REPORT ON EXAMINATION OF EARS, NOSE AND THROAT, CHEST, ABDOMEN, ETC., OF 750 SCHOOL-CHILDREN IN GLASGOW.

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THIS clinical examination of school-children was carried out under the supervision of Dr. A. K. Chalmers, Medical Officer of Health for Glasgow, and followed as closely as possible on the lines adopted by Dr. Leslie McKenzie, Local Government Board, in his report of the Royal Commission on Physical Training (*vide* Appendix).

Five schools were visited, and in each 75 males and 75 females at various ages examined; the only exception lay in the instance of Gorbals school, where 150 each of Christian and Jewish children were examined for purposes of comparison, both sections living practically under the same conditions, and both belonging to a comparatively poor social class.

KEENNESS OF HEARING.

The only test conveniently applicable was that of the ticking watch, and it proved rather unsatisfactory on account of the difficulty in obtaining reliable answers from the younger children, also on account of the great variation in volume and intensity of the noise in the different examination-rooms as well as of that in school-rooms, playgrounds, and adjacent streets.

A special room for this clinical examination was never available, and the three medical men engaged were usually all in a small room at the same hours, together with the group of children awaiting examination.

The percentage of "distinctly defective" children is, however, thought to be fairly accurate; under the heading "defective hearing," the results are most probably under-estimated, as for the above reasons accurate results were impossible.

The highest percentages of combined defective and very defective hear-

ing were among males at the ages between 6 to 9, and 9 to 12 years, these being almost equal. These were followed by a percentage of 29·9 per cent. shown by females at ages from 9 to 12 years.

The most commonly associated cause was cerumen, occurring in 16·33 per cent.; next, enlarged tonsils, 6·83 per cent.; and in 750 children there occurred 22 cases of otitis media with perforation.

Adenoids alone, enlarged tonsils, and enlarged tonsils and adenoids combined occurred with moderate frequency as causes.

Of the various schools, Milton Street showed 11 cases of otitis media with perforation, Gorbals 5, Overnewton 4, St. James 2, Jewish 1.

All the causes of more or less defective hearing were most common in the Milton Street school, which represents the poorest class of children examined, though probably not the poorest in Glasgow.

In the Jewish section a total of 25·33 per cent. represents the combined defective and very defective hearing, as against 27·34 per cent. in the aggregate of the other schools.

It is thought that the percentage of those with defective hearing is considerably understated, and that most probably the instances of ear disease are more numerous than stated in these tables, for there was great difficulty in examining many of the patients; when scholars would not or could not submit to a detailed examination of ear or throat, frequently owing to nervousness, the examination was never persisted in for obvious reasons.

All the cases of otitis media were in a neglected condition, required active treatment, and the children were advised to inform their parents so that treatment could be at once commenced.

NOSE AND THROAT.

Enlarged Tonsils.—The largest percentages were found at the Milton Street and Gorbals schools. In them the percentages were 32·66 and 31·33 per cent. respectively; whilst amongst the Jewish at Gorbals they occurred in 24·66 per cent. In the aggregate of Christian children they were most common among boys at the ages of 6 to 9 years, and were more common in boys than in girls (82 to 69) at all ages; among Jewish 12 to 25.

Enlarged Tonsils and Adenoids.—Frequency: Milton Street, 21 boys, 18 girls; Jewish, 18 boys and 20 girls. These are the highest numbers, the lowest being obtained at Overnewton school, with 21. Altogether there was a preponderance among boys of 65 to 59 (Christian).

Adenoids only were most common of all among the Jewish children;

there were 29 affected, 16 boys and 13 girls. This is closely followed by Milton Street, which showed 26 cases.

All cases of tonsillar enlargement, however small the enlargement, were reported, but for all purposes it was not always easy to examine the throat thoroughly. In a moderate number of cases with enlarged tonsils excision was indicated, especially as in many of these there was coexistent deformity of the chest. All undoubted instances of *mouth-breathing* were observed and noted; the highest number reached was at St. James, 86; the next, at Milton Street, 84, where there was also the largest number of cases of nose and throat trouble. The lowest number, which was found in Overnewton school, where the associated causes were least frequent, was 45. The total number of male mouth-breathers was 142, as against 123 female, or, including Jewish children, 169 males and 155 females.

