye-strain. It is pointed out, however, that difficulty is experienced, especially by parents who live some distance from eye hospitals, in obtaining glasses, owing to the cost of sending their children long distances and the scarcity of recommendation tickets.

Dr. Moffett records certain figures which tend to confirm the opinions of other observers as to a relationship between low standards of height, weight, and eyesight, and low educational standard among children of corresponding ages. The number of records, however, is too small upon which to base any reliable conclusions, but the subject is of great interest, and it is to be hoped that Dr. Moffett will continue to record the figures from year to year.

Dr. Myra Mackenzie calls special attention to the difficulty of getting minor ailments attended to—troubles which hardly call for medical treatment. It is in such cases that a district nurse may be of great use in teaching the mothers what to do, and, as the Committee are aware, steps have been taken to make use of the services of such nurses where they are available.

In the new Education Code the machinery for the closure of and the exclusion of children from schools has been extended. Besides the Medical Officer of Health, the School Medical Officer has now the power of recommending or approving closure and exclusion, and the circumstances which may warrant him in exercising that power do not seem to be strictly limited to considerations of public health.

For the guidance of Medical Officers of Health and School Medical Officers, a Memorandum, framed by the senior Medical Officers of the Local Government Board and the Board of Education jointly, has been issued with the view of securing—
 (a) co-operation between medical officers of local public health and school authorities as regards administration, and
 (b) as far as possible uniformity of practice as regards the policy of closure and exclusion under varying local conditions. The Memorandum reiterates the advice contained in previous memoranda of the Local Government Board as to the considerations which determine the need for complete closure, and points out that individual exclusion rather than closure should, as a rule, be the policy adopted for the purpose of preventing the spread of infectious disease. This advice is consistent with the usual practice of medical officers of health, but, unfortunately, since the discontinuance of the epidemic grant, in 1903, it results in serious financial loss to education authorities in districts where the medical officer of health and school medical officer conscientiously endeavour to combat outbreaks of infectious disease among school children by approved scientific methods. The position, from the point of view of the school medical officer, is most unsatisfactory, for unless he is prepared to act merely as a certifying officer and more or less automatically attach his name to a closure certificate on financial grounds only, he must frequently be the innocent cause of depriving his Authority of a material part of a grant which otherwise they would be entitled to.

The only remedy would seem to be the renewal of the payment of an epidemic grant, and every effort should be made, possibly by concerted action among education authorities throughout the country to induce the Government to comply with that proposal. To bring this about effectively, however, would mean a good deal of organising work, and probably

the simpler and better plan would be for this Committee and other County Education Committees to join in a memorial inviting the County Councils' Association to take up the question and approach the Government. Possibly, that Association might succeed in inducing County Boroughs also to join in the representation, and thus bring very strong pressure to bear.

GEO. REID,

School Medical Officer.

REPORT.

The Report of the Medical Inspection of Elementary School Children in Staffordshire, relating to the year 1909, is, like the first Report, put into the form suggested by the Board of Education in Circular 596, August 17th, 1908. The headings of information desired by the Board are printed in italics in front of each section.

The report has reference to 370 schools, of which about half are schools with an average attendance of less than 150, about one-third have an average attendance between 150 and 450, and the rest are large schools.

The average number on the roll for the year 1909 was 83,731.

The average attendance was as follows:—

Children over 5.	Children under 5.	Total.
72632	3473	76105

According to the Census of 1901, the children in the Administrative County of Stafford (including the County Boroughs) who were turned 5 but were not yet 15 at the time of the Census, constituted between $\frac{1}{4}$ and $\frac{1}{5}$ of the total population. The exact figures are 226 per 1,000.

A.—Sanitary Conditions of Schools.

In the last year's report the policy of the Education Committee in regard to improving the sanitary condition of schools was explained, and an account was given of the work done in that direction since the change in the constitution of the local education authorities in 1903. Details were given showing that a very creditable amount of work had been done in the direction of improving the sanitary condition of schools, involving in many cases radical re-construction, and in ten instances abolition and replacement. It was also stated that two new additional schools had been provided.

The great value of the work done up till then will be appreciated from the fact that, as a result, the physical welfare of no fewer than 35,454 school children has been greatly improved.

The work has steadily proceeded on similar lines, and it is pleasant to be able to call attention to the following excellent record for the year under review :—

	No.	Accommodation.
1. New Council Schools to replace others	9	... 3784
2. Council Schools re-constructed or considerably enlarged and improved...	10	... 3736
3. Council Schools improved as regards ventilation, warming, closet and lavatory accommodation, drainage, etc.	20	... 9658

In addition to the above, it may be mentioned that, in January, 1910, three new schools were opened, and at the present time six others are in course of erection.

With reference to the figures just recorded, it may be well to point out that some of the records under Nos. 2 and 3 relate to schools which had undergone improvement of one sort or other within the period covered by the corresponding statement in the preceding Annual Report, but, as regards the work actually accomplished, there is no duplication, as the figures recorded in this report relate to matters dealt with which previously had been untouched.

As regards voluntary schools, one new building was opened during the year to take the place of another which had been condemned, and at the present time two others are in course of erection. Besides these, plans of four other new voluntary schools are now under consideration, and various improvements have been effected in the case of a number of other schools of this class.

B.—Correlation of School Medical Service with the Public Health Service ; Organisation and Methods of Medical Inspection.

The general method of the correlation of the School Medical Service and the Public Health Service in the Staffordshire Administrative County was described in the Report on the year 1908. There has been no essential change of

organisation in regard to it. Points of detail have been raised in a Memorandum on Closure of and Exclusion from School, issued to Medical Officers of Health and School Medical Officers by the Local Government Board.* These points will form the agenda of a Conference of Medical Officers about to meet in April, 1910, at which it is hoped that details in the correlation of the two services will be settled between the various district Medical Officers of Health and the School Medical Officer.

Organisation of Work.—No change has been made in organisation except such as was called for on account of the increased amount of work given us to do. We have this year inspected children of three age periods in addition to babies under five and special cases; in all, there were about twice as many as were inspected last year. We have continued to use the three geographical divisions of North, Mid, and South, served by the assistant inspectors, Dr. Myra Mackenzie, Dr. Elizabeth J. Moffett, and Dr. Lila Greig, who are resident at Stoke, Stafford, and Wolverhampton respectively. But owing to the increased amount of work, and to the fact that the South has nearly twice the child population of either of the other divisions (North about 20,000, Mid 21,000, South 35,000), it was necessary to subdivide the work of the South division and appoint another assistant inspector, Dr. Alice W. Maclean. It has been found convenient for the present not to divide the South by a line on the map, but to let the two assistant inspectors share the work indiscriminately.

We have again found it most convenient to take the schools in groups—a group being constituted by all the schools served by one school attendance officer. Quite exceptionally one attendance officer will take charge of two groups of schools.

The system of weighing and measuring by means of a portable steelyard and measuring rod carried from school to school by the attendance officers has worked satisfactorily, and, if we may judge from the absence of complaints, smoothly. The machine and fittings have proved to be very

* This is the Memorandum already referred to on p. 3.

serviceable. Necessary repairs have not exceeded a few shillings.

We have made no change in the method of collecting and tabulating the results.

B. (i.).—Schedule of Medical Inspection.

The schedule adopted last year has been found on further trial to be quite convenient for our purpose. The terminology of medical entries made on the schedule by the different inspectors has now reached a high degree of uniformity, and the clerks in the office who have the duty of tabulating have little or no difficulty. For convenience of reference a copy of the schedule is appended.

B. (ii.).—Assistance rendered by Managers, Teachers, Attendance Officers, and Nurses.

We have met with the same courtesy and goodwill from managers, teachers, and attendance officers as I had the pleasure to acknowledge last year. Teachers do in a satisfactory manner all that is necessary to prepare the children for our examination, and it is doubtful whether a trained nurse would effect an appreciable saving of time. It is true she might be trusted to fill in the entry on the schedule relating to verminous conditions; but, even so, many cases, such as alleged scabies, would have to be verified by the doctor, and the doctor would have to go over the same ground again to search for other skin diseases. The saving would be negligible.

B. (iii.).—Presence of Parents and their Co-operation in Securing Treatment.

The presence of parents at the inspection is requested by means of a card of invitation, on which, however, it is clearly stated that attendance is optional. The numbers of parents availing themselves of the privilege varies extraordinarily in different schools. Passing waves of interest seem to touch schools here and there and lead to an increase in the attendance of parents; but, speaking generally, there

(STRICTLY PRIVATE AND CONFIDENTIAL).

The Head Teacher, except where otherwise directed, will fill in the Items down to C5 (thick line).

STAFFORDSHIRE EDUCATION COMMITTEE.
SCHEDULE OF MEDICAL INSPECTION.

GIRL

A.—General Facts:

Name..... Date of Birth.....
(Surname first).

Address

School Date of Admission.....

Occupation of Parents: Father..... Mother.....

No. of Rooms in House.....

General Observations.....
(For use of Med. Inspector only).

B.—Personal History: (For use of Med. Inspector only).

(a) ILLNESSES:	(Year).	(Year).	(b) Fam. Med. History (if exceptional):
Measles			
Whooping Cough.....			
Chicken Pox.....			
Scarlet Fever			
Diphtheria			
Other			

C.—Special Examination:

		1st Inspection.	2nd Inspection.	3rd Inspection.	4th Inspection.
1 Age at date of Med. Inspection (e.g. 5½)					
2 Standard and Attendance					
3 Height (ft. and in).					
4 Weight (lb. and oz).					
5 Clothing Note if usually insufficient, or unclean, or in disrepair					
Footgear Note if usually insufficient or in disrepair					
6 Skin	HEAD				
	BODY				
7 Vision (Snellen)	R.				
	L.				
Eyes					

(Confidential.)

1st Inspection.

2nd Inspection.

3rd Inspection.

4th Inspection.

8 Hearing

R.

L.

Ears

9 Teeth

10 Nose and Throat

11 Speech

Stammering; lisping;
idioglossia; indistinctness

12 Mental Condition

GENERAL—Bright; fair;
dull; backward. Men-
tally defective. Imbecile

SPECIAL—Attention; ir-
ritability

13 Heart, etc.

14 Lungs, etc.

15 Kidneys, etc.

Only test in special cases

16 Nervous System

17 Anæmia

18 Tuberculosis

19 Rickets

20 Rheumatism

21 Deformities

22 Other Diseases

23 Present Infections

24 Nutrition

Good; normal; sub-
normal; bad

25 Inspector's Initials
and Date

Ref. No.

OVER.

will rarely be more than three or four parents waiting on a day when we have 30 or 40 children to inspect. On many days no parents whatever attend.

Unquestionably, from the point of view of the practical utility of medical inspection, this is greatly to be regretted. Although we make no attempt to cure diseases, the good we might be able to do by spreading abroad conceptions of hygiene in the course of conversations with parents could not fail to be considerable. Some good of this kind would come from the notions we managed to impart to parents themselves; more, perhaps, from the incidental edification of teachers, who would soon become authorities in their neighbourhood. These talks to parents, however, take up much time; if many parents came it would not be possible to examine so many children per hour as we do.

Here seems a fitting opportunity to consider the immediate practical results of our system of inspection. Have our efforts to warn parents of their children's ailments made much impression on them? Have they been induced to co-operate in securing treatment? Answers to these questions will be found in the following account of the method adopted of following up cases.

Co-operation of Parents in Securing Treatment.—The view of the Staffordshire Education Committee as to the treatment of ailments discovered at medical inspection may be illustrated by quoting from a Circular to Managers and Others on Medical Inspection of Children in Elementary Schools (Circular 15, 1909), dated April, 1909 :—" After very careful consideration of the needs of the ailing children, and of the provisions in the County for meeting those needs, the Education Committee have decided to proceed tentatively. They start with the assumption that the existing means of attending to the health and physical condition of the children of their administrative area are varied and extensive, and as yet unexhausted. Such means may be enumerated as :—

- " 1. The usual medical attendant.
- " 2. The various hospitals and dispensaries.
- " 3. The Poor Law system of medical relief.

"The Education Committee, therefore, see no reason at present why they should elaborate any fresh 'arrangements,' but propose to confine their activities to securing that parents or guardians themselves shall obtain the relief of which their children are shown to stand in need."

In order to carry out the intentions of the Education Committee a scheme of following up the cases was devised.

The Committee will remember that as a result of the examination of the children inspected a certain number are found to be ailing, and, therefore, needing medical or other attention to their health or persons (the defect might not be medical but might be in respect of cleanliness only). Such ailing children are designated "Specials," and to the parents or guardians of such cases notification is sent by the head teacher pointing out that the child needs attention and stating in general terms what is believed to be the ailment.

FORM OF NOTIFICATION.

FORM 7 (M.I.)

This Card is Strictly Confidential, and must be sent in a closed Envelope.

STAFFORDSHIRE EDUCATION COMMITTEE.

To the Parents or Guardians of

.....
This Child has been examined by the School Medical Inspector and is reported to be suffering from

.....
You are **URGENTLY REQUESTED** to obtain medical advice for this or to take such other steps as may be necessary to relieve the child. This request is not intended to apply to cases now under the care of a Doctor.

By Order of the Education Committee.

Date.....

*County Education Offices,
Stafford.*

No diagnosis is given in technical terms. The parent is told in common parlance that, for instance, the child has a squint, or chronic obstruction of the nose, or defective eyesight. It is tacitly assumed that each family has a doctor

near by to whom they are accustomed to apply on occasion. We never volunteer the suggestion that the child should be taken to a hospital.

Having thus advised the parents, it was now necessary to inquire what they had done, and, if possible, to put some pressure upon them to take our advice; and it was considered by the Committee that if the inquiry could be repeated several times it might give parents the impression of a determined purpose, or at least of importunity, which might exercise the very pressure they desired. The scheme was designed to that end.

About a month after the sending of the notification we begin a series of inquiries. We ask the head teacher in regard to each case whether anything has been done. As a result,* some names are struck off the list as having been dealt with. In another month a similar inquiry is addressed in respect of the remaining names, and by this means the list is still further reduced. After another month we address inquiries to the school attendance officer of the area in which the children not yet attended to reside, and he pays visits to the homes and has a talk with the parents. He thereupon sends us a fuller report on all the circumstances than we can expect to get from head teachers, and he also deals more frankly with recalcitrant parents. In another month or six weeks the attendance officer's visit is repeated.

If at any stage of the inquiry a child's health is deemed to be in too serious a condition for this deliberate method, steps are taken to follow the case up *de die in diem*, and it is open to the Committee to use any legal means of enforcing attention conferred in the Children Act, 1908, or in any other Act, or to apply to the N.S.P.C.C.

A child's name is struck off the inquiry list—(i) If the child is declared to be well by the teacher or attendance officer, provided that the case is of such a nature, *e.g.*, a verminous head, sore eyes, &c., that such a declaration is good evidence; (ii) if a teacher or attendance officer informs us that he has good reason to believe the parents have taken the child to a doctor or to a hospital.

It will be apparent to the Committee that the evidence on which we strike off a child's name from the inquiry list must in many cases be of little value, and often it is of least value in the very cases of neglected children, as to whom we should most like assurance. Therefore, the apparently satisfactory nature of the results about to be presented must be to some extent discounted. But, although the prevarication of dishonest parents is a source of weakness to our statistics, we are not altogether defenceless. Teachers and attendance officers, from their knowledge of the parents, are not slow to warn us that a statement is untrustworthy, in which case we disregard it and continue to follow the case up as before.

I am now in a position to present the results of the first four or five thousand cases followed up in the manner described.

As the object of the following analysis is to afford the Committee a clue to the degree of success in general which has attended the plan, we must limit our consideration to cases where the plan has fully operated. In some of the cases the inquiry is still pending, in others it was interrupted from some cause or other. These must be excluded.

After eliminating these we have left a mass of cases by which to test the success of our operations. These cases may be regarded as constituting an almost unworked field of medical activity. Very few, indeed, were being attended by a doctor ; in most cases the parents did not suspect there was anything wrong with the child ; in others they may have suspected it, but they were reconciled to it by the hope that the child would " grow out of it," or they had in some manner become indifferent. And yet the cases were beyond all question worthy of being carefully examined. They were all serious cases. In making our notification to parents we adopted the rule laid down last year. Realising that nothing would so soon have brought ridicule on medical inspection as the wholesale notification of trifling pathological conditions, we again passed over all but really urgent cases ; and that we have succeeded in hitting a common standard may be inferred from the rarity of the cases in which the report has come to us that the child has seen a doctor,

but that the doctor does not think the case bad enough for treatment. There have been some such cases of, perhaps, quite legitimate difference of opinion, but extremely few.

I venture to think, therefore, that the Committee will deem it a matter for congratulation that so many ailing children, who a year ago had no prospect of medical aid, have been submitted to medical examination by their own doctor or at hospitals. Some parents may not have persevered, some may have shirked the subsequent expense of treatment, but a large number, though how many we cannot yet say, have gone on to the completion of cure. In the aggregate a considerable amount of good must have resulted, the full extent of which we shall be able to estimate when the same children come up again for their next routine inspection.

ANALYSIS OF CASES REFERRED FOR TREATMENT.

Total number of special cases inquired into					
from June to December, 1909	..	..			4476
Inquiry still pending	..	..	..	..	211
Inquiry cut short :					
i. Death of child (from other causes)	..				3
ii. Left school	..	..	..	..	194
				—	408
<hr/>					
Total number of children submitted to the operation of the plan	..	..	..	..	4068
<hr/>					

Of these children, 3,626, or nearly 90%, obtained relief in the above-described sense of the term, *i.e.*, with the exception of a few cases, such as mental deficiency and old-standing infantile paralysis, which in the circumstances were deemed insusceptible of benefit by further medical advice, the cases were all brought within the range of medical investigation and direction. Out of the 3,626 cases, 423 either belonged to the class insusceptible of further benefit, or were already being attended by doctors at the time of medical inspection. In regard to the rest, it may fairly be claimed that the action of the Committee, and that alone, has induced the parents

or guardians to seek for their wards, the not inconsiderable boon of a medical talk, and in many cases the very definite boon of medical and surgical treatment. In 55 of the cases this was achieved forcibly by means of the Society for the Prevention of Cruelty to Children, or by legal action, or the threat of it, on the part of the school attendance officers; but in the great majority of cases the only weapon used was moral suasion and repeated inquiry.

Of the 442, or rather more than 10%, of cases where we failed entirely to drive the parents to a doctor, there were only 80 defiant refusals. The majority, some 300, were profuse of promises and good intentions, but were still promising at the end of the fourth monthly inquiry. Sterner measures may, if the Committee think fit, still further reduce this number at future inquiries. About 50 or 60 cases definitely pleaded poverty, or failure to get hospital notes, as an excuse for not complying.

