

accurate definition and the muscles of accommodation are strained to their utmost. A sustained and strenuous effort is demanded of all the ocular muscles. The continuous contraction of the internal recti renders them liable to overpower their antagonists and become a factor in the causation of squint. More important is the pull which the muscles of accommodation exert upon their points of insertion; they distort the eyeball and tend to lengthen it antero-posteriorly. This elongation produces myopia, which when caused in this way is more likely to attain a high degree and become ultimately perilous than when it existed as an original proportion. All recorded cases which have passed from hypermetropia to myopia have done so by astigmatism, no one having been emmetropic at any stage.

The small or hypermetropic eye is always found in animals, in infants, in uncivilized races, and in those who pass their lives in employments of the grosser sort, whilst myopia is almost unknown under these conditions of life. It is with the greatest rarity that the adult Indian outgrows his hypermetropia. Unfortunately I did not take statistics, but, when doing a large practice amongst Kaffirs, I was never once consulted about short sight, or even asthenopia.

Myopia results only under the stress of those employments which require the protracted use of the eyes for near work. Half a century ago Professor Donders laid down the law that "the myopic eye is a diseased eye." Myopia increases steadily with the progress of pupils in school; it is the characteristic of the student or of the artisan who began accurate near work early in life. Among the compositors of Breslau, Cohn found that no less than 51 per cent. had myopia. Risley found the same great percentage among the compositors and brass-founders of Philadelphia. Among the students in various German universities Cohn found 22 per cent. to 28 per cent. were myopes. Erisman showed that among 1,245 myopic children in St. Petersburg, only 5 per cent. were free from pathological conditions of the choroid. Horner kept 1,875 myopes under observation, and no less than 34 per cent. developed the greatest complications later on, such as haemorrhages into, or detachment of, the retina, optic atrophy, etc.

#### Indications for Treatment.

A child compelled to struggle with a sign is negligent of the thing signified. Its nervous energies cannot be directed into two channels at the same time. Therefore if its senses are defective it cannot take the full advantage of its education.

The public duty of providing an education which is to be the preparation for the child's after-life should include the duty of ascertaining whether that education is likely to inflict serious and permanent physical injury upon it.

It is only reasonable to expect some degree of physical deterioration will result from depriving the child of its freedom and confining it to lessons, and since the eye is the organ upon which the greatest strain falls, it will be the eye which is most likely to suffer.

All eyes should be tested immediately on the child beginning its education: (1) As to visual acuity; (2) as to rapidity of perception; (3) as to colour blindness.

All children whose visual acuity is subnormal should be atropinized at once, and if there is any excessive degree of hypermetropia simple *plus* lenses should be worn until it is outgrown. Spectacles for them should be regarded not as an evil, but as a temporary protection against the evil of defective vision.

With regard to commencing myopia, it is very questionable whether the child should be allowed to continue its studies at all. Certainly no more near work should be done than is absolutely necessary. A special curriculum should be devised for these children which will fit them for a congenial career in after-life and not involve any strain on the eyes.

Children with errors of refraction always get as near to their work as possible. The hypermetrope, to get a larger image; the myope, to get any image at all—spectacles may do away with the necessity, but the objectionable habit may be formed. The thing to do is to use a face rest which will keep the face at least 10 in. off the book. Kallman's of Breslau is the best.

*Squint* occurs when there is an error of refraction combined with a defect in the "fusion faculty." I have found it present in 4.5 per cent. of children under 8 years of age. It is of the utmost importance to cure squint with the greatest speed as early as possible. Before the child is 6 years old it is easy to do so by correcting the refraction and training the fusion faculty with Worth's amblyoscope. After this it is a

matter of considerable difficulty. Only 30 per cent. of squints can be cured by glasses alone, the rest requiring operative treatment, etc. Squinting eyes become amblyopic from continued suppression of vision to prevent diplopia.

*Colour sense* is as often untrained as absent, therefore attempts should be made to develop it.