These were all instances where a properly applied system of breathing exercise was of necessity. The percentages of the three principal conditions under "nose and throat" are rather higher than those observed in the schools of Edinburgh, and very much higher than those of Aberdeen.

SKIN DISEASES.

These comprised the following: pediculosis; eczema of face and body or limbs; xeroderma and ichthyosis; ringworm of scalp and face. The first two forms were presented most frequently.

An ichthyotic condition was observed in five cases (very marked with hide-bound skin over extensor aspects of legs in one), and the degree known as xeroderma in six more.

Milton Street again showed the highest total of cases, 18 per cent., principally cases of pediculosis. St. James, 8·6 per cent.; Gorbals (Jewish and Christian), 6 per cent.; Overnewton, 2·6 per cent. In the aggregate boys were more affected than girls, 36 to 26.

GLANDS.

All cases of small shot-like glands were reported, and, when sub-maxillary or superficial cervical, were always associated with decaying teeth. The worst result was seen in Milton Street, where 29·3 per cent. were affected; and the best at Overnewton, where 12 per cent. showed more or less enlargement.

The glandular enlargement at the latter school is practically equal to that found among the Jewish at Gorbals school, it being of interest to state that the latter belong to a comparatively poorer class of the community, living also in houses with less accommodation, but the con-

dition of the teeth in general was found to be better among the Jewish section.

HEART.

Cases of mitral incompetence were the most numerous in the total of 35, of whom 21 were boys and 14 girls.

Some cases of functional disease with hæmic bruits were found in girls, and a few of irregular cardiac action in boys.

Added to the above were five cases among the Jewish children.

A few typical examples are given:—

1. Girl: age $7\frac{2}{3}$; height $46\frac{1}{2}$ in.; weight 44 lbs.; very thin; slight pigeon-chest deformity; enlarged tonsils and a mouth-breather. Mitral incompetence.

2. Girl: age 14 years; height 54 in.; weight 56 lbs.; very thin; irregular in attendance; slight scoliosis; muscles generally flabby and weak. Mitral systolic bruit, coarse in quality; pulse of small volume, low tension, but regular in force and rhythm.

3. Boy: age 9; weight 46 lbs.; height 46 in.; good intelligence though often a truant. Astigmatic; very thin and pale; enlarged glands in groins; mitral incompetence; would require good feeding.

4. Boy: age 14 years; height $58\frac{1}{2}$ in.; weight 74 lbs.; irregular in attendance; right eye hypermetropic; left eye myopic. Very irregular cardiac action and pulse at wrist irregular in tension and rhythm. He admits that he is a cigarette smoker.

5. Boy: age 14 years; with lordosis, scoliosis, rickets of both femora and slightly deformed rachitic chest; rapid and irregular action of heart low tension, irregular pulse at wrist; a cigarette smoker.

6. Another case of rapid, weak, irregular, cardiac rhythm; and diminished intensity of sounds in a boy who is a cigarette smoker.

These are fairly representative cases, but the space of this report prevents all from being described; in most of these 35 cases of cardiac disease the general nutrition was under the normal.

Frequency: Milton Street, 12 cases; St. James and Gorbals, 9 each; Overnewton and Jewish, 5 each, totals are 24 males and 16 females in 750.

An inquiry was made at the Milton Street school, regarding the smoking of cigarettes among boys from ten and upwards; a large proportion of these boys admitted indulgence in the habit, though to what extent it was difficult to ascertain.

All cardiac cases were undergoing exercises at least one hour weekly, such as drill, Chesterton exercises, wand drill, light dumb-bells, etc.

LUNGS.

The difficulty in examination of the lungs in the rooms placed at disposal was great, on account of same circumstances cited above.

The number exhibiting undoubted disease of lung was 25 (15 boys and 10 girls).

Frequency: Milton Street, 13; Gorbals, 6; St. James, 5; Overnewton, 1; Jewish, 1.

Cases.—1. Girl: æt. 12½; height 56 ins.; weight 71½ lbs.; attendance very bad. Patient is pale, thin, and anæmic looking, dulness and bronchial breathing at right apex in front, and right infraclavicular region; obitis media, defective hearing and enlarged tonsils. This was considered to be tubercular lung disease.

2. Girl: æt. 11½; height 48½ in.; weight 50½ lbs.; attendance bad. Thin; often has "sore eyes" (strumous ophthalmia); granular pharyngitis; enlarged tonsils; rachitic chest and genu valgum (double); a right apical catarrhal condition is present and is probably tubercular.