It will interest the Committee to note the rate at which the cases dropped out as having been dealt with by the parents or as being such that the parents were found incapable of being roused to action. The numbers of the cases which went to the various monthly inquiries were as follows:—

First inquiry by the head teacher	..	3939 cases
Second " " "	..	2250 "
First inquiry by the school attendance officer	.. .. .. .. ..	1512 "
Second " " " "	..	514 "

B. (iv.).—Disturbance of School Arrangements Involved.

There has been no change of method as compared with last year. School arrangements have inevitably been disturbed by medical inspection. Few schools have a "spare room." Often two classrooms have been emptied—one for waiting and one for examining—and their occupants crowded into the rest of the school. Often a cloakroom has had to be used as a waiting room. Rarely, where the school consisted of one room only, all the children except the examinees have been sent home and the attendance cancelled.

C.—Extent of Medical Inspection during 1909.

As in the first year of medical inspection, the work which the Committee prescribed for 1909 consisted of :—

- i. The routine examination of children of stated ages, as suggested by the Board of Education.
- ii. The examination of children, whatever their age or standing, the state of whose health appeared to managers or teachers to be hindering their education, or in whom educational methods were injurious to health.

Although no sanitarian, and no well-informed medical man, will doubt for a moment the value of the first division of the work, it is the second, beyond question, that appeals to the imagination of practical people. The attempt to relieve the sufferings of individual children, which is what our second division of work aims at, will always, I suppose, seem a more worthy object of effort, more touching to contemplate, than the attempt to pave the way for prevention of suffering, though this may affect thousands. Certainly, the examination of children who are actually seen to be ailing disarms the critics, who might be inclined to say that the medical inspection of children, the majority of whom were sure to be found healthy, is somewhat of a scientific fad.

C. (i.).—Number of Visits Paid.

We have visited our schools once in the year.

C. (ii.).—The Classes of Children Inspected.

The three age-periods adopted were 5—6, 8—9, and the leaving year, viz., 12—13 in rural areas and 13—14 in urban. More specifically the definition is: All children who, on January 1st of the year of inspection, had turned five (8, 12, &c.), but were not yet six (9, 13, &c.). Thus, every child in the county who arrives at one or other age comes up automatically for inspection, and the accumulated statistics of future years will automatically fall into comparable groups. As most of the children of the Staffordshire Administrative Area come to school at the age of five, the above

grouping secures the examination of the great majority of "entrants" within a few months of their admission to school ; but, as there are considerably over 3,000 children who enter at an earlier age than five, we always request head teachers to present for inspection, in addition to children of the above-named groups, all those younger ones who may have entered school since the last medical inspection. But, inasmuch as they will come up for formal inspection on reaching the age of five, we do not examine them so fully as the older children, or tabulate the results of examination in the normal cases. We concentrate attention on the children who seem delicate or are brought to school with a history of feebleness or drawbacks of any kind.

Thus, the categories of the children called up for examination in 1909 in an urban area were :—

- (a) Children born on or after January 2nd, 1904.
- (b) Children born on or between January 2nd, 1903, and January 1st, 1904.
- (c) Children born on or between January 2nd, 1900, and January 1st, 1901.
- (d) Children born on or between January 2nd, 1895, and January 1st, 1896.
- (e) Children other than the above presented for special reasons.

In rural areas the categories are the same *mutatis mutandis*.

While recognising the great importance of having repeated periodical examinations of all children during the nine years of their school life, I am of opinion that it would be of doubtful advantage to add to the three periodical inspections above-mentioned, so long as we encourage, as we do, the discovery and production of special cases. When head teachers have witnessed our procedure at the routine inspections for a year or two, and have realised what we look upon as interesting and important, they will, I am sure, become as clever as a nurse—many are so already—in detecting deviations from the normal state of health. If we pass all children under review at the beginning, middle, and end

of the nine years (5—13 or 14) of school life, and, in addition, set teachers, with their quickened powers of observation in medical matters, to watch and report in the intervals, there is little fear that any case deserving treatment will escape.

C. (iii.).—The Number of Children Examined.

The divisions of urban and rural as constituted for Local Government purposes, which were adopted provisionally last year, proved to be so convenient and suggestive that they have again been taken as a basis of statistical classification. It must, however, be kept in mind that “urban” and “rural” have not, strictly speaking, their literal root meanings as regards this county at least. Although our urban areas include many villages which look like fragments of an ugly town, yet they are after all only fragments, faced on all sides by the free air of the country. We must not expect to see the startling contrasts of city slum and open suburb,—our blacks are only greys.

The total number of children falling within the categories prescribed for the routine inspection in 1909 (that is to say, not counting the special cases presented by managers and head teachers, or the babies under five) amounts to 21,582 ; of these :

38 refused inspection, or 0·17 per cent.

20,474 were inspected, or 94·8 per cent.

1,070 were unavoidably absent on the day of inspection, or 4·95 per cent.

The percentages of 1908 were :—Refused inspection, 0·199 per cent. ; inspected 95·47 per cent. ; absent 4·33 per cent.

Of the 38 cases this year in which parents refused inspection, 11 refused by letter beforehand ; in other cases parents attended to refuse ; in yet others the children were alleged by teachers to be absent from school because the parents had refused inspection. Ten of the cases occurred in a batch at one school, which is suggestive of concerted action.

No reasons for refusal were either demanded or offered ; one or two who refused did so because they thought medical inspection “unnecessary.”

Thus the refusals were approximately the same in relative number as last year, and it may be inferred that medical inspection is popular.

The following is an analysis of the children inspected in the routine years:—

Division.	NORTH.				MID.				SOUTH.				Totals.	
	Urban.		Rural.		Urban.		Rural.		Urban.		Rural.			
	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.	B.	G.		
Ages:—														
5—6	488	542	538	503	459	471	776	667	1280	1278	690	604	8296	
8—9	554	584	527	520	479	459	781	722	1084	1091	546	610	7957	
12-13	..	..	337	360	..	..	505	516	..	..	392	396	2506
13-14	175	187	..	..	206	183	..	..	482	482	..	..	1715
Totals	1217	1313	1402	1383	1144	1113	2062	1905	2846	2851	1628	1610	20474	
				5315				6224				8935		
Grand Total 20474														
Boys			10,299		Urban		10,484							
Girls			10,175		Rural		9,990							

C. (iv.) and C. (v.).—Children Referred for further Examination, and Children in respect of whom Treatment was urged.

No case was referred for further examination. Our arrangements did not admit of visiting each school more than once a year ; nor did any case arise calling for reference to a specialist. In a number of cases specimens of hair, sputum, and urine were forwarded to the Pathological Department for report.

As a result of our examination a large number of ailments were detected of greater or less severity, some among the children of routine years, others among the children specially presented for medical examination. Confining our attention to the routine group first, the actual numbers of the ailments, grave and slight, will be found in Section D. of this report (page 21 *et seq.*) under the headings of the organs affected. But many of the ailments were of such a trifling character that it was not necessary to notify the parents of them ; only those were notified whose children urgently needed attention. There were 4,015 such children in all.

Thus, out of 20,474 routine cases examined, 4,015, or 19·6 per cent., were so ailing as to need medical or other assistance urgently.

As to the children specially presented, since all were presented because of some obvious defect, it was necessary in nearly every case to notify the parents.

C. (vi.).—Average Time of Inspection per Child.

Having regard to all reasonable requirements, an average of eight minutes should be allowed for children of 5—6 and an average of ten minutes for older children. Children under five who are reviewed in a more cursory fashion for reasons already explained, and of whom only the obviously feeble and ailing are examined thoroughly, should be calculated for at the average rate of three or four minutes ; and cases presented as specials should be allowed for at the same rate as the older children, viz., 10 minutes per child. In this estimate of times the other inspectors concur with me.

During two or three months of the year, we tried larger numbers per hour. The inspecting staff, at a considerable sacrifice of personal convenience, working overtime or under strain in order to get through the daily tale of work, obligingly consented to take part in what proved a wearisome and exhausting experiment. But it was a failure; the sense of hurry was intolerable; the impression of inspectors was that they were missing points, or forgetting to put down points they had observed; and, speaking for myself, towards the end of the day, when I was attempting a *tour de force* of say 45 to 50, the senses became so jaded that I used to forget the symptom I was about to make a note of in the act of turning round from the child to the table where the schedule card lay. But with a day's work of 30 or 35, I think it is safe to say that any expert inspector would be able to finish in style.

When the methods of medical inspection were under discussion and the relative merits of whole time and part time officers were being debated, a good deal was made of the paralysing monotony of the work. That the work is monotonous goes without saying; so is teaching the same children; but several things relieve the monotony. We cannot, as a rule, owing to exigencies of school regulations, have more than two hours at a stretch. It is a relief, also, to interpose a few special cases in the monotonous sequence of routine children.

With a little management, and a not too parsimonious allotment of time, I do not think there is any danger of monotony deadening the faculties and making the results inaccurate.

D.—Record of Ailments grouped under the Headings of the Schedule Card.

The primary object of the schedule cards is to preserve a record of the medical condition of individual children. Second in importance to this object is the utilisation of the schedules for the purposes of a demographical survey of the school population. Ideally, the form in which this survey is presented should be such as to render possible comparisons

between the various Education Areas of the country, and it should, therefore, be a form prescribed by Headquarters for all Authorities. At present, for no doubt good and sufficient reasons, this has not been done ; each Authority is left to devise its own form ; and all grouping of the facts must, therefore, be considered to be tentative.

Meaning of the Statistics.—Before offering the statistical matter for consideration it may be well to point out exactly what the figures and percentages indicate.

We visit each school on the day of medical inspection, and we make a note of the pathological conditions found. When the figures are added together in their respective categories they show, therefore, the numbers existing in all the schools on the day of inspection in regard to the various pathological conditions ; but it is not one and the same day for all the cases of a particular ailment. These figures are then percented on the total number of the children submitted to examination, and we get a percentage of the particular ailment or condition found in all the schools on the day of inspection. It is assumed, and reasonably assumed, that this is an average day.

This is really all the figures tell us. They do not tell us the total number of cases of a particular disease occurring during a year, say. If the pathological condition is in its nature permanent, like cleft palate, the percentage of cases found on any one day of the year may be taken as practically equivalent to the percentage of cases existing in the schools. But in the case of attacks of disease, like ringworm, or impetigo, which occur and subside again, this is not so. The figures tell us nothing of the total numbers of such cases ; we can only infer these totals from the daily percentage of cases present in the schools if we know the average duration of the diseases.

To make the statistical tables of service the following key-numbers should be borne in mind :—

No. of children in average attendance	..	76,109
No. of children actually inspected	..	20,474

Wherever contrasts are shown between children of various ages, between boys and girls, and urban and rural,

it will be found that the basic numbers on which the percentage is taken are always given in the context.

Leaving on one side for the moment the question of the child's home environment, to which a separate section of the report is given, let us take the various facts of demographical importance as they occur on the schedule.

Previous Illnesses.—This record is both faulty and incomplete. Teachers sometimes have records of infectious illnesses based on medical certificates; in other cases they can tell us that a child was absent owing to some alleged illness. Mothers, when they turn up on the day of inspection, generally have much to tell us, but a good deal of it is based on their own unaided powers of diagnosis and treatment; moreover, they do not often come to the inspection. Children of 5—6 it is useless to ask; but children of eight and upwards generally give statements of the illnesses they have themselves undergone, which, I believe, are in most cases not less accurate than the accounts their mothers would have given had they been present.

Thus, the numbers of illnesses stated on the schedules fall far short of the actual numbers suffered by all the children inspected, but they probably give a fairly accurate idea of the *relative* incidence of the different diseases since no disease would be more often forgotten than another, and this relative incidence is illustrated by the following table, based on about 5,000 histories:—

ILLNESSES.				
Measles	..	..	..	4708 cases
Whooping Cough	..	..	..	2321
Chicken-pox	..	..	..	1300
Scarlet Fever	..	..	..	733
Mumps	..	..	..	426
Diphtheria	..	..	..	167

It is hardly necessary to dwell on the uncertainty of the data of this table. The diagnosis must in many cases have been that of the parents alone; there must have been cases in which children had had one or other of the diseases, but it had not been recognised; there must have been cases

in which, for example, enlarged cervical glands were called "mumps"; there is no distinction attempted between measles and r  theln; and so on. Notwithstanding the meagre quality of the information, however, the curious may be interested to remark that the order of the numbers of the different diseases approximates closely to the order of geometrical progression. This approximation was apparent in the figures of last year's Report, based on the histories of over 1,000 cases; and it is equally apparent in the data of the 5,000 odd cases of which we have histories this year.

If the number of cases of measles in each year is taken as 1,000, the proportional numbers in which the other diseases occurred are those given in the table below. In the first column are given the numbers in which the various diseases ought to have occurred if the order of geometrical progression had been literally observed.

	Theoretical order of geometrical progression.	Observed order in 1908.	Observed order in 1909.
Measles	1000	1000	1000
Whooping Cough ..	500	468	493
Chicken Pox	250	255	276
Scarlet Fever	125	112	155
Mumps	62	67	90
Diphtheria	31	39	35

This is, no doubt, merely a curious coincidence.

Family Medical History.—No attempt is made to get a family medical history of all cases in the life assurance sense of the term. Such statements as come up are commonly volunteered by parents or teachers. Hence, the record is imperfect and wholly destitute of comparative value. As might be expected, "Phthisis" and "Insanity" are the chief items. The story of phthisis generally comes to us in the form that the incriminated member "had consumption," but as a rule we cannot get satisfactory details. We interpret the statement to mean pulmonary tuberculosis. "Insanity" very commonly means "is or has been in an asylum." We have included under the same term all

cases of feeble-mindedness occurring in a family. In this sense there were 209 histories of "phthisis" and 49 of "insanity."

Height and Weight.—The children were measured and weighed without shoes, but in ordinary indoor clothes. The figures were read in inches to the nearest quarter-inch and in pounds to the nearest quarter-pound. The children were of the age stated (viz., turned 5 but not yet 6; 8 but not yet 9; 12 but not yet 13; 13 but not yet 14) on January 1st, 1909; but the actual day of weighing may have been any school day from January to December. The ages on the day of weighing may, therefore, have conceivably varied (in the case of members of the youngest group) from five years and a few days to a few days short of seven years, and *mutatis mutandis* in the other groups. So that the mean height and weight must be taken as expressing the means of the upper year of the limit of age (viz., the year 6 in the case of children of 5—6, and so on). In the case of the group of leavers, 13—14, no child can have been more than 14, because on that day they are entitled to leave, and generally do leave. With them the mean height and weight, therefore, express the true mean of the years of the group (13 and 14).

HEIGHT AND WEIGHT.

Age.	5-6				8-9				12-13		13-14	
	Boys.		Girls.		Boys.		Girls.		Boys.	Girls.	Boys.	Girls.
	U.	R.	U.	R.	U.	R.	U.	R.	Rural only.		Urban only.	
No. Examined.	2227	2004	2291	1774	2117	1854	2134	1852	1234	1272	863	852
HEIGHT:												
English inches ..	41.75	42.5	41.25	42.0	47.75	48.75	47.5	48.25	55.75	56.5	55.25	56.75
Metres ..	1.06	1.08	1.05	1.07	1.21	1.24	1.21	1.22	1.42	1.44	1.40	1.44
WEIGHT:												
English lbs. ..	40.31	40.37	38.94	40.37	53.06	54.62	51.19	52.31	76.19	78.44	76.87	82.0
Kilogrammes ..	18.29	18.35	17.69	18.35	24.12	24.83	23.27	23.77	34.63	35.65	34.94	37.27

Clothing and Footgear.—These entries are made by the teachers on their knowledge of the usual state of the children's clothing, and not merely of the state on the day of inspection. Different teachers, however, have different standards of what should be allowed to pass as sufficient, and the medical inspector has the opportunity of altering the statement after consultation with the teacher.

It will be seen from the schedule that clothing and foot-gear are noted if insufficient, unclean, or in disrepair. A considerable number of children are overclothed, especially in the summer, and this is made a subject of verbal instruction to the mother or teacher; but in the table about to be given overclothing is not included among the "faults." The latter are insufficiency, uncleanness, and disrepair, and they are grouped together as being for the most part faults of destitution—either the literal absence of all means or that relative absence due to drinking or squandering the means that exist. The child, clean and tidy, and yet insufficiently clad through the sheer poverty of its parents, is not unknown, but is extremely rare. Whatever may cause poverty, poverty generally causes filthiness, disrepair, and personal neglect.

CLOTHING.

Age.	5-6						8-9						12-13		13-14		TOTALS AND MEANS.
	Boys.			Girls.			Boys.			Girls.			Boys.	Girls.			
	Urban.	Rural.		Urban.	Rural.		Urban.	Rural.		Urban.	Rural.						
Sex.	Urban.	Rural.		Urban.	Rural.		Urban.	Rural.		Urban.	Rural.		Rural only.	Urban only.			
Area.	2227	2004	2291	1774	1854	2117	2134	1852	1234	1272	863	852					
No. Inspected.	2227	2004	2291	1774	1854	2117	2134	1852	1234	1272	863	852			20474		
Faulty {	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	
	Clothing	307 13.8	203 10.1	269 11.7	115 6.5	367 17.3	209 11.3	198 9.3	113 6.1	98 7.9	55 4.3	128 14.8	95 11.1	2157 10.5			
Footgear	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	
		186 8.4	139 6.9	182 7.9	75 4.2	243 11.5	131 7.06	170 7.9	97 5.2	48 3.9	36 2.8	79 9.1	75 8.8	1461 7.13			

From this table it may be deduced that, as regards the children examined during 1909, clothes were more often faulty than footgear; that children of 12—14 were rather better provided than children at earlier ages; and that rural children were distinctly better off as to clothing than urban children (13 per cent. of rural children had faults as compared with 21 per cent. of urban).

Skin.—Skin diseases do not readily lend themselves to a natural classification, and a purely practical classification was adopted. While we have full records of who are verminous and who are merely unclean, it seemed unnecessary to distinguish between “unclean” and “verminous,” or between the latter and “nits.” For demographical purposes, what we want to arrive at is a knowledge of the personal habits of the children. Are they washed and kept clean sufficiently for the purposes of health? The presence of nits, of lice, or of flea-marks in abundance, all equally bear witness to inadequate cleanliness.