*The Type of Children's Books.*—It has already been most ably pointed out by Dr. Kerr that pens, pencils, paper, etc., are utterly out of place in an infants' school. They are much too minute. Infants should only be allowed chalk on cardboard. Reading should be learnt from the blackboard. Every child in a 6-year-old class should be able to print its name in 6 in. letters on the blackboard with a free arm. Fine writing should be absolutely forbidden. In order to be distinguished, letters must subtend an angle of at least five minutes, and the lines of which they are composed at least one minute. This requires the utmost endeavour of an emmetrope, being the limit of normal acuity of vision. Therefore it is obvious that a hypermetropic infant should not be set to small print. At no time during school life should type smaller than *pica* be used.

*Parents* among the lower orders are so astoundingly ignorant with regard to the care of their children's eyesight, that it is impossible to rely on them to get defects attended to. They invariably imagine the child will in time "grow out of" any defect. Glasses they regard as a disfigurement worse than sore eyes, or else as an adornment for Sundays. Many children also run grave risks by their parents taking them to sight-testing establishments, certified opticians, etc., who are rightly prevented by law from using atropine, and who therefore prescribe wrong glasses.

#### CONCLUSION.

No child's eyes were intended by Nature to undergo the strain of accommodating over lessons for six or seven hours every day of their lives between 4 to 14 years of age.

If, however, compulsory education enforces it, it becomes the duty of the Board of Education annually to separate those 20,000 children or more whose vision is so defective that they are unfit physically, to devise for them a specially modified curriculum, and to provide them with glasses if their parents are too poor or too ignorant to do so. This is the type of case, common enough, I am referring to.

Boy, aged 13; rest of his class I examined yesterday, but he was absent, as he stopped at home to help his mother (who is a widow with five younger children) do the washing. He suffers from headaches, squints, sees double, and has blepharitis. His class is at present doing algebra, a subject in which he makes no progress, as sometimes the figures are all a blur and at others they jump about.

Such children are as unfit to become students as cripples are to become soldiers.

There is plenty of skilled manual work to be done by the class which is so poor that the public has to pay for their education, and they should be taught from their earliest infancy to regard this as their special lot in life.

For if the child with defective vision has its weak eyes overstrained, not only does he as an individual suffer, but also future generations, to whom the welfare of the nation is to be entrusted, it being a well-proved fact that there is no defect more likely to be transmitted from parent to child than that of defective eyesight.

## OBSERVATIONS ON AN EPIDEMIC OF SCARLATINA.

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THE following notes on a recent epidemic of scarlatina will be of interest on account of the mildness of the symptoms in a large proportion of the cases, only 31 children out of a total of 96 showing any signs of a rash.

The not infrequent occurrence of very mild cases of scarlatina, with little or no perceptible rash or indisposition, is not dwelt upon with sufficient emphasis in the usual textbooks.

The epidemic occurred in a school of 300 children (boarders), to which I am medical officer, and was a source of much anxiety on account of the absence of all symptoms of illness in a large proportion of cases and the consequent difficulty of selecting cases for isolation. At the outset I may note that the milk supply was above suspicion, and that there was no scarlatina in the neighbourhood.

Early in October, 1902, my attention was called to a child

who was clearly peeling after an undiscovered attack of scarlatina; the child had apparently been in the best of health, and, as far as was known, had not been in contact for at least six or eight weeks with any but her fellow school children. As I anticipated from an exactly similar experience on a former occasion, this case was soon followed by others, and the outbreak continued till June, 1903, before it was stamped out.

Before dealing with statistics, I will note the following particulars relating to examination and isolation.

On the discovery of the first case, all the children were examined by myself, and subsequently, twice daily, by the matron and two nurses, who had all had considerable experience of scarlatina, for the slightest evidence of any rash, sore throat, or peeling; cases of the least suspicion were detained for my inspection. All cases of sore throat were specially isolated, however slight. Undoubted cases were immediately sent to the District Fever Hospital till it was unable to take any more. The remainder were nursed in the institution infirmary, an isolated building in the school grounds. The Committee engaged a large empty building outside the town, and to this house all the convalescent cases were drafted till the peeling stage was accomplished.

All the children who were peeling had a daily hot bath with carbolic soap, and were subsequently rubbed with carbolic oil; some of the more obstinate cases of feet peeling were subjected to the more heroic measures of strong soda water and pumice stone. The usual precautions were taken on sending the children back to school.