There were other cases of tubercle of lung, and numerous cases of mild bronchitis.

In some of the cases of bronchitis with cough, the additional conditions of otitis media, decaying teeth, enlarged glands, rachitic or pigeon-chest were present, singly.

A complete clinical examination of the cases as in hospital, was, however, impossible. Lung conditions occurred most frequently in boys, the proportion being 3 to 2.

ABDOMEN.

Here 8 cases of considerably enlarged abdomen were noted, and approaching very closely to the condition known as pot-belly, but in none were enlarged mesenteric glands satisfactorily determined. In all, however, there was a marked degree of mal-nutrition of limbs and trunk.

Cases.—1. Boy: age 6 years; height 41½ ins.; weight 36 lbs. Very thin; has bad teeth; enlarged sub-maxillary glands; slightly enlarged tonsils; slight rachitic chest; enlarged femoral epiphyses (lower) and marked "pot-belly."

2. Boy: age 11½; height 50½ ins.; weight 65 lbs. Clothing very bad; body very dirty; myopic; defective hearing; enlarged tonsils; pediculosis; enlarged sub-maxillary glands, with decaying teeth; slightly rachitic chest, and large pot-belly.

Two cases of *oblique inguinal hernia* were seen in boys, one right and the other left-sided; one was present in a boy of 13 years, the other

of 9 years. Five cases of urinary incontinence, of the nervous variety probably, were noticed, and all were ill-nourished and unhealthy looking, *e.g.*, Boy: age $6\frac{1}{2}$ years, very unhealthy and pale in appearance; attendance very irregular owing to "illness"; height 37 in.; weight $32\frac{1}{2}$ lbs.; of dull intellect; very dirty and astigmatic; a mouth-breather, with marked double genuvalgum: with rachitic chest and during examination dribbling of urine.

DEFORMITIES.

No case of congenital deformity was found.

Of acquired deformities, the division of those of the chest into those due to rickets and those due to respiratory obstruction is only a convenient one, as many of the latter may be largely due to rachitic softening, though in these no positive evidence was found. All slightly deformed chests, in which costo-chondral thickenings were found, are included in the first column; in the second are found all, even slightly deformed chests, where no objective rachitic phenomena presented, and where such conditions as enlarged tonsils, etc., were present. Some degree of deformity of chest was present in 112 of 600 Christian children, or 18·6 per cent.; whilst 26 of 150 Jewish children, or 17·3 per cent., showed the same.

Of these former, 41 boys and 27 girls were distinctly rachitic, whilst in 33 boys and 11 girls the causes seemed more referable to respiratory obstruction. Relative frequency of deformities of chest:—

Milton Street	...	...	37	male and female.
St. James	...	...	32	" "
Gorbals	...	...	29	" "
Jewish	...	...	26	" "
Overnewton	...	...	14	" "

90 males and 48 females out of 750 suffered from deformity of chest.

Affecting the lower limbs, in order to include enlargement of epiphyses where the limbs were straight, and to include cases where the tibia or tibiæ were alone affected, the arbitrary division has been made of rickets of femora and tibiæ. In the former the curvature was usually outwards and to the right, in the latter forwards, in both the convexity being forwards.

In genuvalgum cases, usually double, it was observed that there was always an appearance of flat-foot, but on closer examination it was impossible to satisfy one's self there was much if any depression of the arch of the foot on either side.

In rickets of lower limbs, 16 boys were affected and 18 girls, among 600; and among 150 Jewish children 2 boys and 1 girl.

Scoliosis.—Here 31 cases were found among girls, 16 of whom were at ages between 12 and 14 years, whilst 5 boys showed a similar lesion.

In all, the condition was one of mal-nutrition and imperfect muscular development. It was very noticeable as being more frequent in its occurrence in girls approaching or at puberty.

One case of typical flat, rickety pelvis was noticed in a girl of 14 years; she was exceptionally well-developed and had a large prominent abdomen, but was muscular and healthy in appearance.

Flat-foot.—This is restricted to cases in which there was no genu-valgum; 11 of these were girls, and 4 boys at various ages.