The following are the figures :—

SKIN DISEASES.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.					
	Boys.			Girls.			Boys.			Girls.			Boys.		Girls.		Boys.		Girls.							
	Urban	Rural	No.	p.c.	Urban	Rural	No.	p.c.	Urban	Rural	No.	p.c.	Urban	Rural	No.	p.c.	Urban	Rural	No.	p.c.						
No. Inspected.	2227	2004	2291	1774			2117	1854	2134	1852			1234	1272			863	852			20474					
HEAD.																										
Verminous and unclean	205	9.2	107	5.3	751	32.3	540	30.4	165	7.8	69	3.7	924	43.3	697	37.6	23	1.9	464	36.5	64	7.4	4395	21.5		
Ringworm	..	0.9	8	0.4	17	0.7	10	0.6	9	0.4	7	0.4	7	0.3	9	0.5	2	0.2	..	..	1	0.1	..	..	92	0.45
Other locally infective	..	1.9	19	0.9	42	1.9	21	1.2	19	0.9	16	0.9	27	1.3	21	1.1	6	0.5	7	0.6	6	0.7	9	1.06	236	1.15
Other	..	2.2	49	2.4	50	2.2	44	2.5	60	2.8	40	2.2	57	2.6	45	2.4	29	2.4	40	3.1	23	2.7	29	3.4	516	2.52
Totals	..	14.4	183	9.1	860	37.5	615	34.7	253	11.9	132	7.1	1015	47.5	772	41.7	60	4.9	511	40.2	94	10.9	424	49.8	5239	25.5
BODY.																										
Verminous and unclean	139	6.24	164	8.17	155	6.8	140	7.9	147	6.9	149	8.0	157	7.4	189	10.2	74	6.0	100	7.8	43	5.0	55	6.45	1512	7.39
Ringworm	..	0.04	..	..	..	..	..	..	2	0.1	..	..	..	..	2	0.1	1	0.08	..	..	1	0.1	1	0.12	8	0.04
Other locally infective	..	0.22	2	0.1	2	0.09	5	0.3	2	0.1	5	0.3	5	0.2	6	0.3	2	0.16	4	0.31	1	0.1	1	0.12	40	0.19
Other	..	1.08	24	1.2	23	1.0	17	1.0	12	0.6	18	1.0	22	1.0	25	1.3	17	1.4	16	1.3	10	1.16	9	1.06	217	1.05
Totals	..	7.59	190	9.5	180	7.9	162	9.1	163	7.7	172	9.3	184	8.6	222	12.0	94	7.6	120	9.4	55	6.37	66	7.74	1777	8.68

It is of importance to note the different incidence of diseases according to age, sex, and locality, whether urban or rural. This can readily be done by means of the foregoing table. The leaving age in rural districts is, however, not the same as that in urban districts, being 12-13 in the former and 13-14 in the latter. All children of 12-13, therefore, are rural, and all children of 13-14 are urban. To eliminate the disturbing factor of locality, these two ages are taken together.

Taking all skin diseases together, there were:—

Group.		No. examined.		All skin diseases.	
Children,	5—6	..	8296	..	32%
„	8—9	..	7957	..	36%
„	12—14	..	4221	..	33%
<hr/>					
Boys ..	..	..	10299	..	18%
Girls ..	..	..	10175	..	50%
<hr/>					
Urban	..	..	10484	..	36%
Rural	..	..	9990	..	32%

Thus, the different incidence of skin diseases as a whole in boys and girls is very marked, but the differences according to age and locality are not very impressive.

A closer study reveals that the difference between boys and girls arises almost entirely under the heading of “Verminous and unclean heads.” Taking this category alone, there were:

Group.		No. examined.		Verminous and unclean.	
Children	5—6	..	8296	..	19%
„	8—9	..	7957	..	23%
„	12—14	..	4221	..	22%
<hr/>					
Boys ..	..	..	10299	..	6%
Girls ..	..	..	10175	..	37%
<hr/>					
Urban	..	..	10484	..	23%
Rural	..	..	9990	..	19%

Thus there is a slight excess of verminous and unclean cases at age 8—9, possibly because at this age the elders are beginning to leave off their personal supervision and the children are not yet experienced enough to look after themselves properly.

The disproportionate prevalence in the two sexes of verminous conditions of the head is, of course, to be credited to the long hair worn by the girls. The figures last year were :—Boys, 7·5% ; girls, 39·5%. The figures this year are slightly better ; and the change, it is to be hoped, is the beginning of improvement ; but so long as the homes are filthy and infested with vermin it is a Sisyphean task to attempt to secure the cleansing of the heads of school children.

As to urban and rural children and verminous heads, there is still an appreciable difference (23% and 19% respectively) Last year the figures were 28% and 18% respectively. I hope it may be inferred that the visits of your inspectors to the schools have lead to a more vigorous propaganda in the populous urban areas, and that this diminution in the differences between urban and rural may be ascribed to it.

The two other contagious ailments of the skin have much in common and may be taken together ; they are ringworm and impetigo, which is practically the only disease which figures in the category of "other locally infective" ailments of the skin. It is a disease marked by heavily crusted and unhealthy sores, generally about the mouth, chin, and scalp, but also on the body.

In both ringworm and impetigo the body cases, relatively few in number, are added to the head cases in their respective groups.

Group.			No. examined.		Impetigo.		Ringworm.	
Children	5—6	..	8296	..	1·67%	..	0·69%	
	8—9	..	7957	..	1·25%	..	0·45%	
	12—14	..	4221	..	0·85%	..	0·14%	
<hr/>								
Boys	..	..	10299	..	1·22%	..	0·52%	
Girls	..	..	10175	..	1·47%	..	0·45%	
<hr/>								
Urban	..	..	10484	..	1·54%	..	0·58%	
Rural	..	..	9990	..	1·17%	..	0·39%	

Thus, there is a marked and progressive decline in the relative numbers of cases in older children, in both impetigo and ringworm ; and in both also is there a distinct if not

very marked preponderance among urban children as compared with rural. As between boys and girls, there is a slight preponderance of cases of ringworm among boys, and a slight preponderance of impetigo cases among girls.

The decline of the number of cases of ringworm with age is perhaps to be read in the light of another, and cardinal, fact in the natural history of ringworm, viz., that ringworm of the scalp is unknown or at least extremely rare in persons over 16 years of age.

Ringworm.—This is an ailment that bulks largely in the view of educationists, possibly because so many of these are townsmen; for there can be little doubt that ringworm is a very different matter in different localities. Dr. Hogarth, in his book on “Medical Inspection of Schools,” (p. 214) speaks of it as “exceedingly contagious”; and Drs. Newsholme and Pakes, in their manual of “School Hygiene” (p. 181), say that it is “extremely common among children, in some districts almost as common as pediculosis.” To many this must read like an unaccountable exaggeration. It is therefore of the first importance to arrive at clear ideas of the extent of the evil in Staffordshire.

Ringworm is a disease which is due to the growth of a mould-fungus,—a minute vegetable parasite,—in the skin. Where the fungus is actively growing it causes the skin to be a little red and swollen, and it leads to some scurfiness. It descends into the follicles of the hairs, and it may penetrate into the substance of the hairs themselves, making them brittle and likely to snap short off. There are many varieties of fungus which have the power of growing on the skin, some of which have small spores, others large, some grow on human skin only, others on different animals as well as on man, and some penetrate readily into the substance of the hairs and others do not. The disease produced is never fatal; it gives rise to little distress to its victim; its chief drawback is that it causes the hairs to snap off and so produces a bare scurfy patch. As the child approaches the age of 15 or 16, ringworm of the scalp seems to have a tendency to die down.

The fungus is a delicate mould-structure of fine threads and spores easily destroyed by the touch of corrosive or germicide fluids, such as dilute mercurial solutions, carbolic acid, tincture of iodine, or even ink. When the mould lies on the surface nothing is easier than to kill it ; but when it has penetrated into the recesses of a hair follicle or into the very grain of the hair itself, it is commonly safe from these destructive liquids. In such situations, however, it may still be reached by the penetrating X-rays. So impossible is it in many cases to get the corrosive or other destructive agent to the recesses of the hair follicles that the cases resist steady and continuous treatment for years, and only seem to die out as the age of puberty is reached.

From this account of the nature of the disorder it will be understood both how it spreads and why it offers such difficulties in treatment. It spreads by spores becoming implanted on a suitable soil ; it persists because the necessary treatment entails time and trouble to which there is nothing in the shape of immediate and sharp suffering to impel either mother or child.

As to the prevalence of ringworm, there was in the schools at the time of inspection a total of 100 cases out of some 20,000 children examined, or about 0·5%. This figure is in agreement with the figures obtained during the inspection of the year before.

The percentage is deduced from the examination of all children of 5—6, 8—9, and 12—14 ; but there is no reason to suppose that the children at other ages would have given a materially different percentage. Our 20,000 examinees may no doubt be taken to be representative of all the 75,000 and more children in average attendance ; and we may conclude that the average total number of ringworm cases in daily attendance at the schools of the County is 5 per thousand children attending, or about 375 in the aggregate.

From this number, 375 in daily attendance, we could infer the total number of new cases every year if we knew the average duration of the cases. If the average duration were a year, the number of new cases every year would be 375 ; if the average duration were 6 months, the new cases

would be twice that number ; and so on. An average duration of 6 months is probably not far from the mark.

Of course, these are the numbers found in schools on the day of inspection. If many of the ringworm cases existing had already been excluded from the school by the teachers, the figures might be entirely misleading. No doubt many zealous teachers exclude cases they are sure of ; but although their action may account for the absence of some cases, I do not think it accounts for a great number. Many teachers are not greatly concerned by ringworm ; they view it with considerable equanimity. In the country neighbourhoods parents make very little of it, and teachers are not likely to be far ahead of the local public opinion. Although they act with commendable promptness in cases the gravity of which they realise, teachers are not likely to err on the side of exclusion ; and when a child has been excluded, and returns in two or three weeks seeking re-admission, if there is the least colourable reason for believing that some improvement has taken place, the child will nearly always be re-admitted.

These considerations tend to make one think that the numbers reported in these tables are fairly representative, and this view receives some support from the experience of other places. In the city of Bradford, the number of cases of ringworm has been computed by excluding the cases as they arise and then counting the numbers absent week by week.* Records of the numbers of children absent each week on account of ringworm have been kept for some years, and the average numbers in the past, before the schools were more efficiently ransacked for cases, used to be something like 0·24%, or from 80 to 100 cases out of about 37,000 children. Since the advent of the School Nurse and the devotion of more interest to the subject, the figures have been doubled, or in other words the percentage now is approximately 0·5. This percentage is, of course, not strictly comparable with ours, but it seems to indicate a somewhat similar condition of affairs.

No doubt, with still greater care, we shall all succeed

* Annual Report for 1908 of the Chief Medical Officer of the Board of Education, 1910. Cd. 4986. p. 52.

in finding more cases ; but I think we are quite safe to take the numbers now obtained as a practical basis for discussion.

If, then, we assume 0·5%, or 5 cases per thousand children in attendance, to represent the number of cases of ringworm, we see at once it is not a very formidable figure. It may be said, indeed, that ringworm is among the rarer diseases of school life ; in Staffordshire, taking the relative numbers found in school on the day of inspection, it is comparable in rarity with tuberculosis ; discharging ears are twice as numerous as it ; impetigo from two to three times, and mouth-breathing case ; are 10 times as numerous.

There is another way of looking at the prevalence of ringworm. Our 100 cases were all found in 71 schools out of the total of 370, and the schools contributed thus :—

1	had 5 cases of ringworm.
2	had 4 cases each.
4	had 3 cases each.
11	had 2 cases each.
53	had 1 case each.
—	
71	
—	

This does not look like a disease which is difficult to control. Considering that if a case appears in a school it must have reached a rather conspicuous stage before it is excluded, if it ever is excluded ; and considering that in most cases it is received back again before it is cured ; the opportunities for self propagation must usually be ample. It can only be that the disease naturally makes its way slowly and deliberately in ordinary circumstances, and therefore it should be all the easier to deal with.

If we study the figures of 1908, when our examination was, with a few exceptions, limited to children of 5—6, we get a similar result.

Forty-seven schools yielded 86 cases in the following proportions :—

1 had 17 cases of ringworm.

1 had 5 cases.

4 had 3 cases each.

11 had 2 cases each.

30 had 1 case each.

—
47
—

Thus, there is the same phenomenon of isolated cases or tiny groups as was noticed in 1909, except in one school, where it is evident that in the mysterious way of endemic or occasional or sporadic infectious diseases, ringworm had become for a short time sharply epidemic. (This school was the infant department of Red Hall Council School, Sedgley, a large department numbering nearly 300. The 17 cases were all found among 135 children of 5—6; there were, in addition, only 2 cases of ringworm presented by the head teacher from among children at other ages, one being 7—8 and the other 6—7. We were not examining the boys' and girls' departments, which, moreover, are practically separate schools. Next year, in the same school, there was found only one case among children of 5—6, none in the boys' and girls' departments, and only one presented by the head teacher, viz., a child of 4—5 years. Thus, the epidemic had exhausted itself.)

It may, of course, be urged that the argument is incomplete in the absence of an exhaustive examination of all the children. This is true; but on the other hand we are dealing with all the children of the same age as the children discovered with ringworm, and therefore with all those most likely to have been exposed to the risk of infection from these particular cases. It is between classmates using the same schoolroom, cloakroom, and playground that the danger of infection chiefly lies. It will, therefore, be interesting to see the percentage of cases of ringworm among children thus known to have been exposed more or less to the risk of infection.

If we consider a school where there is a child of 5—6 known to have been attending the school for some time with ringworm it is clear that the other children of the same age

have, speaking generally, been exposed in greater or less degree to the risk of infection. How many have contracted the disease? To know this is to have some idea of the risk such children run.

At age 12—14 there were so few children who were thus known to have been exposed to the risk of the infection of ringworm, viz., only 54, that it would be unsafe to use them for percentage purposes. At age 5—6 there were 1,040 children who had more or less been exposed to the risk of infection, and 58 had the disease, or 5·5%. At age 8—9, 535 children had been more or less exposed, and 36 had the disease, or 6·7%.

The value of these figures is relative only; we must compare them with other infectious ailments. Take verminous heads. When tested in the manner above indicated, by taking only those schools and only those age-groups in which verminous heads had occurred, and in which, therefore, the children were known to have been exposed to the risk of verminous infection, 5,724 children so exposed yielded 1,703 cases, or about 29%. Only the children of 5—6 were used for this calculation.

Impetigo treated in the same fashion leads to a percentage almost identical with that of ringworm; at age 5—6, 2,290 children exposed to infection showed 143 cases of impetigo or 6·2%; and at age 8—9, 1,812 children showed 101 cases, or 5·5%.

It is clear that both ringworm and impetigo have at present in the County a low degree of practical infectiveness very favourable to any efforts which may be made to suppress them.

I say, at present; for it is quite conceivable that these diseases may suddenly become severely epidemic under conditions which we do not clearly understand. Some such hypothesis seems necessary to explain not only cases like Red Hall Council School, quoted above, but also the very different way in which these undoubtedly contagious diseases are spoken of by different careful observers.

The question of the infectiveness of ringworm is so important practically that I offer no apologies for presenting yet another line of illustration. In 1908, as has been said,

we visited all the schools where there were children of 5—6 and examined them for ringworm. In addition, we asked the head teachers to bring forward whatever cases of illness at other ages they had noticed, and a certain number of ringworm cases were thus produced.

In 1909 we went round to the same schools and departments, among others, and again collected from them a number of ringworm cases, some of which we found ourselves among children of 5—6 and others the teacher presented to us.

Now, if ringworm were a highly contagious disease, persistent and difficult to dislodge, we should expect it to be found year after year hovering about the same schools, since all the time fresh material in the shape of new entrants is being freely offered to the disease. As a matter of fact, in 1908, 54 schools were found to have ringworm; and in 1909, limiting our search to precisely the same strata of children and sources of information, 61 schools had ringworm. But, so far from the schools being largely the same, there were only 16 schools common to the two years. Thus, even if we assume that these 16 schools in 1909 had derived their ringworm cases by direct tradition from the cases in the same schools in 1908—not by any means an inevitable assumption—it would still remain that for every school where ringworm managed to persist into the second year, there were 2 or 3 where it died out.

Conclusions.

1. That there are on any day of the year, on an average, rather less than 400 cases of ringworm among the 75,000 or so of children at school in the administrative area. In addition, there must be a certain number of cases—probably not many—at home, having been excluded by head teachers. Compared with some other diseases of school life these numbers are small.

2. That ringworm is a disease of slight practical infectiveness, making its way among the children of a class with considerable slowness and difficulty. Occasionally, however, it may become sharply epidemic.

3. That, apart from the unsightly appearance of the bald and stubbly patches on the scalp, the disease is neither

dangerous nor inconvenient to the sufferer, nor in any way peculiarly disgusting or revolting to others. Running at the ears, for example, if not under regular treatment, is incomparably more dangerous to life and offensive to the senses of others.

There remains the question what ought to be done? In the first place, the Committee may resolve to attempt the extirpation of ringworm in the schools. This is quite feasible, but it would be costly. We should have to exclude every case occurring until assurance could be had, based on a microscopical examination of the hairs, that the case no longer showed spores. It is estimated on the experience of authorities who have tried it that the average period of exclusion under this plan is about 20 weeks.* Therefore, on a certain day, when it was arranged that operations should begin, 400 children would be excluded, and no grant would be paid on them for 20 weeks. This amounts straight away to a loss of about £400 in grant. But against this must be set the grant which is even now being lost by the sporadic and too-short exclusions at present in vogue. Then there would be the question of the fee for examining the hair. Estimating an average of 5s. a case to cover a doctor's fee for collecting the hair and a fee for the microscopic examination, this would cost £100, not allowing for private payments of some parents.

But this expense would not be final. Before the expiration of the 20 weeks it may confidently be predicted that some more cases would have been introduced from without, which would have to be similarly treated; and so on indefinitely. Until ringworm was extirpated in animals as well as in man all over the country, it would mean a perpetual endowment for the purpose of keeping the schools free.

The second method of dealing with the difficulty of ringworm is a totally different one, based on the conviction that the infectiveness, when once the disease is systematically under treatment, is an almost negligible quantity, and that, therefore, the sufferers may mix freely with others with certain simple precautions.

* Annual Report of the Chief Medical Officer of the Board of Education, *loc. cit.*; there are, however, less favourable estimates.

If some such plan were adopted, no child whose parent consents to the rules of treatment should be excluded. The rules of treatment should be :—

1. The hair to be cut short all over the head, or at least over a large part.
2. The case to be under treatment in the sense that it receives daily some application ordered or approved by a medical man. It is commonly easy for an intelligent lay person to see whether this is being done.
3. The child to wear a simple linen skull cap tied on its head. The cap should belong to the school, and must be exchanged for a clean one when the child arrives in the morning, but the child must go home in it and return in it the next day. The cap discarded in the morning should be boiled under the direction of the school officials ready for the next day. It must be worn continuously indoor and out, so far as the teacher can control this.

The essence of the plan is that the Education Committee shall make itself responsible for the details of the simple quarantine procedure—not the treatment, but the quarantine. It would, I think, be indefensible for the Education Committee to permit the association of healthy children and ringworm children on the strength of precautions, however simple, which they left to the parents to carry out, and the parents of the healthy children would have just ground of complaint.

The child of a parent who objected to these simple rules would, of course, have to be excluded ; but the Education Committee would be in a strong position to insist on such a parent neglecting no available means of cure.

The case is by no means free from possible difficulties, and if it is thought impracticable to insist on adequate means of simple quarantine it may be foreseen that a greater stringency of exclusion—and with it a greater and greater loss of grant—will almost insensibly and inevitably come about. The danger of infection, as I have endeavoured to suggest, may not usually be very great, but it is a real danger ; and we

cannot well avoid the duty of protecting the non-infected. We shall in course of time reach the limit indicated above when every case is excluded until really cured and the loss of grant is proportionate to the numbers excluded.

It will be noticed that nothing has been said about X-rays. I believe the evidence to show that X-ray treatment is the most rapid and certain yet introduced, and many who have experience of it make light of its alleged dangers. But even with X-rays the duration of cases is said to average two to four months (*British Medical Journal*, February, 1908, p. 484).

Eyes.—Children 5—6 were not tested for acuity of vision. Older children were tested by means of Snellen's Type at 20 feet. As to eye diseases, apart from optical defects, a practical classification for administrative and sanitary purposes was preferred. "Minor ailments" includes blepharitis, conjunctivitis, phlyctenular ulcers, etc.

The following are the total figures of defective sight of all degrees, whether of one or of both eyes, and also of eye diseases :—

EYE DISEASES AND DEFECTIVE SIGHT.

Age.		5-6						8-9						12-13				13-14				TOTALS AND MEANS.	
Sex.		Boys.			Girls.			Boys.			Girls.			Boys.		Girls.		Boys.		Girls.			
Area.		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Rural.		Rural.		Urban		Urban			
No. Inspected.		2227	2004	2291	1774			2117	1854		2134	1852		1234		1272		863		852		20474	
Minor (non-infective) ailments		83	75	116	57	3.74	3.21	79	99	5.34	112	5.25	93	45	3.64	71	5.58	26	3.01	29	3.40	885	4.32
Infec. opth. ailments		3	1	3	6	1.05	0.33	2	3	0.16	1	0.05	4	1	0.08	2	0.16	..	..	1	0.12	27	0.13
Opacities	..	8	2	6	1	0.09	0.06	6	3	0.16	14	0.65	3	1	0.08	3	0.23	5	0.58	2	0.23	54	0.26
Squint	..	35	24	35	22	1.19	1.24	27	19	1.02	38	1.78	15	12	0.97	11	0.86	10	1.16	11	1.29	259	1.26
Other	..	8	5	8	6	0.25	0.33	4	5	0.27	1	0.05	6	5	0.40	6	0.47	4	0.46	9	1.06	67	0.33
Totals	..	137	107	168	92	5.32	5.18	118	129	6.96	166	7.78	121	64	5.18	93	7.31	45	5.21	52	6.10	1292	6.31
Sight defective, one or both eyes		..	..	..	..	..	..	588	514	27.7	723	33.9	564	284	23.0	356	27.9	238	27.6	249	29.2	3516	28.9 *

* Total of all cases examined, excluding ages 5-6, is 12,178.

Contrasting the children according to age-period, sex, and locality, urban or rural, and combining the two leaving-ages, 12—13 and 13—14, since all children of the former are rural and of the latter urban, we have the following. As regards all eye diseases taken together there were :—

Group.		No. examined.		All eye diseases.
Children, 5—6	..	8296	..	6.0%
„ 8—9	..	7957	..	6.7%
„ 12—14	..	4221	..	6.0%
<hr/>				
Boys ..	..	10299	..	5.8%
Girls ..	..	10175	..	6.8%
<hr/>				
Urban	..	10484	..	6.5%
Rural	..	9990	..	6.0%

Two-thirds of all eye diseases consist of the minor non-infective ailments, blepharitis, conjunctivitis, etc. The total numbers of the other ailments are too slight to support important conclusions; nevertheless it may be noted as to *opacities*—(1) that they are less often seen at age 5—6 than later, presumably because later when the children are older, there has been more time to incur injuries and diseases which may lead to opacities, (2) that they are equally distributed between boys and girls, and (3) that there are three times as many in urban areas as in rural. As to *squints*, (1) there is a slight preponderance at the earlier age, (2) there is practically equality between boys and girls, and (3) a preponderance in urban children as compared with rural.

As regards defects of vision, apart from eye diseases, the incidence according to age, sex, and locality is as follows:—

Group.		No. examined.		Optical defects.
Children, 8—9	..	7957	..	30%
„ 12—14	..	4221	..	27%
<hr/>				
Boys ..	..	6068	..	27%
Girls ..	..	6110	..	31%
<hr/>				
Urban	..	5966	..	30%
Rural	..	6212	..	28%

Children of 5—6 were excluded.

Thus there is a slight though distinct difference between children of 8—9 and those of 12—14. Supposing this to be constant it may merely mean that children get cleverer at interpreting the evidence of their eyes as they grow older. It must not be forgotten that Snellen's test is a test of mental quickness as well as of optical defect of the eye; with the same optical defect a quick-witted child may read the $\frac{6}{12}$ type whereas a dull child will only feel sure of $\frac{6}{18}$.

There is also a slight difference between boys and girls, but hardly enough to justify sweeping conclusions. Again, the mental element will have to be discounted in drawing conclusions from the difference should it prove to be constant; girls are, I think, more conscientious than boys, more scrupulous in responding to tests.

Association of Defects of Sight.—The figures dealing with defects of sight are more interesting to the biologist than to the educationist in that they include all degrees of defect whatsoever, slight or marked. Many of the cases of slight defect, however, leave the possessor no worse off than normal people for the common purposes of life. Indeed, if the defect is in one eye only, the other being normal, the child may never realise that anything is wrong. It is, therefore, of importance to know something of the association of different eye defects in the two eyes, and the relative proportions of minor and major, or really disabling, defects.

For this reason the Board of Education have required us to test the sight in each eye separately and record the results. The results are summarised in a table given as an appendix, which may be of value to those who are interested in the question of the eyesight in school-life.

Each degree of optical defect of the right eye is taken in turn, and the cases of optical defect of the left eye found to be associated with it are enumerated and classified.

Optical defects of the eye are estimated by placing the child at one end of a room, in a suitable light, and showing him letters of different sizes held up before him at a distance of 20 feet (six metres). The smallest letter he is just able to see clearly at that distance is the index of his acuity of

vision. The result is stated in the form of a fraction in which the numerator indicates the distance in metres between the test letter and the child and the denominator indicates the size of the smallest letter recognised by the child at that distance.

Each letter according to its size is indicated by a number, not an arbitrary number, but the number of the metres at which a normal healthy eye should be able to see clearly that particular letter.

Thus, if an eye is said to have acuity of vision equal to $\frac{6}{18}$ it means that at six metres (20 feet) the eye was able to read a letter of a certain rather large size known as 18. The letters of size 18 are so large that a normal person should be able to read them at a distance of 18 metres (60 feet).

Thus, $\frac{6}{6}$ indicates a normally-sighted person, and the stages of defect are indicated as $\frac{6}{9}$, $\frac{6}{12}$, $\frac{6}{18}$, $\frac{6}{24}$, $\frac{6}{36}$, $\frac{6}{60}$. W(= "worse") indicates any degree of defect worse than $\frac{6}{60}$. In the table in the appendix, the numerator of the fraction, being constant, is omitted.

The children examined numbered 12,178. The total number found to be defective as to their eyesight was 3,516, but of these defectives, 55 are rejected because of some doubt as to the tests. This reduces the number of the defectives who were further analysed to 3,461.

A glance at the table in the appendix will show at once that it is possible to pick out all the cases in which the right eye was normal while the left had some defect of sight, and similarly the cases in which the left eye was normal. The results may be stated thus:—

Right eye normal and left defective	673 cases or 19.4%
Left eye normal and right defective	454 „ 13.1%
Both eyes defective	2334 „ 67.5%
	<hr/> 3461 <hr/>

Thus, the left eye was more often faulty than the right ; and in about 33% of all cases of defective sight the defect was limited to one eye.

A scrutiny of the table in the appendix will show that where one eye is defective to a certain degree the other eye may exhibit defects either of the same degree or of any other degree ; but that in the great preponderance of cases the defect of the second eye is the same as that of the first eye. Thus, the cases in which the right eye has the index of optical defect $\frac{6}{12}$, and the left eye has also some optical defect, number in the aggregate 627 ; but more than half of these are cases in which the left eye has the same index of defect as the right, viz., $\frac{6}{12}$, the other half of the cases being distributed among the other degrees of defect.

In other words, if one eye is defective to a certain degree the presumption is that the other eye, if defective at all, will be defective to the same degree. This is probably due to community of inherited defect, though community of danger and strain to the two eyes in actual use would equally tend to bring about an identity of defect.

What degree of eye defect should be considered bad enough to call for treatment either by spectacles or otherwise ? There is no doubt that many people suffer very little inconvenience from a defect of $\frac{6}{12}$. On the other hand, $\frac{6}{18}$ is a really high and disabling degree of defect. The practical limit for the common purposes of life in civilised countries lies somewhere between these degrees ; defects of $\frac{6}{18}$ always merit treatment, but defects of $\frac{6}{12}$, if they do not cause headache or other complaint, may often be passed over.

Taking $\frac{6}{18}$ as our standard, the following statement, derived from a study of the table in the appendix, will be of interest :—

Both eyes $\frac{6}{18}$ or worse	..	..	707 cases or 20·4%
Right eye better than $\frac{6}{18}$ and left			
eye $\frac{6}{18}$ or worse	..	..	305 „ 8·8%
Left eye better than $\frac{6}{18}$ and right			
eye $\frac{6}{18}$ or worse	..	..	266 „ 7·6
Both eyes better than $\frac{6}{18}$	..	..	2183 „ 63·2%
			<hr/> 3461 <hr/>

If we are right in taking $\frac{6}{18}$ as the point at which spectacles or other suitable treatment should be considered imperative, it

follows that 20% of our recorded cases of defective sight reached this high degree in both eyes, and 37% in one or both. These children, beyond all cavil, will be severely handicapped in life if they cannot have their defect remedied. This figure (37% of the eye-defectives) corresponds to 10.5% of all the children examined; 10.5% of all children had the defect $\frac{6}{18}$ or worse in one or both eyes. If $\frac{6}{12}$ were taken as the limit, the figures of the table in the appendix would indicate that 16.6% of all cases examined are $\frac{6}{12}$ or worse in one or both eyes.

Ears.—Defective hearing was tested by the whispered voice at 20 feet,—a sufficient practical test in our generally noisy schoolrooms, but not accurate enough for finer scientific purposes.

As to ear diseases, apart from deafness, an elaborate examination of the ear in all cases, as a routine matter, is clearly out of the question in the time at disposal. One symptom, however, was always looked for, viz., purulent discharge. When the traces of this purulent or semi-purulent discharge can be seen about the meatus there is commonly no risk of mistake; but in judging of a history of ear discharge it is necessary to be on one's guard, especially in the case of very young children. Such children often have a catarrh of the meatus with an escape of slushy wax which mothers commonly but erroneously call "discharge."

The figures are as follows:—

EAR DISEASE AND DEFECTIVE HEARING.

Age.	5-6								8-9								12-13				13-14				TOTALS AND MEANS.		
	Sex.	Area.	Boys.				Girls.				Boys.				Girls.				Boys.				Girls.				
			Urban.		Rural.		Urban.		Rural.		Urban.		Rural.		Urban.		Rural.		Urban.		Rural.		Urban.			Girls.	
			No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.		No.	p.c.
One or both ears discharging	..	28	1-26	13	0-65	36	1-57	14	0-79	23	1-09	10	0-54	15	0-70	8	0-43	11	0-89	13	1-02	12	1-39	10	1-17	193	0-94
Defective hearing*	138	6-19	68	3-39	136	5-94	65	3-66	153	7-23	81	4-37	123	5-76	71	3-83	51	4-13	47	3-69	45	5-21	40	4-69	1018	4-97

* In this table cases in which the hearing test was doubtful are nevertheless, classified as defective. Such cases are chiefly among the children of 5-6.

If we study the table of ear affections with a view to noticing the incidence of the defects according to age, sex, and locality, whether urban or rural, the following can be made out. As in previous tables, the ages 12—13 and 13—14 are thrown together, since the children at the former age were exclusively rural while the children at the latter were exclusively urban.

	Group.	No. examined.	Ear Discharge.
Children, 5—6	..	8296	.. 1.0%
„ 8—9	..	7957	.. 0.7%
„ 12—14	..	4221	.. 1.0%
<hr/>			
Boys	..	10299	.. 0.9%
Girls	..	10175	.. 0.9%
<hr/>			
Urban	..	10484	.. 1.18%
Rural	..	9990	.. 0.69%

Thus, ear discharge is distinctly more prevalent among urban children than among rural. The same fact was noted last year, and the difference then was approximately the same as now.

As to defective hearing, the figures are :—

	Group.	No. examined.	Defective Hearing.
Children, 5—6	..	8296	.. 4.9%
„ 8—9	..	7957	.. 5.3%
„ 12—14	..	4221	.. 4.3%
<hr/>			
Boys	..	10299	.. 5.2%
Girls	..	10175	.. 4.7%
<hr/>			
Urban	..	10484	.. 6.0%
Rural	..	9990	.. 3.8%

There is a distinct difference between urban and rural children in regard to the incidence of defective hearing. The figures last year were :—Urban children, 7% ; rural, 4.2%.

It is interesting to note the proportion of cases in which ear discharge had not entailed deafness. Only children over 8 are taken, for only in them is hearing tested separately in the two ears ; the number examined was 12,177.

CASES OF EAR DISCHARGE.

With Deafness	..	..	..	61
Without Deafness	..	..	..	40
				<hr/>
Total	..	..	..	101
				<hr/>

As the total number of the cases happened to be 101, the figures give the percentage sufficiently nearly. Thus, about 40% of the cases of ear discharge were not deaf.

Association of Defects of Hearing.—The figures in the above table (p. 49) relate to all defects of hearing, but many of these defects are trifling, and the figures must be dissected in order to judge of the amount of practically disabling defect among the children.

Such a dissection of the figures is given in the table of associated ear defects in the appendix. The object was to show the numbers of cases in which the different defects of right and left ear occurred in association. The method of the table is that of the table of associated eye defects already referred to. Twenty feet is assumed to be the range of hearing of the whispered voice for the average healthy person. The first grade of defect includes all who can hear the whispered voice at distances between 20 and 15 feet, the second grade between 15 and 10, and so on. All cases which fail to hear the whispered voice close to the ear are denominated "worse" (W). Some of these can hear the loud-spoken voice; others shouts or a bell; some are stone deaf. The first grade or defect constitutes what would be called a "slight degree of deafness." One who could hear between 15 and 5 feet would be called "deaf"; and between 5 and 0 "very deaf"; beyond that "stone deaf," and therefore unfit, to that extent, for instruction in a public elementary school.

The number of cases examined for the purposes of the table of associated ear defects given in the appendix was 12,165. They were all children over eight years. The cases of defect in one or both ears was 598.

A study of the table in the appendix will show the following facts:—

Right ear normal and left defective	65 cases or 10.8%
Left ear normal and right defective	54 „ 9.0%
Both ears defective	479 „ 80.2%
	—
	598
	—

Thus the deafness was limited to one ear in nearly 20% of all cases of deafness.

From the table of associated ear defects also it may be gathered that where both ears were defective the degree of defect was commonly the same in the two. For example, if the grade of hearing in the right ear were 10—5 the strong presumption was that the left ear, if defective at all, would be found to be defective to the same degree, viz., 10—5.

The following statements, based on facts collected from the same table, will enable us to arrive at the numbers suffering from a really disabling degree of deafness among children of eight and upwards:—

Both ears “deaf,” “very deaf” or of worse degree	299 cases or 50.0%
Right ear “slightly deaf” and left ear “deaf” or of worse degree	45 „ 7.5%
Left ear “slightly deaf” and right ear “deaf” or of worse degree	55 „ 9.2%
Both ears “slightly deaf” ..	199 „ 33.3%
	—
	598
	—

A child who is “slightly deaf” in both ears, or one who, though “deaf,” “very deaf,” or even of worse degree in one ear, is, nevertheless, normal or but “slightly deaf” in the other, can often put up with his difficulties very well. Such cases account for 50% of the total number of deaf cases.

Teeth.—The distribution of dental caries is illustrated in the following table:—

DENTAL CARIES.

Age.	5-6						8-9				12-13		13-14		TOTALS AND MEANS.											
	Boys.			Girls.			Boys.		Girls.		Boys.	Girls.	Boys.	Girls.												
	Urban	Rural		Urban	Rural		Urban	Rural	Urban	Rural																
Sex.																										
Area.																										
No. Inspected.	2227	2004	2291	1774	2117	1854	2134	1852	1234	1272	863	852	20474													
Dentures sound	432	19.3	342	17.0	433	18.9	285	16.0	206	9.7	175	9.4	221	10.3	213	11.5	272	22.0	252	19.8	192	22.2	168	19.7	3191	15.5
Cases with 4 or more teeth carious	993	44.6	940	46.9	960	41.9	842	47.4	1035	48.9	947	51.0	1024	47.9	914	49.3	407	32.9	355	27.9	274	31.7	268	31.4	8959	43.7

The presence of caries is judged by inspection only without the aid of mirror and probe. "Sound denture" means the absence of such things as decay, overcrowding, etc., but it does not mean that every tooth was present which might have been present. If a tooth had been extracted or successfully stopped the case would still be classed among the sound dentures.

The figures may be compared with those given in the Memorandum on the Teeth of School Children prepared for the Commission of the Board of Education on Medical Inspection (see Memorandum, British Dental Association, tab. vii., p. 6, 1906.).