Relative frequency of all deformities (male and female) in the various schools: Milton Street, Cowcaddens, 68; Gorbals, 58; St. James, 49; Jewish (Gorbals) 43; Overnewton, 21; total, 239. This represents the total number of deformities, these being distributed over 169 Christian and 36 Jewish children, *i.e.*, 16 per cent. of Christian and 24 per cent. of Jewish children were deformed to a greater or lesser degree.

As was expected the largest number was found in Milton Street school, which educates children derived from one of the poorest districts in Glasgow. It was not unexpected that the children in the Overnewton school showed least deformity, as these children belong to a class of working people whose earnings are considerably higher than those in the Cowcaddens (Milton Street school) area. In the matter of housing, open spaces and parks, the Overnewton area has much the advantage also.

A comparison between Christian and Jewish children examined at the school of Gorbals, these children residing in the same district, is interesting. The preponderance of acquired deformity is rather in favour of the Jewish; the figures being: 43 Jewish and 58 Christian each in 150 examined; among the Jewish also there were less cases of defective hearing, 38 to 47; less ear-disease, 11 to 17; less enlarged tonsils, 37 to 47; but more combined enlarged tonsils with adenoids, 38 to 31; and considerably more adenoids, 29 to 15, almost double the proportion; also more mouth-breathers, 59 to 50; less glandular disease, 19 to 22; less cardiac disease, 5 to 9; less lung disease, 1 to 6; less abdominal enlargement, 2 to 5. The aggregate here shows more nose and throat trouble in the Jewish, 107 to 95, and considering that usually the condition of the teeth in the Jewish children was better than in the Christian children, the difference in glandular enlargement which was usually sub-maxillary is small.

The greatest care must be exercised in making deductions from the above comparison, but the physique of the Christian children seemed on the whole considerably better, the Jewish appearing to be less robust.

One is inclined to the belief that if a much larger number of each set was examined there might be less disease generally among the Jewish, as from personal observation the writer thinks that these children are fed more in harmony with the laws of nature during the first few years of life, and especially during the first year.

A large percentage of the deformities noticed in this investigation were due to rickets, *e.g.*, 23 per cent. males and 13 per cent. females had more or less deformity of chest of the "pigeon" or "rachitic" types, whilst 8.8 per cent. males and 3.4 per cent. females apart from the above showed deformity principally due to obstruction from tonsils enlarged and adenoids.

As regards gross deformity of the lower limbs, about $3\frac{1}{2}$ per cent. each of males and females showed this, as genuvalgum or genuvarum. As rickets is a disease of the first years of life in its onset, a few points might here be considered in relation to its ætiology.

It appears to be most common among the poorest classes of the community, *i.e.*, among the class where the weekly earnings are lowest, and where the social, moral and sanitary conditions are at their worst. It will be generally admitted that rickets is a disease of mal-nutrition from faulty feeding principally, whatever the co-related causes are.

Probably the majority of women of the poorest class, and many of the lower middle class are more or less unhealthy during pregnancy and lactation, this arising from various causes such as imperfect or improper feeding, from immoderate use of alcoholic liquors, and perhaps not a small proportion from the deteriorating influence of syphilis. Another important factor in the production of the disease is probably that so common in Glasgow among the poorest classes, *viz.*: the practice of allowing infants about or under one year to be fed to a greater or less extent on the food of adults in the same house, *e.g.*, articles of diet such as potatoes, tea, bread, etc.

The proper feeding of infants is a matter of the greatest importance, and one about which the lower classes are lamentably ignorant.

The effect of the immoderate use of alcohol is at least two-fold, *viz.*: in depriving of the means to purchase enough food of proper quality, and also by directly damaging the health of the nursing mother, indirectly affecting that of the infant. To what extent the immoderate use of liquors is responsible for causation of rickets it is well-nigh impossible to estimate as it is an indirect cause.

In conclusion, the points which seem of importance in relation to the prevention of rickets, are in the writer's opinion :—

1. The complete control by the corporations (of large cities at least) of the milk supply, so that the milk shall be of uniform and good quality.

2. The feeding of poor children at the schools where they are educated, this being a matter of greater importance than that of physical drill of dumb-bell and other exercises.

3. Education of the older female children in plain cookery, and the feeding of infants.

4. Education of the older children in hygiene with special reference to the use and abuse of alcoholic liquors, tobacco, tea, etc., etc.

[*For discussion on this paper see page 938.*]