Age	4—6	7—9	13—15
No. Examined	744	1716	2376
Sound (no decay) ..	p.c. 23·8	p.c. 14·2	p.c. 14·1

A study of the foregoing table (page 53) under the divisions of age, sex, and area (taking ages 12—13 and 13—14 together since all of the former age are rural and all of the latter urban), shows the following results as to sound dentures and extensive caries :—

Group.	No. examined.	Sound dentures.	4 or more teeth caries.
Children, 5—6	8296	17·9%	45·0%
„ 8—9	7957	10·2%	49·2%
„ 12—14	4221	20·9%	30·8%
Boys	10299	15·7%	44·6%
Girls	10175	15·4%	42·8%
Urban	10484	15·7%	43·4%
Rural	9990	15·4%	44·0%

Thus, there is no considerable difference between boys and girls or between denizens in urban and rural areas. As to age, children of 8—9 are in the worst case of all; they have fewer sound dentures among them and more cases with four or more teeth carious than children at any other age.

This is, of course, due to the accident of the shedding of the worn-out and often decayed milk teeth about that period. At age 12 this shedding is largely complete, and the statistics of decay therefore are most important at the period 12—14. The number of unsound dentures at this age indicates the irreducible minimum of the dental problem as it stands at present ; and it must be remembered that our figures are rather more favourable than the actual facts would be, since a more elaborate search would still further reduce the number of apparently sound dentures by the discovery of minute specs of incipient decay.

Caries and Uncleaness of Teeth.—The question of uncleaness of the teeth and its connection with caries is one of those apparently simple and obvious questions which may, nevertheless, repay a careful study. It is extremely rare to have teeth noted as unclean when the dentures are sound, and this is claimed as proof of the assertion that cleaning the teeth keeps them sound. But, unfortunately for the argument, in the great majority of such cases the teeth, though perfectly clean, never are *cleaned* ; and the argument is at least as plausible when reversed. In other words, it is just as likely that soundness of teeth and healthy action of all the organs of the mouth effectually prevent uncleaness. Certain it is that this cleanness and soundness of dentures, in the cases observed by me personally, were quite independent of the use of the tooth brush or other means of cleansing the mouth artificially. Not one in a hundred of the children we examine ever sees a tooth brush, and the number of those who use one efficiently must be small indeed ; yet in scores of cases I saw children with perfectly clean, glistening white or ivory teeth. In great numbers of cases, again, the teeth which were carious would be “unclean” in the sense of showing sordes or tartar, while those which were not carious, even when on the same side of the mouth as the carious teeth, would be perfectly clean and shining. Especially is this so at the younger ages, 5—6.

The matter was somewhat fully discussed in the Report for 1908, and it is unnecessary to go over the ground as fully again.

“Uncleanness” is a comprehensive term, and it is necessary to know what it means in relation to teeth. For example, it only leads to confusion to use the term as if it were synonymous with caries, since the progress of caries may often be followed in teeth kept scrupulously clean by brushing. We must begin with an unprejudiced study of the common conditions of the mouth.

UNCLEANNESS.—If we examine the teeth immediately after chewing bread, meat, etc., particles of food are found clinging between and around the teeth, especially in hollows and corners. The teeth are then certainly “unclean.” If the lips of a fevered patient be turned up so as to expose the teeth, even if this be done at a time when he has not been recently masticating, a kind of pultaceous stuff, or sordes, may be seen on the teeth, especially in a semi-circle under the sheltering ridge of the gum. These teeth, also, may with strict accuracy be described as “unclean.” In both cases the material could be wiped or brushed away quite readily. But there are other conditions known to dentists which must be carefully distinguished.

DISCOLORATION.—There is the general darkening or discolouring of the whole tooth as if it had been steeped in very watery blue-black or brown-black ink. This, I think, rather tends to affect all the teeth of the mouth equally and does not so often select particular teeth. So far as my experiments have gone no washing or rubbing makes any difference here ; this is not uncleanness, for it may be seen in teeth well brushed and tended.

Another form of discolouration is that in which the surfaces show coloured flecks sometimes of a rich Vandyke brown. This colouration is seen either in the form of numerous flecks on a tooth-surface, or in larger patches, or the whole of a tooth may be affected ; even every tooth may be extensively affected. It is often seen as a semi-circle of colour running parallel to the edge of the gum at a greater or less distance away.

This colouration in flecks and lines is not, of course, to be confused with the spots of black with zones of blue-grey which indicate at the surface the existence of carious erosion beneath.

How far these brown flecks are to be taken as evidences of uncleanness is doubtful. They are, of course, not "dirt" in the common acceptance of the term; they cannot be removed by scraping with the edge of a glass spatula; but sedulous tooth brushing might conceivably prevent their formation. If the lack of tooth brushing were the sole cause of the flecks one would, however, expect to see more children affected.

TARTAR.—The question of tartar in connection with cleanliness is also of great interest. I have not seen a case of generalised tartar—tartar everywhere—in children. Commonly, one finds one or two teeth heavily encrusted with tartar as if they had been under the drip of petrifying waters, while the neighbouring teeth are entirely free. Such cases are sometimes explained as due to disuse of that set of teeth to which the encrusted one belongs owing to pain in the use of the set—an explanation not wholly free from difficulty.

DEFECTIVE ENAMEL.—Defective enamel means ridged or honey-combed enamel-surfaces, and serrated or crenulated enamel-edges.

The following table is based on a somewhat more detailed study of the conditions of the teeth than was generally given to this subject. Dr. Maclean and the Senior Inspector, in the schools assigned to them, devoted particular attention to the matter, as did also Dr. Moffett for a short time. These schools form the basis of the table. It refers to 3,733 children in 74 schools, urban and rural :—

TEETH.

SPECIAL EXAMINATION OF 3,733 CASES.

Age.	5-6		8-9		12-13		13-14		TOTALS.	
No. Inspected.	1720		1423		490		100		3733	
	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.	No.	p.c.
Four or more Carious	632	36.7	542	38.1	79	16.1	24	24.0	1277	34.2
Irregular and Crowded ..	23	1.3	78	5.4	51	10.4	2	2.0	154	4.1
Unclean	113	6.5	65	4.5	54	11.0	4	4.0	236	6.3
Discolouration	138	8.0	117	8.2	68	13.8	9	9.0	332	8.8
Tartar	75	4.3	33	2.3	8	1.6	6	6.0	122	3.2
Faulty Enamel	2	0.1	—	—	3	0.6	—	—	5	0.1
Suppurative Conditions ..	1	0.05	4	0.28	—	—	1	1.0	6	0.1
Hutchinsonian	—	—	1	0.07	—	—	—	—	1	0.02
Other Conditions	—	—	1	0.07	2	0.4	—	—	3	0.08

In regard to this table it may be well to recur for a moment to the distinction between uncleanness and caries. It frequently happens in a mouth containing some carious teeth that the teeth generally are perfectly clean and bright, although the carious teeth may contain in their hollow shells the brown *débris* of decay. It seems wholly inappropriate to describe such teeth as "unclean," although such *débris* might conceivably be removed by means of a suitable brush or scraper. The *débris* is an incident belonging to caries and not to unclean habits; it is not "dirt" any more than *pus laudabile* is dirt. We do not call a healing ulcer "unclean" merely because it is exuding pus.

It will be noticed that there is a preponderance of cases of crowding and irregularity at ages 8—9 and 12—13, due no doubt to the eruption of the permanent teeth into mouths not, in many cases, sufficiently expanded to accommodate them.

The cases strictly and fairly to be called unclean were only 6 or 7%, a number which absolutely disposes of the contention that mouths can only be kept clean by brushing or similar artificial means. Over 90% of mouths keep themselves clean. Even if the cases of discolouration and tartar be added, it only amounts to 18% of cases which could by any possible stretch of language be denominated unclean.

Nose and Throat.—In the routine examination prescribed by the Board of Education it is not possible to attempt a complete examination of throat, nose, and ear. Both time and conveniences are lacking. We must therefore select certain salient symptoms, and draw what conclusions the facts seem to warrant with becoming modesty. Especially must we insist on a strict definition of terms.

ENLARGED TONSILS.—If any distinct prominence of one or both tonsils is noticed it is recorded as enlarged tonsils.

MOUTH BREATHING.—It is in practice impossible to subject children of all ages and states of health to a routine palpation of the naso-pharynx. We have, therefore, discarded the category “adenoids” in our analyses, although the diagnosis of adenoids may have been made in individual cases.

The possible causes of mouth-breathing may be enumerated as:—(1) Overcrowding of the naso-pharyngeal spaces with adenoid growths; (2) anatomical narrowness of the nasal passages, or permanent obstruction of a non-adenoid character such as deflected septum of the nose, tumours, etc.; (3) temporary but it may be frequently repeated obstruction of passages through catarrhal swelling of mucous membranes or turgescence of the erectile tissue of the septum and turbinate bones—this turgescence may, apparently, in certain oversensitive states of the nasal membranes, cause complete obstruction with surprising suddenness, and a person breathing easily at one moment may in a few seconds find the nasal passage completely blocked; (4) purely habitual mouth-breathing, the habit having been established in early life from a necessity which no longer exists; (5) a short upper lip, or some other anatomical peculiarity of the mouth, rendering it difficult to keep the lips closed, may give an appearance of mouth-breathing, and may conceivably give rise to genuine mouth-breathing as a habit; but it must be remembered that stoppage of the entrance of air at the mouth is as much a function of the tongue closely applied to the hard palate as it is of the lips, and therefore imperfect apposition of the lips would not of necessity imply the passage of air through the mouth.

Thus, we must distinguish between apparent mouth-breathing and real mouth-breathing; and, in cases of the latter, between mouth-breathing with actual nasal impediment and that without it which is merely a habit.

The detection of mouth-breathing is not usually difficult: the open mouth and hanging jaw in most cases sufficiently attest it though they do not necessarily establish the fact. When the child is told to keep the mouth shut the embarrassment of breathing in the real cases with actual impediment is soon apparent. There are, of course, various degrees of embarrassment, and we may have complete and incomplete cases of mouth-breathing. In regard to the partial cases it will be obvious that we are dealing with a condition as to which different observers may be expected to give different estimates, perhaps even widely different.

If we except the cases due to merely habitual mouth-breathing, and those other cases due to peculiarity of the anatomical structure of the lips and mouth with no true impediment to nose-breathing, which must together be relatively few in number, the term mouth-breathing becomes synonymous with impeded nose-breathing. But impeded nose-breathing may be due to causes other than adenoids. Unfortunately, owing to the practical impossibility of palpating the back of the nose as a routine procedure, we are not in a position to discriminate between the various causes in the case of our children. Mr. Macleod Yearsley, however,* found in the cases examined by him that about one-sixth or one-seventh of the total number of mouth-breathers had neither adenoids nor tonsils, and owed their mouth-breathing to other causes.

CHRONIC PHARYNGITIS.—With cases of true chronic pharyngitis, marked by the whole symptom-complex of enlarged mucous glands, dusky red and dry throat, cough, etc., were included last year all those cases in which the mucous glands of the pharynx are seen to be swollen to the size of of a large pin-head, whether clinically chronic pharyngitis or not. This was misleading, and the practice has not been followed. It is certain that such swollen mucous glands

* YEARSLEY, MCLEOD: "Occurrence of Adenoids in three of the L.C.C. Elementary Schools.—*Brit. Jour. Children's Diseases*. Vol. VII. London. Feb. and March, 1910.

may be present, at least in the years of childhood, without causing any of the annoyances of chronic pharyngitis.

ENLARGED CERVICAL AND SUBMAXILLARY GLANDS.—The prevalence in children of cervical glands which can be recognised by palpation is very great indeed. It is perhaps an academic point whether such glands should be called pathological, as being due to some peripheral irritation, or natural. On the one hand, there is a large proportion of children with verminous heads and decayed teeth, both of which conditions are efficient causes of glandular enlargement in the neck ; on the other hand, slightly enlarged or palpable cervical glands may be detected in children without any discoverable peripheral cause. The submaxillary glands are much less often to be felt on palpation. No glands are called submaxillary which are behind the level of the front edge of the masseter-muscle. I believe that our enumeration of cervical glands may possibly include a number of cases which some other observers might pass by as not worthy of notice, though we have by no means noted all cases that were palpable.

The following are the figures :—

NOSE AND THROAT.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.					
	BOYS.			GIRLS.			BOYS.			GIRLS.			BOYS.		GIRLS.		BOYS.		GIRLS.							
	Urban	Rural.	No.	Urban	Rural	p.c.	Urban	Rural	No.	Urban	Rural	p.c.	Urban	Rural	No.	Urban	Rural	p.c.	Urban	Rural		No.	Urban	Rural	p.c.	
No. Inspected.	2227	2004		2291	1774		2117	1854		2134	1852		1234	1272		863	852		20474							
Mouth-breathing ..	152	6.8	126	6.2	149	6.5	105	5.9	136	6.4	82	4.4	76	3.5	91	4.9	39	3.1	28	2.2	35	4.0	26	3.0	1045	5.1
Chronic pharyngitis	156	7.0	102	5.0	110	4.8	92	5.1	164	7.7	142	7.6	153	7.1	115	6.2	95	7.6	107	8.4	76	8.8	54	6.3	1366	6.6
Tonsils enlarged ..	454	20.3	418	20.8	439	19.1	359	20.2	398	18.8	389	20.9	427	20.0	388	20.9	259	20.9	315	24.7	164	19.0	199	23.3	4209	20.5
Cervical glands enlarged	606	27.2	577	28.7	643	28.0	481	27.1	521	24.6	398	21.4	558	26.1	427	23.0	206	16.6	215	16.9	92	10.6	146	17.1	4870	23.8
Submax. glands enlarged	87	3.9	53	2.6	69	3.0	59	3.3	23	1.0	22	1.1	31	1.4	32	1.7	10	0.8	7	0.5	29	3.3	40	4.6	462	2.2
Totals ..	1455	65.3	1276	63.6	1410	61.5	1096	61.7	1242	58.6	1033	55.7	1245	58.3	1053	56.8	609	49.3	672	52.8	396	45.8	465	54.5	11952	58.3

A consideration of the table of throat and nose ailments under the heading of age, sex, and area yields some results of interest ; ages 12—13 and 13—14 are combined in order to neutralise the influence of area, since children 12—13 are exclusively rural and children 13—14 exclusively urban.

Taking all the ailments of these organs together, there were :—

Group.				No. examined.	All nose and throat ailments.
Children, 5—6	..	..	..	8296	63.1%
„ 8—9	..	..	..	7957	57.4%
„ 12—14	..	..	..	4221	50.7%
<hr/>					
Boys	..	..	..	10299	58.3%
Girls	..	..	..	10175	58.3%
<hr/>					
Urban	..	..	..	10484	59.2%
Rural	..	..	..	9990	57.4%

Thus, there is no difference between girls and boys, and the slight excess of cases among urban children appears to be without significance. There is, however, a marked decline in the numbers of all throat diseases as the children are older.

This decline does not equally affect all the diseases, and the differences are instructive. For example, tonsillar enlargement is steady at all ages, or rather tends upwards at the ages 12—14. So also with chronic pharyngitis, which shows a rise from age 5—6 to age 12—14.

Group.				No. examined.	Enlarged tonsils.	Chronic pharyngitis.
Children 5—6	..	..	..	8296	20.1%	5.5%
8—9	..	..	..	7957	20.1%	7.2%
12—14	..	..	..	4221	22.1%	7.8%
<hr/>						
Boys	..	..	..	10299	20.2%	7.1%
Girls	..	..	..	10175	20.9%	6.2%
<hr/>						
Urban	..	..	..	10484	19.8%	6.8%
Rural	..	..	..	9990	21.4%	6.5%

On the other hand, mouth-breathing, enlarged cervical glands, and to a slighter extent submaxillary glands suffer a marked and gradual diminution as the children are older.

Children—		No. examined.		Mouth breathing.		Cervical glands enlarged.		Submax. glands enlarged.
Group								
5—6	..	8296	..	6.4%	..	27.8%	..	3.2%
8—9	..	7957	..	4.8%	..	23.9%	..	1.3%
12—14	..	4221	..	3.0%	..	15.6%	..	2.0%
<hr/>								
Boys	..	10299	..	5.5%	..	23.2%	..	2.1%
Girls	..	10175	..	4.6%	..	24.2%	..	2.3%
<hr/>								
Urban	..	10484	..	5.4%	..	24.4%	..	2.6%
Rural	..	9990	..	4.7%	..	23.0%	..	1.8%

Connection of Nose and Throat Diseases.—The disagreement of practitioners as to enlarged tonsils and adenoids and the need of operation in particular cases is the opprobrium of medical practice, and no other region of the body has been so fertile of disregarded advice on the part of the laity. Nor has this disregard always led to the discomfiture of the laity. I am speaking now of unquestionably large growths. Should they be removed simply because they are there? And, if not, what amount of disability should be held to justify operation?

Whatever scruples may commonly be felt, there would probably be no disagreement as to the wisdom of operating if hearing is threatened or affected. It is, therefore, of the first importance to establish the degree of correlation between the various conditions of throat, nose, and ear.

The number of cases at disposal for the present inquiry was 12,178. The children varied in age from 8—9, 12—13, and 13—14 years, and were composed of girls and boys, urban and rural, in about equal proportions.

Turning first to the cases of mouth-breathing and their connection with deafness, we find that there were 4.2%, or 513 cases of mouth-breathing. Of these, 489 were made use of in this branch of the inquiry, and among them no less a number than 169 suffered from deafness. In other words, 35.5% of the mouth-breathers were deaf. As the mean percentage of cases of deafness in the whole number of children under examination amounted to only 5%, it will readily be understood in what peril of deafness mouth-breathers stand.

The next point is equally clear. Out of 12,178 children examined there was a certain group numbering 2,523 who had enlarged tonsils. This was sub-divided into two, a smaller group numbering 150 who were mouth-breathers, and a large group of 2,373 who were not. Among the latter there were 106 who were deaf, or 4·4%—a percentage which is slightly less than the mean percentage of deaf cases in the whole group.

It may be stated, therefore, that the possession of enlarged tonsils, if not accompanied by mouth-breathing, did not in this fairly large group of children entail any special liability to deafness. And not only so, but if we may assume that a large number of those tonsil cases had adenoids as well—and five-sixths of Mr. Yearsley's tonsil cases had adenoids—then we may go further and state that the possession of adenoids, if similarly unaccompanied by mouth-breathing, entailed no preponderance of cases of deafness.

This, if sustained, is a conclusion of considerable interest. It might have been thought that adenoids would be likely in some proportion of cases to interfere with the Eustachian tubes and cause deafness without at the same time causing such an impediment in the nose as to lead to mouth-breathing ; but apparently this did not happen in any number of cases capable of raising the percentage of deaf cases above the mean. It seems as though we might generalise and say : No mouth-breathing, no deafness, so far as least, or adenoids may be a cause of deafness. Mr. Yearsley tells us that 10·8% of his adenoid cases had ear complications, but I do not think he anywhere tells us whether all those ear cases, or what proportion of them, were mouth-breathers.

Finally, as to the connection or degree of correlation between enlarged tonsils and adenoids, on the one hand, and mouth-breathing on the other. The mean percentage of cases of mouth-breathing in all the children examined in this inquiry was 4·2% or 513 cases out of 12,178 children. If, however, we limit the search for mouth-breathers to those children having enlarged tonsils, of whom there were 2,523 cases available for comparison, the number of cases of mouth-breathing among them was 150, that is 5·9 per cent. Thus, the possession of enlarged tonsils by a part of

the group of 12,178 children (accompanied, as we must suppose them to be in no small proportion of cases, by adenoids) was associated with a preponderance of cases of mouth-breathing in that part above the mean percentage in the whole group.

The preponderance may be illustrated in another way. If we divide the 12,178 children examined into two groups, one marked by the possession of enlarged tonsils (2,539), and the other not (9,639), about one-third of the cases of mouth-breathing will be found in the tonsil group and about two-thirds in the non-tonsil group. But if this is the case with mouth-breathing, we may infer that it is also the case with adenoids so far as they are a cause of mouth-breathing, and therefore probably with adenoids in general. In other words, there is reason to believe that one-third of all the cases of adenoids were to be found in the tonsil group and two-thirds in the non-tonsil group.

This is in fact the ratio of the distribution of adenoid cases given by Holt when he says that adenoids are associated with enlarged tonsils in about one-third of the cases of adenoids.* In Mr. Yearsley's cases, adenoids were associated with enlarged tonsils in about two-thirds of the cases of adenoids.

The total number of cases of enlarged tonsils in the group examined was 2,539, or 20·8%. It is impossible to give an enumeration of adenoids from the data collected. The greatest variations seem to exist as to the numbers of adenoid cases in different groups of children, as may be inferred from the following figures quoted by Pfaundler and Schlossmann.† Among school children, Kafemann found 17%, Schmuckmann 30%, Felix 28 to 35%, Wilbert 62%. Körner found adenoids in 36% of sea-coast dwellers. Mr. Yearsley, in the paper just quoted, found 37·8% among his London school children.

The practical conclusion is that mouth-breathing rather than visible tonsils or palpable adenoids is the determining factor in regard to operations on the naso-pharynx and throat which are contemplated for the sake of saving the hearing.

*HOLT, EMMETT: "Diseases of Infancy and Childhood." London: Sidney Appleton, 1907. p. 299.

† PFAUNDLER & SCHLOSSMANN: "The Diseases of Children." Philadelphia and London. Lippencott Co. 1908. Vol. III., p. 50.

The preceding data may be summarised :—

	No. Inspected.	No. of Cases.	p.c.
<i>Cases of—</i>			
Enlarged tonsils among all children, 8—9, 12—13, 13—14	12178	2539	20·8
Mouth-breathers among all children, 8—9, 12—13, 13—14	12178	513	4·2
Mouth-breathers among children of above groups with enlarged ton- sils	2523	150	5·9
Deafness among all children of above groups	12178	611	5
Deafness among children of above groups with mouth-breathing ..	489	169	35·5
Deafness among children of above groups with enlarged tonsils but without mouth-breathing ..	2373	106	4·4

Heart.—In this classification, “Functional Defects” includes hæmic murmurs, irritability, and rapid or irregular pulse without obvious lesion. Dilatation is always put down under “Disease Lesions.” “Feeble Circulation” is the name given to certain cases of blue extremities and cheeks. These are probably cases of vasomotor disorder, if disorder it be; and the chief characteristic of the cases is a curious symptom which I do not remember to have seen discussed. When fully developed the symptom is very striking. It is often typically seen in children of what used to be called the dark-haired strumous type, with coarse dark hair and rough heavy skin. It shows itself as a dusky purple red colour, not unlike that of the coloured side of a peach, on cheeks and ears and hands. The feet also show it. In cool weather the colour is bluer, and the hands then look almost as if gloved, the bluish colour extending an inch or two above the wrists. When the skin is squeezed white by the pressure of the finger tip, the colour returns very slowly. It is, indeed, a kind of localised cyanosis. There is nothing

remarkable about the heart sounds or the pulse ; but you can often get a history of chilblains in the winter. The children often seem strong muscularly, heavy and sturdy.

This is a description of a fully-developed typical case, but there are many slighter grades shading off into a condition which might on a cursory inspection be set down to chilly weather. It is, however, usually quite easy to distinguish between the two conditions.

It is commonly called "feeble circulation," but this is a very imperfect designation if it implies feebleness of the circulatory organs generally. It would lead us too far to discuss its points of analogy to Raynaud's disease.

The figures illustrating Heart and Circulation are given in the following table :—

HEART AND CIRCULATION.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.
	Boys			Girls			Boys			Girls			Boys		Girls		Boys		Girls		
	Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Rural		Urban	Rural		Urban	Rural		
No. Inspected.	2227	2004	2291	1774	1854	2117	1854	2134	1852	1234	1272	863	852	20474							
Developmental defects	2 0-09	4 0-19	..	1 0-05	2 0-09	2 0-09	4 0-21	2 0-09	4 0-21	..	1 0-08	..	..	20 0-09							
Functional defects	88 3-95	108 5-39	91 3-98	89 5-02	88 4-16	88 4-16	73 3-94	114 5-34	113 6-10	62 5-03	78 6-13	34 3-94	69 8-09	1007 4-92							
Disease lesions	33 1-48	17 0-84	26 1-14	19 1-07	25 1-18	25 1-18	13 0-70	31 1-45	34 1-83	7 0-57	18 1-41	10 1-16	11 1-29	244 1-19							
Feeble circulation	89 3-99	52 2-59	125 5-45	51 2-87	126 5-95	126 5-95	71 3-83	136 6-37	121 6-53	87 7-05	110 8-65	46 5-33	53 6-22	1067 5-21							
Totals	212 9-52	181 9-03	242 10-56	160 9-02	241 11-38	241 11-38	161 8-68	283 13-26	272 14-68	156 12-64	207 16-27	90 10-43	133 15-61	2338 11-42							

The total number of heart affections is too small to make a detailed analysis very valuable. Twenty cases of congenital, developmental defect were observed—about one per thousand children. Functional disorders—hæmic murmurs, “irritability,” etc.—were somewhat more prevalent at 12—14 than at earlier ages, and more prevalent among girls than among boys.

Organic diseases were approximately equal at all ages, but were slightly more prevalent among girls than among boys, and very slightly more prevalent in urban areas than in rural. But the so-called “Feeble Circulation” shows more interesting differences. There were over 1,000 cases noted, and they were for the most part only the well-marked ones; there is a progressive increase in the relative number of them as the children are older, from about $3\frac{1}{2}\%$ at age 5—6, $5\frac{1}{2}\%$ at age 8—9, to $6\frac{1}{2}\%$ at age 12 to 14; and there are relatively more among girls than among boys (about 6% and $4\frac{1}{2}\%$ respectively); but they occur in equal numbers among urban and rural children.

Lungs.—It is not to be expected that children well enough to attend school should present evidences of well-defined and typical lung diseases. Such well-defined lung diseases, if occurring at school age, must be looked for among the absentees at home or in hospital. Speaking generally, the facts elicited at medical inspection under the heading “Lungs” are a mere assortment of clinical oddments.

One such sign or symptom, viz., dulness in patches, it seemed worth while to classify separately. It is certain that very many children who seem in good health have patches of chest-surface which do not resound to a blow of the finger tips like the rest of the surface of the chest. The surface just below the collar-bone is specially liable to show this peculiarity. When you listen with a stethoscope over the dull patch, the breath sounds are not remarkable in any way; it is merely the sound emitted on percussion which is wrong. No doubt this symptom is due to a variety of causes—slightly abnormal position of solid organs below, thickened pleura left by past inflammation, local atelectasis, consolidation—and therefore very various

degrees of importance are to be assigned to it in different cases. It is by far the most frequent sign recorded under "Lungs," and it is to be suspected that a more elaborate investigation of all cases would have greatly increased the number.

LUNGS.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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It will be noticed that catarrhs are much more prevalent at 5—6 than at later ages—they are twice as prevalent as at 8—9, and four times as prevalent as at 12—14. They are also rather more prevalent among boys than girls, and in urban areas than in rural.

It is interesting to notice the rarity of asthma—three cases out of over 20,000 children. Last year there were two cases out of nearly 10,000 children. Pleurisy also is nearly equally rare. But we do not know how many were being kept at home for these complaints.

As to the cases of dulness in patches, they increase in frequency with age, being present in nearly 5% of cases at age 5—6, nearly 6% at age 8—9, and over 8½% at age 12—14. They were rather more frequent in boys than in girls, and decidedly more frequent in urban children than in rural.

Kidneys.—Diseases of the kidney (including cases of albuminuria as such) would probably present a respectable total if we had facilities for examining all children ; but this is impracticable in the conditions of school inspection. Nevertheless, cases come before us from time to time with a history more or less valuable of an attack of Bright's disease and symptoms which suggest the possibility that the disease may still be active. Or in other cases, without any such history, the symptoms exhibited by a child, though not conclusive evidence of kidney disease, may be strongly suggestive of the need of a special investigation of those organs. In all these cases we call the attention of parents to the suspicious symptoms, and strongly urge the calling in of their own doctor, and, if necessary, we exclude the case until assurance can be had that the child is fit for school life.

Nervous System.—What was said under " Lungs " applies to some extent here. Clinical symptoms rather than pathological inferences have to be recorded. Under " Functional " are grouped nervousness as commonly understood, nervous frequency of micturition, nervous tremors with no suspicion of organic disease attached, etc. :—

NERVOUS SYSTEM.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.
	Boys			Girls			Boys			Girls			Boys		Girls		Boys		Girls		
	Urban		Rural	Urban		Rural	Urban		Rural	Urban		Rural	Boys		Girls		Urban		Urban		
	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.	No. p.c.		
Sex.	2227	2004	2291	1774	1854	2117	1854	2134	1852	1234	1272	863	852	20474							
Area.	2227	2004	2291	1774	1854	2117	1854	2134	1852	1234	1272	863	852	20474							
No. Inspected.	2227	2004	2291	1774	1854	2117	1854	2134	1852	1234	1272	863	852	20474							
Spasmodic affections	..	5 0.22	3 0.15	5 0.22	..	..	4 0.19	12 0.64	9 0.48	3 0.24	2 0.16	2 0.23	2 0.23	49 0.24					
Paralysis	7 0.31	4 0.19	7 0.30	4 0.22	4 0.19	6 0.32	4 0.19	1 0.05	5 0.40	3 0.24	3 0.35	..	48 0.24							
Epilepsy	4 0.19	..	2 0.11	2 0.09	5 0.27	1 0.05	4 0.21	1 0.08	2 0.16	3 0.35	1 0.12	25 0.12							
Chorea	2 0.09	..	1 0.04	2 0.11	1 0.05	1 0.05	..	..	..	1 0.08	..	..	8 0.04		
Headache	24 1.08	12 0.59	29 1.27	10 0.56	59 2.79	40 2.15	82 3.84	55 2.97	31 2.51	53 4.17	15 1.74	29 3.40	439 2.14							
Functional	21 0.94	20 0.99	30 1.31	23 1.29	20 0.94	13 0.70	29 1.36	30 1.62	12 0.97	13 1.02	8 0.93	6 0.70	225 1.09							
Totals	59 2.64	43 2.14	72 3.14	41 2.31	90 4.25	77 4.15	118 5.53	99 5.34	52 4.21	74 5.81	31 3.59	38 4.46	794 3.88							

The figures under most of the headings of nervous diseases are too small to render a detailed analysis of any real value.

Headaches are equally prevalent at ages 8—9, 12—14. (We may disregard the record of headache at age 5—6 for comparative purposes, since so many children at this age are unable to give a trustworthy account of their own experiences ; at later ages this is not so. I have often been impressed by the precision and accuracy of the observations of children at 8—9 and later.) Headache is more prevalent among girls, but as between urban and rural there is little difference. The same is true of the nervous disorders called “ Functional ” ; they are exhibited more frequently by girls than by boys ; but there is no marked difference according to age or locality, whether rural or urban.

Mental Condition.—No attempt was made to gauge the mental condition of the children of 5—6. The mental condition of the older children is here given :—

MENTAL CONDITION.

Age.	Sex.	Area.	No. Inspected.	8-9						12-13						13-14						TOTALS AND MEANS.
				Boys.			Girls.			Boys.			Girls.			Boys.			Girls.			
				Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		
				2117	1854		2134	1852		1234	1272		863	852		12178						
Bright and Fair	..			No. 1937	p.c. 91.49	No. 1723	p.c. 92.93	No. 2045	p.c. 95.83	No. 1753	p.c. 94.65	No. 1146	p.c. 92.87	No. 1217	p.c. 95.68	No. 815	p.c. 94.44	No. 822	p.c. 96.48	No. 11458	p.c. 94.09	
Dull and Backward				166	7.84	123	6.63	82	3.84	95	5.13	82	6.64	54	4.24	43	4.98	29	3.40	674	5.54	
Mentally deficient	..			13	0.61	8	0.43	7	0.33	4	0.21	6	0.48	1	0.08	4	0.46	1	0.12	44	0.36	
Imbecile	..			1	0.05	..	..	..	..	..	..	..	..	..	..	1	0.12	..	..	2	0.02
Totals	..			2117	100.0	1854	100.0	2134	100.0	1852	100.0	1234	100.0	1272	100.0	863	100.0	852	100.0	12178	100.0	

There were 44 mentally deficient and 2 imbecile children. Of these, 33 were boys and 13 girls ; 27 were urban children and 19 rural.

The percentage of mentally defective is 0·36. The percentages of the Commission on the Care of the Feeble Minded varied from 0·28 to 1·24 (see Report, p. 90).

Taking the dull and backward children, of whom there were 5·5% recorded this year as against 5·2% last, they are somewhat fewer in relative numbers at the later age 12—14, as might have been expected. There was little difference between urban and rural areas, urban areas showing about half per cent. below the mean average percentage of the group, and rural areas about half per cent. above the mean. But there was a marked difference between boys and girls, the percentages being 6·5 and 4·1 respectively.

Anaemia.—The following are the figures as regards anæmia, sub-divided according to degree :—

ANÆMIA.

Age.	5-6						8-9						12-13		13-14		TOTALS AND MEANS.							
	Boys			Girls			Boys			Girls			Boys		Girls									
	Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban		Rural						
Area.	2227	2004		2291	1774		2117	1854		2134	1852		1234	1272		863	852		20474					
No. Inspected.																								
Marked	88	3.95	53	2.64	118	5.15	109	5.15	43	2.32	162	7.59	71	3.83	30	2.43	37	2.91	17	1.97	35	4.11	825	4.03
	227	10.19	209	10.43	341	14.88	193	9.11	118	6.36	312	14.62	203	10.96	71	5.75	134	10.53	61	7.07	75	8.80	2167	10.58
Slight																								
Totals	315	14.14	262	13.07	459	20.04	302	14.26	161	8.68	474	22.21	274	14.79	101	8.18	171	13.44	78	9.04	110	12.91	2992	14.61

We may now dissect the figures for anæmia under the headings of age, sex, and area. As before, ages 12—13 and 13—14 are taken together to equalise the urban and rural elements, the former age including none but rural children, the latter none but urban. Taking all cases of anæmia together, there were :—

Group.			No. Inspected.	All cases of Anæmia.	
Children	5—6..	..	8296	..	15·9
	8—9..	..	7957	..	15·2
	12—14	..	4221	..	10·7
<hr/>					
Boys	..	..	10299	..	11·8
Girls	..	..	10175	..	17·4
<hr/>					
Urban	..	..	10484	..	16·6
Rural	..	..	9990	..	12·5

The mean percentage of anæmia cases this year is 14·61, as against 15 last year.

It will be noticed that there is a decline in the number of cases of anæmia at ages 12—14 as compared with earlier ages. There is also a decidedly greater degree of prevalence among girls than boys, but this was not the case last year. There is a decided excess of cases also in urban areas as compared with rural, but the difference is less than was noted last year.

In the absence of any objective standard, it is clear that the estimation of anæmia by the personal impressions as to colour of each inspector must lead to widely divergent results as between different inspectors, though I believe the results of the same inspector will not be found to vary much.

Speech.—The following are the figures relating to speech :

The cases of defect of speech are too few to make a detailed comparison by age, sex, &c., worth while. Taking all defects together, there are decidedly more of them at the early ages. As the defects include idioglossia, or continuance of "baby language," and indistinctness, this is what would naturally be expected. The number of stammerers, however, does not fall off with age; there was a rather larger relative number of cases at 12—14 than at earlier ages; but in the other kinds of defect the numbers all fall off.

Boys have a relatively larger share of defects than girls, and rural children have somewhat more than urban according to percentages.

Tuberculosis.—Cases of bone disease, or of lung disease, when they are supposed to be tuberculous, are entered here as well as under the heading of their proper organs.

It is perhaps unnecessary to say that the diagnosis of tuberculosis could not always be made with absolute confidence. Some of the cases must be considered to be such on strong suspicion only.

The following are the figures:—

TUBERCULOSIS.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.
	Boys.			Girls.			Boys.			Girls.			Boys.		Girls.		Boys.		Girls.		
	Urban	Rural	No. p.c.	Urban	Rural	No. p.c.	Urban	Rural	No. p.c.	Urban	Rural	No. p.c.	Rural	Urban	Rural	No. p.c.	Urban	Urban	Urban		
No. Inspected.	2227	2004	2291	1774	1854	2117	1852	2134	1852	1234	1272	863	852	20474							
Glandular	11 0.49	6 0.29	5 0.22	2 0.11	4 0.21	8 0.38	6 0.32	8 0.38	6 0.32	3 0.24	1 0.08	6 0.69	6 0.70	66 0.32							
Osseous	3 0.13	2 0.09	..	1 0.06	7 0.38	1 0.05	2 0.11	1 0.05	2 0.11	2 0.16	1 0.08	2 0.23	1 0.12	23 0.11							
Pulmonary	3 0.13	3 0.15	2 0.09	3 0.17	1 0.05	5 0.23	4 0.21	6 0.28	4 0.21	4 0.32	2 0.16	..	1 0.12	34 0.16							
Abdominal	1 0.05	..	1 0.04	..	..	..	..	1 0.05	..	..	..	..	..	3 0.01
Cutaneous	..	..	..	..	1 0.05	..	1 0.05	..	1 0.05	..	..	1 0.12	1 0.12	4 0.02	
Totals	18 0.80	11 0.54	8 0.35	6 0.34	13 0.70	14 0.66	13 0.70	16 0.75	13 0.70	9 0.73	4 0.31	9 1.04	9 1.05	130 0.63							

The numbers of the cases of tuberculosis are altogether too small to justify dissection according to age, &c. The proportion of cases of pulmonary tuberculosis which came to light was the same as last year, viz., 0.16%.

The Chief Medical Officer of the Board of Education, in his First Annual Report, dated 1910, p. 65, gives figures which show that the average number of cases of pulmonary phthisis amounted to 0.33% out of a total number of 194,740 children examined as routine cases (*i.e.*, not cases specially selected on account of being ill). The constituent Education Areas on which his summary is based yield percentages varying in the different areas from 0.053 to 3.321—very wide limits of variation.

The absence of any agreement among observers as to a criterion of early tuberculosis makes the statements of the numbers of such cases among school children somewhat ridiculous reading. The statements as to the frequency of all cases of tuberculosis—not merely pulmonary—vary from 0.1% to 55%, according to the proclivities of the various quite competent observers as to what shall be regarded as evidence of incipient tuberculosis.*

As a matter of fact, as was argued in my Report last year, if we assume the morbidity rate of all tubercular cases to be about ten times the mortality rate, it only requires an incidence of about 11 or 12 tuberculous children per thousand children of school age to account for a *post-mortem* rate of 40% showing signs of tubercle, which is a rate accepted commonly by pathologists. The argument is too long to repeat here, but it may be re-stated in a briefer and slightly different form.

The records of *post-mortems* of children of school age would lead us to infer that $\frac{4}{10}$ of all dying children have tuberculous lesions or disorders; $\frac{3}{10}$ are actually dying of tuberculosis, but $\frac{4}{10}$ have lesions. Now the total number of children of school age who die is about 3 per 1,000 living. This is the mortality rate per thousand living at ages 5—15 given by Dr. Tatham for the quinquennium 1901-5 in the 69th Report of the Registrar General, 1908, p. lxxiii. (Dr. Tatham's actual figure is 2.920).

* See for example a paper quoted in *Zeitsch. f. Schulgesundheitspflege*. (Hamburg: LEOPOLD VOSS). 1910. p. 275.

Therefore, if $\frac{4}{10}$ of all dying children are tuberculous, the number of children dying with tubercular lesions is 1.2 for every 1,000 living. And if the tubercular morbidity be assumed to be ten times the tubercular mortality, it follows that 12 per thousand living at school age is the number of children suffering from tuberculosis. Assuming further that the ratio of pulmonary tuberculosis to all cases of tuberculosis is as 3 to 7—a generally accepted ratio—we arrive at the conclusion that the number of children of school age with pulmonary tuberculosis is normally 5 per 1,000 living.

Thus, the known fact that the mortality rate per thousand children living at ages 5—15 is 2.920, and the known fact that in 40% of all *post-mortems* of children tubercular lesions or injuries are discovered, lead rather strongly to the presumption that there cannot be more than about 5 per thousand children of school age with pulmonary phthisis. Some of these 5 per thousand cases would be at school, but some, of course, would be too ill to be there. Hence, it follows that the medical inspectors of children at school who record proportions of pulmonary phthisis ranging below 5 per thousand, or 0.5%, are likely to be nearest the mark; that is to say, always assuming that the morbidity rate is about ten times the mortality rate—which may, however, be an unwarrantable assumption.

Rheumatism.—Rheumatism is a frequent disease of childhood after the first two years of life. It sometimes occurs in the guise of a trifling ailment—"growing pains"—which, however, is easily recognisable by a doctor. It might have been expected that a fair number of cases would be found at school. As a matter of fact, only 9 cases out of over 20,000 children are reported as exhibiting evidences of acute rheumatism at the time of inspection. (This does not include the cases showing cardiac or other evidences of past rheumatism).

Rickets.—Rickets is a disease of pre-school years, occurring for the most part between the ages of 6 months and 2 years. It is commonly believed to attack boys and girls

in equal numbers, and to be more prevalent among town children than among country children.

The prevalence of the disease is variously estimated. The latest figures to which I have had access are contained in a summary of a paper by Thomas and Furrer, published in *The Cleveland Medical Journal*, December, 1907, and summarised in *The Medical Annual* (John Wright & Co., Bristol), 1910, p. 532. At Cleveland, 40% of infants and children of the hospital class between 6 months and 2 years of age were rachitic; in London, according to the same authors, the figures are 44·6%, including children up to 3 years. Dr. Robert Hutchison* speaks of "more than half the children seen in the out-patient room" in many towns; other authors give even larger proportions.

It is not every one of these children who exhibits a gross and obvious rickety deformity. For one case in which rickets has left behind a marked deformity like knock-knees or typical *caput quadratum*, there are a dozen showing enlarged epiphyses, slightly beaded ribs, parietal bosses, or some minor degree of pigeon-chest; but these will only show themselves to those who diligently seek them out. The number recorded, therefore, will vary, not only—or even, perhaps, chiefly—with the time given to the search, but even more with the interest and purpose of the investigator.

Such variations are well illustrated by our figures for rickets. Most of us who were engaged in the actual work of inspection were content to note the salient cases—those, if one may so express it, of interest to the educationist; but Dr. Moffett, who was greatly interested in the distribution of rickets, was asked to note, in addition to the salient cases, every minor case that she detected. The result was that the cases noted by her were many times as numerous as the cases recorded by any of the others. Her cases are included in the general figures for rickets; but they are also given separately, and contrasted with the figures obtained by all the other inspectors taken together.

The following table gives the figures and percentages:—

* HUTCHISON, ROBERT: "Lectures on Diseases of Children." London: Ed. Arnold. 1906. p. 108.

RICKETS.

Age.	5-6						8-9						12-13				13-14				TOTALS AND MEANS.																
	Boys			Girls			Boys			Girls			Boys		Girls		Boys		Girls																		
	Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural		Urban	Rural																	
Sex. Area.	No. Insp. Inspectors except Dr. Moffett	2227	2004	2291	1774	2117	1854	2134	1852	1234	1272	863	852	20474	No. Insp. Dr. Moffett	341	689	392	587	387	679	388	627	441	440	204	168	5343									
		No. 196	p.c. 8.8	No. 269	p.c. 13.4	No. 151	p.c. 6.5	No. 143	p.c. 8.0	No. 143	p.c. 6.7	No. 197	p.c. 10.6	No. 102		p.c. 4.7	No. 101	p.c. 5.4	No. 105	p.c. 8.5	No. 58	p.c. 4.5	No. 47	p.c. 5.4	No. 30	p.c. 3.5	No. 1542	p.c. 7.5									
		129	37.8	242	35.1	122	31.2	130	22.1	120	31.0	176	25.9	90		23.1	98	15.6	99	22.4	55	12.5	41	20.0	27	16.0	1329	24.8									
All Inspectors except Dr. Moffett	No. Insp. Inspectors except Dr. Moffett	1886	1315	1899	1187	1730	1175	1746	1225	793	832	659	684	15131	No. Insp. Dr. Moffett	67	3.55	27	2.05	29	1.58	13	1.09	23	1.32	21	1.78	12	0.68	3	0.36	6	0.91	3	0.43	213	1.40

Thus, Dr. Moffett, giving close attention to the minor evidences of rickets, was able to note nearly 25% of cases of rickets in the children she examined, while the other inspectors, limiting their attention to the grosser and more obvious cases, noted nearly 1.5% of cases.

In spite of the fact that rickets is a disease of pre-school years, and that, therefore, we are merely dealing with the vestiges of a past condition of affairs, a dissection of the figures according to age proved to be of considerable interest.

Taking Dr. Moffett's figures as being more nearly exhaustive, the distribution according to age is as follows:—

Group.	No. Inspected.	Cases of Rickets.
Children 5—6..	2009	32%
8—9..	2081	23%
12—14	1253	18%

Thus, there is such a marked decline in the numbers of cases showing evidences of rickets in the older groups that we are justified in assuming on the part of the patients, not only an ability to survive rickets as an acute disease, but also great powers of reducing, or even completely smoothing away, what seemed likely to be permanent deformities. This power may not seem very surprising in regard to the cases of minor signs like parietal bosses and enlarged epiphyses such as constituted the bulk of Dr. Moffett's cases; but a similar decline is noticed also among the grosser lesions which form the bulk of the cases noted by the other inspectors, which were at age 5—6 present in 2.16% of cases, at 8—9 in 1.04%, and at 12-14 in 0.6%.

It is well known in the experience of doctors in private practice that marked cases of bow-legs will sometimes right themselves, or nearly so, even when nothing is being done in the way of treatment or repair.

Dr. Moffett's figures show a preponderance of cases among boys as compared with girls of 29.4% as against 20%. The figures of the other inspectors, based on the more marked cases, also show a similar inequality (viz., nearly 20 per 1,000 of boys as against 8 per 1,000 of girls). Dr. Moffett points out that the clothing and the long hair of girls would tend to render their deformities, especially the minor ones, less conspicuous, and more easily overlooked on a rapid

survey; but the inequality seems almost too great to be explained in this manner. Among urban children, Dr. Moffett recorded about 28%, among rural children 23%. The proportional numbers of the other inspectors were somewhat similar, viz., 16 per 1,000 urban and 11 per 1,000 rural.

Deformities.—The deformities which may be exhibited by children well enough to go about are very numerous and heterogenous. A broad classification by origin seemed to offer some advantages for demographical purposes.

“Developmental deformities” include all such as are due to arrest, deviation, or excess of normal growth; asymmetrical heads, cleft palates, high palates, supernumerary fingers, unequally coloured irides are all included. Also the cases of slight fulness of the thyroid, of which there are many apparently not pathological. (True goitre would go down as a disease.). Hernias are included here, for it is safe to assume that hernias before the age of 15 are due primarily to weakness of the body walls, and only secondarily to strains. As is well known, the proportion of hernias arising in successive years is greatest in the first year of life, when developmental weakness of body walls is greatest, and gets less and less until the age of 14 or 15 is approached, when strenuous occupations begin, and lead to the production of hernias due to straining.

It is no argument against the validity of the group of “developmental” defects that the relative numbers increase with age; a feature of growth is not the less developmental because it first appears late in life, *e.g.*, the beard in adolescents.

“Pathological deformities” are such as arise as the consequence of diseases. The bowed-legs or knock-knees of rickets are typical cases.

“Traumatic deformities” are such as are due to injuries, whether it be a joint ankylosed after a severe crush, or a scar left by a burn or an operation, or an eye enucleated. But there must be an obvious “deformity” in the popular sense of the term.

The great majority of pathological deformities were due to rickets, and so have incidentally been classified in the

table illustrating that disease. It will only be necessary here to give sectional analyses of the other deformities.

There were 25 cases of *hernia*—10 among 8,296 children of 5—6, 8 among 7,957 children of 8—9, and 7 among 4,221 children of 12—14—a slight increase in relative numbers at the last-mentioned age. These figures illustrate the remarks as to the relative frequency of hernias which stand at the beginning of this section. There were 13 cases amongst the boys, and 12 amongst the almost similar number of girls. Thus the marked preponderance of hernias among males which comes out in a study of hernias at adult ages does not show itself in these young children. There were 8 cases among 10,484 urban children and 17 among 9,990 rural children, a disparity which may possibly be due to the heavier physical work to which country children are put.

Another peculiarity classified under developmental deformities was that of slight even *fulness of the thyroid* noticed in many children. It makes the thyroid just perceptible, as in the pictures of several painters, mediæval and modern. There were 161 cases among 20,474 children.

The distribution of these cases is illustrated as follows:—

Group.				No. examined.		Slight thyroid enlargement.
Children	5—6	..	..	8296	..	0·23%
	8—9	..	..	7957	..	0·59%
	12—14	..	..	4221	..	2·25%
<hr/>						
Boys	..	..	..	10299	..	0·36%
Girls	..	..	..	10175	..	1·21%
<hr/>						
Urban	..	..	..	10484	..	0·59%
Rural	..	..	..	9990	..	0·99%

Thus there is a progressive increase in relative numbers in older children, which is very marked at puberty. There is a marked preponderance of cases among girls, a preponderance which (as the full figures show) does not exist at age 5—6, but is very great indeed at 12—14; at that age 2,097 boys exhibited it in 13 cases, while 2,124 girls exhibited it in 82 cases. There is also a preponderance among rural children.

Other Diseases.—There were discovered among the 20,474 children examined, 329 cases of disorders which could not be placed in any of the categories already discussed. No good purpose would be served by dissecting these figures, except, perhaps, in regard to 44 of the cases about whom nothing more could be said than that they suffered from “debility” or “delicacy.” This number constitutes about 0·2% of the total children examined. Of these cases of debility, 15 were boys and 29 girls; 27 were urban children and 17 rural. There was a progressive decline, according to age, in the relative numbers of the cases of debility, about 3 per 1,000 being found at age 5—6, 2 per 1,000 at age 8—9, and 1 per 1,000 at age 12—14.

Nutrition.—The mean percentages of all the 20,474 children examined are:—

Good.	Normal.	Subnormal.
11·8%	73·8%	14·4%

Last year the mean percentages of 9,576 children, chiefly 5—6, were 11, 73, and 16 respectively. From this it may be inferred that the standards of the inspectors have not varied much from year to year.

The figures for nutrition may be presented at once under the headings of age, sex, &c.:—

Group.	No. examined.	NUTRITION.		
		Good.	Normal.	Sub-normal.
5—6 ..	8296 ..	11·7%	73·6%	14·7%
8—9 ..	7957 ..	10·2%	75·0%	14·8%
12—14 ..	4221 ..	14·8%	72·1%	13·1%
Boys ..	10299 ..	10·1%	74·9%	15·0%
Girls ..	10175 ..	13·4%	72·7%	13·9%
Urban ..	10484 ..	9·8%	75·1%	15·1%
Rural ..	9990 ..	13·9%	72·4%	13·7%

“Good” should be read in the sense of decidedly good.

It is difficult to find a satisfactory criterion of nutrition, and considerable allowance must be made for the varying standards of different observers, though the standard of the

same observer is probably remarkably constant. No doubt, in general, the records of nutrition sum up the observer's vague impression of the physical well-being of the child before him, compounded of sub-conscious inferences from facts of height, weight, colour, weary look or the reverse, and general bearing.

It is better, perhaps, to leave it vague ; more particularly should we avoid identifying subnormal or bad nutrition too closely with anæmia ; marked anæmia of a certain type is quite compatible with " good " nutrition.

It will be noticed in the first place that there is comparatively little variation from the mean in the number of " subnormal " cases yielded by any group ; about 14% of all children are steadily subnormal in nutrition.

It will be further noticed that there is a decided improvement in nutrition at age 12—14,—there are at those years considerably more " good " and slightly fewer " subnormal." This corresponds to the outburst of growth and vigour at puberty. The outburst is earlier in girls, and the tables of heights and weights bear witness to the same early development ; for a short time in their life-history, girls take the lead of boys in height and weight.

As between boys and girls, the latter have apparently a markedly better record. The relative number of cases of " good " nutrition among girls is considerably greater than among boys, and the number of " subnormal " cases is slightly less. This is almost entirely due to an advantage arising in favour of girls at age 12—14 (boys, 2,097 examined ; girls, 2,124 examined). At that age, the " good " cases among boys are still about 10% (as is shown by a study of the complete figures), but among girls no less than 19% ; whereas at ages 5—6 and 8—9 taken together, the percentage of " good " cases among boys is 10 and among girls slightly less than 12 (boys, 8,202 examined ; girls, 8,051 examined). There can be little doubt, therefore, that this appearance of superiority in girls as a class is due to the earlier advent of adolescence in them, bringing with it all its invigorating influences on life, physical and mental.

Lastly, it will be noticed that there is a decidedly better record among rural children than among urban, both as

to the relative number of "good" cases present, and—though to a less extent—of "subnormal" cases absent.

Analysis of Cases Specially Presented.

Managers and teachers were encouraged to present for medical examination all children, in addition to the routine children, who seemed to them to be in a state of health likely to interfere with their education or in whom the methods of education appeared to be injurious to health. It cannot, of course, be said that the children presented constituted the total body of children not of the routine years whose cases would have attracted the attention of the medical inspectors had they taken all the children of the schools one by one. They represent the teachers' ideal of an unhealthy child.

We have notes of 2,282 children. It should be explained that when a child was presented for a certain reason, say because of its deafness, a more or less exhaustive examination was made of the organ suspected to be faulty and of other organs likely to contribute to the defect, but not of every organ of the child. The cases are classified according to sex and area, whether urban or rural.

CASES PRESENTED FOR EXAMINATION BY HEAD TEACHERS.

	Boys.		Girls.		Totals and means.
	Urban.	Rural.	Urban.	Rural.	
NUMBER EXAMINED	568	484	700	530	2282
DELICATE	37	43	46	53	179 8%
SKIN : Verminous	27	12	136	98	273 11%
Ringworm	20	4	12	5	41 2%
Other Infective	19	13	35	14	81 3%
Other	12	15	24	18	69 3%
EYES : Vision Defective	135	106	193	125	559 24%
Squint	34	37	43	23	137 6%
Opacities	7	2	16	7	32 1%
Other	67	43	79	48	237 10%
EARS : Hearing Defective	64	57	51	52	224 10%
Suppurating Middle Ear	38	25	22	13	98 4%
TEETH : Marked Caries	4	8	6	6	24 1%
NOSE AND THROAT : All kinds	134	182	155	162	633 28%
SPEECH : Stammering	1	2	2	1	6 0.2%
Lisping and Indistinctness	4	6	5	1	16 0.7%
Idioglossia	1	6	1	4	12 0.5%
Deaf and Dumb	—	1	—	—	1 —
MENTAL CONDITION :					
Dull and Backward	30	25	10	14	79 3%
Mentally Defective	23	17	23	11	74 3%
Imbecile	—	—	—	1	1 —
HEART : All affections	16	26	33	28	103 4%
LUNGS : All affections	51	48	61	45	205 9%
NERVOUS SYSTEM :					
Epilepsy	5	2	6	2	15 0.6%
Chorea	2	2	8	2	14 0.6%
All other (including Enuresis)	26	15	33	24	98 4%
ANÆMIA : All degrees	17	15	35	25	92 4%
TUBERCULOSIS : Pulmonary	5	3	10	7	25 1%
Other kinds	5	3	6	6	20 1%
RICKETS	18	13	8	5	44 2%
RHEUMATISM	2	—	4	1	7 0.3%
DEFORMITIES	29	29	35	16	109 4%
OTHER DISEASES	35	26	44	30	135 6%
NUTRITION : Subnormal or bad	2	7	16	14	39 2%

Thus, 8% of the ailing children are presented for general delicacy, and it is not possible to say what particular organ is at fault: they were "born tired" and ailing. Defects of sight, and nose and throat troubles, are the ailments that teachers notice in greatest numbers. Verminous conditions also give them concern, and deafness also. The other ailments are small in number and occasional.

The proportions in which boys and girls are found among these children thus selected by head teachers is as follows :—

Boys	..	..	..	1052
Girls	..	..	..	1230
<hr/>				
Urban Children	..		..	1268
Rural	„	..	..	1014

E.—Home Circumstances and Social and Industrial Conditions.

On the schedule card spaces are provided for entries as to the occupation of the father and mother of the child, number of rooms in the house, and general observations of a similar nature. Whenever it is possible we get these facts directly from the parent when he or she attends ; but frequently the entries are filled in by the teachers from their own knowledge or from inquiries from the children. Absolute accuracy, therefore, must not be looked for ; but, on the other hand, no teacher is expected to put down statements unless he feels sure of the facts. There is no sort of compulsion to fill up this part of the schedule.

Two facts seemed of importance : the occupation of the mother when it took her away from the home and the size of the house so far as it implied overcrowding. As to overcrowding, it is difficult to state it numerically without a house-to-house census ; but it is assumed—and there is reason to assume—that a house of three rooms or fewer is probably an overcrowded house.

We have returns referring to houses from which 17,800 children come, and the proportions in which they live in houses of three rooms or less are indicated below :—

	No. of houses reported on.		Houses of 3 rooms or less.		p.c.
Urban	9196	..	884	.. 9.6
Rural	8604	..	776	.. 9.0
<hr/>					
		17800			
<hr/>					

Thus, about 10% of both urban and rural children come from houses which are certainly narrow and probably crowded.

In regard to 815 out of the 20,474 children examined, we were told that the mother was an outworker. There may have been many more, of whom we could get no information; but of these we know certainly. That is to say, 4% of the children came from homes lacking a mother's constant supervision and management. The percentage is higher in urban areas than in rural, but the imperfection of the record forbids any but the most general inferences.

F.—Methods available for the Treatment of the Defects Discovered.

All that is to be said in reference to this heading appears on page 8 under B (iii).

G.—Detection and Prevention of the Spread of Infectious Diseases, and Exclusion of Scholars.

The medical inspectors are instructed to notify at once any case of scheduled infectious disease observed by them, not only to the head teacher and the School Medical Officer, but also to the local Medical Officer of Health. To notify the last-mentioned is, of course, a statutory duty as far as scheduled diseases are concerned.

If the medical inspector is of opinion, after examination, that a child is in a state likely to spread disease or vermin, or is incapable of receiving proper benefit from school instruction, owing to defects of health or physical or mental fitness, the child is excluded from school, and information is sent in at once to the School Medical Officer, who, if he approves, signs a certificate of exclusion.

H.—Methods for Dealing with Children Defective in various ways.

Blind and Deaf Children.—The advent of medical inspection has led to no essential changes in the method hitherto adopted by the Education Committee for dealing with blind and deaf children.

The greatest pains have always been taken to discover children dwelling in the County Elementary Area who were blind or deaf within the meaning of the Elementary Education (Blind and Deaf Children) Act, 1893.

The numbers admitted into Institutions and Day Schools during the year 1909 who were the offspring of parents residing within our borders were :—

Blind	..	..	..	2
Deaf	..	..	..	8

In addition, one blind child and two deaf were transferred to our institutions from the institutions of neighbouring areas, and two of our deaf children were transferred to the care of other authorities.

Children who are blind and deaf to the degree contemplated in the Elementary Education (Blind and Deaf Children) Act, 1893, are discovered in a house-to-house census taken by the school attendance officers yearly ; it is not possible that many escape detection. Such may be called " institutionally " deaf or blind.

The number of blind children admitted during 1909 was, as it happened, unusually small : during the year before 9 were admitted. The deaf children also were fewer than in 1908, when 12 were admitted. A comparison of the numbers in the Blind and Deaf Institutions of the administrative area shows that there are twice as many deaf as blind.

Mentally or Physically Defective and Epileptic Children.—

Forty-four mentally defective children were found among the 12,178 children of 8—9 and 12—14 examined as routine cases, and 2 imbecile children. By mentally defective is not meant merely dull, stupid, or backward, but absolutely defective, incompetent children, who will never, humanly speaking, be fit for full responsibility of citizenship. In addition to these, 74 mentally defective children and 1 imbecile child were presented by the teachers, making totals of :—

Mentally defective	..	118
Imbecile	.. ..	3

No doubt more mentally defectives would have been detected had the inspectors themselves ransacked the schools.

The total of 121 mentally defective and imbecile children compared with the 76,109 children in average attendance gives a percentage of about 0·16. But the percentage obtained from the examination of the 12,178 children of the routine years carefully tested by the inspectors, viz., 0·36 mentally defective and 0·02 imbecile, is probably nearer the true percentage for the County.

Of epileptics, there were 25 found in the systematic examination of 20,474 children of the routine years, or 0·12% ; and there were in addition 15 presented by teachers from among the rest of the children in the schools.

Thus, it is probable that there are normally produced in the administrative area :—

“ Institutionally ” Blind*	..	7	per 100,000 children attending school.
“ Institutionally ” Deaf	..	14	„ „
Epileptic .. .. .	..	120	„ „
Mentally Defective and Imbecile .. .. .	..	380	„ „

I.—Hygiene, Physical Exercises, Open-air Schools, &c.

No experiments have been made in the institution of School Camps, Open-air Schools, etc.

The need of promoting Hygiene, including Temperance, and Physical Exercises, has for some time engaged the attention of the Staffordshire Education Committee. The general principle of action has been to train the teachers and imbue them with just notions and the right spirit, and then to encourage them to put into practice among the children committed to their care the knowledge they have gained. This, rather than formal instruction of the children, has been deemed the more useful course.

The following particulars have been kindly put at my disposal by the department for Higher Education :—

HYGIENE.—Classes limited to teachers in Elementary Schools in the Administrative County are arranged each year at three centres, and are conducted by Miss Maud

* The numbers of “ institutionally ” deaf and blind are in the nature of a guess at the average, on the best evidence available.

Curwen, the County Lecturer in Hygiene. The centres are varied from year to year in order to give opportunities to attend the classes to teachers in various parts of the County.

The syllabus, which covers a two-years' course, requires practical experimental work on the part of the members of class.

Up to the present time classes, attended by about 150 individuals, have been held at eight centres.

PHYSICAL EXERCISES.—Classes for instruction in Physical Exercises, limited to teachers in Elementary Schools in the Administrative County, are conducted by Miss M. T. Hallett, the County Instructress.

In addition to instruction in the "Model Exercises," theoretical instruction and more advanced exercises are included in the syllabus.

Miss Hallett also visits schools in the neighbourhood of the classes in order to advise the teachers and to ensure that the instruction is properly applied in the schools.

Classes have been held at various centres, and have been attended by over 250 Teachers. As in the case of Hygiene Classes, the centres are varied from year to year.

J.—Miscellaneous Work: Examination of Pupil Teachers, Scholarship Candidates, etc.

During the year 424 Pupil Teachers, Exhibitioners, Bursars, and Candidates were examined. The following is an analysis of the facts disclosed:—

	Boys.	Percentage.	Girls.	percentage.
Number examined	131	—	293	—
Limits of age (birth date) ..	[11/8/1891-10/11/1896]		[30/5/1891-24/5/1897]	
Number passed without comment	121	92	263	90
Number passed contingent upon satisfactory result of treatment	10	8	30	10
Number rejected	—	—	—	—

ANALYSIS OF DEFECTS, &c.

	Boys.	Percentage.	Girls.	Percentage.
Vision more or less defective	30	23	64	22
Eye Diseases	6	5	8	3
Hearing more or less defective	13	10	13	4
Ear Diseases	7	5	7	2
Teeth defective	117	89	246	84
Nose and throat defective ..	53	40	93	32
Speech defects (including in- distinctness, nasal qual- ity, etc.)	1	1	2	1
Heart disorders	83	63	38	13
Lung disorders	2	2	7	2
Nervous disorders (including periodic headaches, etc.)	22	17	29	10
Skin disorders	30	23	39	13
Enlarged glands	124	95	87	30
Anæmia	38	29	82	28
Physical defects	15	11	37	13
Other defects	5	4	14	5
Not vaccinated	7	5	16	5
Vaccinated	124	95	275	94
Re-vaccinated	5	4	17	6
Nutrition below normal ..	2	2	7	2

JOHN PRIESTLEY,
Senior School Medical Inspector.



Table of various

The figures in the heading represent the number of children in each class; thus, 18 means 18 children in each class. The figures in the body of the table represent the number of children exhibiting the

Right Eye		Left Eye		Total		Total	
Age	Sex	Age	Sex	Age	Sex	Age	Sex
1	Boys	1	Boys	1	Boys	1	Boys
2	Boys	2	Boys	2	Boys	2	Boys
3	Boys	3	Boys	3	Boys	3	Boys
4	Boys	4	Boys	4	Boys	4	Boys
5	Boys	5	Boys	5	Boys	5	Boys
6	Boys	6	Boys	6	Boys	6	Boys
7	Boys	7	Boys	7	Boys	7	Boys
8	Boys	8	Boys	8	Boys	8	Boys
9	Boys	9	Boys	9	Boys	9	Boys
10	Boys	10	Boys	10	Boys	10	Boys
11	Boys	11	Boys	11	Boys	11	Boys
12	Boys	12	Boys	12	Boys	12	Boys
13	Boys	13	Boys	13	Boys	13	Boys
14	Boys	14	Boys	14	Boys	14	Boys
15	Boys	15	Boys	15	Boys	15	Boys
16	Boys	16	Boys	16	Boys	16	Boys
17	Boys	17	Boys	17	Boys	17	Boys
18	Boys	18	Boys	18	Boys	18	Boys
19	Boys	19	Boys	19	Boys	19	Boys
20	Boys	20	Boys	20	Boys	20	Boys
21	Boys	21	Boys	21	Boys	21	Boys
22	Boys	22	Boys	22	Boys	22	Boys
23	Boys	23	Boys	23	Boys	23	Boys
24	Boys	24	Boys	24	Boys	24	Boys
25	Boys	25	Boys	25	Boys	25	Boys
26	Boys	26	Boys	26	Boys	26	Boys
27	Boys	27	Boys	27	Boys	27	Boys
28	Boys	28	Boys	28	Boys	28	Boys
29	Boys	29	Boys	29	Boys	29	Boys
30	Boys	30	Boys	30	Boys	30	Boys
31	Boys	31	Boys	31	Boys	31	Boys
32	Boys	32	Boys	32	Boys	32	Boys
33	Boys	33	Boys	33	Boys	33	Boys
34	Boys	34	Boys	34	Boys	34	Boys
35	Boys	35	Boys	35	Boys	35	Boys
36	Boys	36	Boys	36	Boys	36	Boys
37	Boys	37	Boys	37	Boys	37	Boys
38	Boys	38	Boys	38	Boys	38	Boys
39	Boys	39	Boys	39	Boys	39	Boys
40	Boys	40	Boys	40	Boys	40	Boys
41	Boys	41	Boys	41	Boys	41	Boys
42	Boys	42	Boys	42	Boys	42	Boys
43	Boys	43	Boys	43	Boys	43	Boys
44	Boys	44	Boys	44	Boys	44	Boys
45	Boys	45	Boys	45	Boys	45	Boys
46	Boys	46	Boys	46	Boys	46	Boys
47	Boys	47	Boys	47	Boys	47	Boys
48	Boys	48	Boys	48	Boys	48	Boys
49	Boys	49	Boys	49	Boys	49	Boys
50	Boys	50	Boys	50	Boys	50	Boys
51	Boys	51	Boys	51	Boys	51	Boys
52	Boys	52	Boys	52	Boys	52	Boys
53	Boys	53	Boys	53	Boys	53	Boys
54	Boys	54	Boys	54	Boys	54	Boys
55	Boys	55	Boys	55	Boys	55	Boys
56	Boys	56	Boys	56	Boys	56	Boys
57	Boys	57	Boys	57	Boys	57	Boys
58	Boys	58	Boys	58	Boys	58	Boys
59	Boys	59	Boys	59	Boys	59	Boys
60	Boys	60	Boys	60	Boys	60	Boys
61	Boys	61	Boys	61	Boys	61	Boys
62	Boys	62	Boys	62	Boys	62	Boys
63	Boys	63	Boys	63	Boys	63	Boys
64	Boys	64	Boys	64	Boys	64	Boys
65	Boys	65	Boys	65	Boys	65	Boys
66	Boys	66	Boys	66	Boys	66	Boys
67	Boys	67	Boys	67	Boys	67	Boys
68	Boys	68	Boys	68	Boys	68	Boys
69	Boys	69	Boys	69	Boys	69	Boys
70	Boys	70	Boys	70	Boys	70	Boys
71	Boys	71	Boys	71	Boys	71	Boys
72	Boys	72	Boys	72	Boys	72	Boys
73	Boys	73	Boys	73	Boys	73	Boys
74	Boys	74	Boys	74	Boys	74	Boys
75	Boys	75	Boys	75	Boys	75	Boys
76	Boys	76	Boys	76	Boys	76	Boys
77	Boys	77	Boys	77	Boys	77	Boys
78	Boys	78	Boys	78	Boys	78	Boys
79	Boys	79	Boys	79	Boys	79	Boys
80	Boys	80	Boys	80	Boys	80	Boys
81	Boys	81	Boys	81	Boys	81	Boys
82	Boys	82	Boys	82	Boys	82	Boys
83	Boys	83	Boys	83	Boys	83	Boys
84	Boys	84	Boys	84	Boys	84	Boys
85	Boys	85	Boys	85	Boys	85	Boys
86	Boys	86	Boys	86	Boys	86	Boys
87	Boys	87	Boys	87	Boys	87	Boys
88	Boys	88	Boys	88	Boys	88	Boys
89	Boys	89	Boys	89	Boys	89	Boys
90	Boys	90	Boys	90	Boys	90	Boys
91	Boys	91	Boys	91	Boys	91	Boys
92	Boys	92	Boys	92	Boys	92	Boys
93	Boys	93	Boys	93	Boys	93	Boys
94	Boys	94	Boys	94	Boys	94	Boys
95	Boys	95	Boys	95	Boys	95	Boys
96	Boys	96	Boys	96	Boys	96	Boys
97	Boys	97	Boys	97	Boys	97	Boys
98	Boys	98	Boys	98	Boys	98	Boys
99	Boys	99	Boys	99	Boys	99	Boys
100	Boys	100	Boys	100	Boys	100	Boys

TABLE of the COMBINATIONS of various degrees of DEFECT OF HEARING in the two ears.

The figures in the heading indicate the degree of defect by the distance in feet at which the whispered voice can be heard : thus, 10-5 indicates the cases in which the whispered voice could be heard at any distance between 10 feet and 5 feet away.

O indicates the cases in which whispering could be heard close to the ear ; W indicates any case worse than this.

The figures in the body of the table indicate the numbers of children exhibiting the particular combination of defects out of a total of 598 children defective in hearing.

(See p. 51.)

The figures in the body of the table indicate the number of children exhibiting the particular combination of defects out of a total of 598 children defective in hearing.

		20						20-15						15-10						10-5						5-0						Worse.						Totals.		
		20	20-15	15-10	10-5	5-0	W	20	20-15	15-10	10-5	5-0	W	20	20-15	15-10	10-5	5-0	W	20	20-15	15-10	10-5	5-0	W	20	20-15	15-10	10-5	5-0	W	20	20-15	15-10	10-5	5-0	W			
Age:	8-9	Boys	3	4	6	4	—	3	62	—	1	1	—	6	—	27	5	2	—	6	1	4	23	3	1	7	1	1	—	54	—	—	—	—	—	3	228			
																																						Girls	2	9
12-13	Boys	3	4	3	1	—	1	9	—	—	—	—	1	—	6	—	—	—	—	—	—	2	2	—	1	1	1	1	11	—	—	—	—	—	3	50				
																																					Girls	1	1	—
13-14	Boys	2	1	—	—	—	3	15	—	—	2	—	—	—	6	—	—	—	—	1	—	—	7	—	—	—	—	7	—	—	—	—	—	1	1	45				
																																					Girls	4	—	—
Totals	15	19	20	10	1	12	172	1	1	3	—	13	—	68	7	3	—	17	1	8	63	6	1	11	2	4	6	116	—	1	—	—	—	—	1	16				
p.c. of all ear-defectives			2.51	3.17	3.34	1.66	—	16.3	28.76	—	1.6	1.6	5.0	—	3.17	—	11.37	1.17	5.0	—	2.84	1.6	1.33	10.53	1.00	1.6	1.84	3.3	6.7	1.00	19.39	—	1.6	—	—	—	—	1.6	2.67	

A child who could hear at 20—15 feet would be considered "slightly deaf."

" " " 15—5 " " " " " deaf."

" " " 5—0 " " " " " very deaf."

A case worse than this would be considered too deaf for ordinary elementary school work.

TABLE of the COMBAT

At the bottom of the page are the names of the persons who were killed in the battle. The names are arranged in the order in which they were killed. The names are arranged in the order in which they were killed. The names are arranged in the order in which they were killed.

Right Wing		20 01 31									
Left Wing		20 01 31									
Age	Boys	1	2	3	4	5	6	7	8	9	10
	Girls	1	2	3	4	5	6	7	8	9	10
12-14	Boys	1	2	3	4	5	6	7	8	9	10
	Girls	1	2	3	4	5	6	7	8	9	10
15-17	Boys	1	2	3	4	5	6	7	8	9	10
	Girls	1	2	3	4	5	6	7	8	9	10
Totals		1	2	3	4	5	6	7	8	9	10
Total		1	2	3	4	5	6	7	8	9	10

"Last night" persons at place 51-52 is read place 51-52
 "Last night" persons at place 51-52 is read place 51-52
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