The total number of cases was 96; this number includes 3 children who had two distinct attacks.

E. S., October 13th to April 17th, rash etc.; June 12th to October 4th, peeling.

A. W., December 15th to February 19th, rash, etc.; May 25th to October 3rd, peeling.

N. M., October 15th to December 15th, rash, etc.; June 11th to October 3rd, peeling.

One boy sent to the District Fever Hospital with rash and other typical symptoms on May 27th developed another attack with rash, sore throat, and temperature of 104° F., while he was still in hospital on August 7th—that is, seventy-two days after admission; this boy did not return to school for eighteen weeks.

The cases may be divided into three classes:

Class I (31 cases).—Typical cases, with rash, sore throat, and elevation of temperature, usually not more than one or two degrees.

Class II (19 cases).—Children who had no observable rash, but only slight redness of tonsils and from one to two degrees of fever, with characteristic peeling beginning during the second or third weeks. These were all isolated on suspicion.

Class III (46 cases).—Children who simply peeled, and although specially examined daily, showed no signs of the slightest indisposition.

With reference to the cases under Class I, I may add that they were all fairly typical, though most of them were not at any time really ill. Nearly all of these were sent to the District Fever Hospital and mixed with scarlatina cases from other sources, as well as a large proportion of cases from Classes II and III; none of them contracted a fresh attack after admission, except the boy mentioned above. This fact may be taken to prove that all the cases were bona-fide cases of scarlatina. My diagnosis was also in all cases confirmed by Dr. Lorimer Sawers, the acting medical officer to the Fever Hospital.

One remarkable feature of the epidemic was the unusual length of time occupied by the process of desquamation. It will be seen from the subjoined table that the mildness or absence of symptoms was not necessarily followed by a shorter period of peeling, but if anything the process of desquamation was prolonged in the cases which showed no initial symptoms of illness.

For precautionary purposes, I considered cases were unfit to return to school in which there was any appearance of ragged skin about the hands and feet, but I did not regard a fixed patch of hard skin on the sole of the foot as technical "peeling," and therefore infectious, after eight or nine weeks from the beginning of the disease. Doubtless, infection had ceased in many instances before I felt justified in permitting them to return to school.

It is not improbable that some of the cases of prolonged peeling were due to reinfection without general symptoms.

In a few instances the children discharged from the District Fever Hospital with desquamation apparently quite accom-

plished, started peeling again a few days after admission to the convalescent house to which I sent all children previous to allowing them to return to school.

*Duration of the Disease till the End of Desquamation.*

*Weeks ...	...	...	...	...	5	6	7	8	9	10	11	12	13	14	16	17	18	19	22	23	24	26
Class I, cases ..	...	...	...	...	1	7	7	2	1	1	1	3	1	4	1	1	1	1	1	1	1	1
Class II, cases	...	...	...	...	6	3	3	2	1	1	2	1	1	1	1	1	1	1	1	1	1	1
Class III, cases	...	...	...	...	3	4	4	2	10	2	2	1	2	2	9	3	1	1	1	1	1	1

\* Portions of weeks omitted.

Although a large staff of teachers and servants were exposed to infection no adult contracted the disease. There was no case of serious illness except one boy who developed an attack of acute tuberculous pneumonia (Osler), and died after his return home, about four months after he contracted scarlatina. There was one case of suppurative adenitis.

The main school buildings were fumigated by the local sanitary authorities and by the school staff two or three times during the outbreak, but as the exposed surfaces of the school rooms, dormitories, corridors, etc., amounted to several acres of wall, floor, and ceiling, it was not possible to be certain that every corner of the building was efficiently disinfected.

My own view, however, was that the children themselves were chiefly instrumental in passing the disease from one to another before they showed any symptoms which justified their isolation.

The total extra cost to the institution of house hire, nursing, and disinfection was approximately £950.

This sum does not include the cost of feeding the children, the cost of maintenance at the Fever Hospital, or the provision of a new supply of school books, etc., to replace the whole outfit which the Committee ordered to be burnt.

It is unnecessary to comment on the appalling cost to a public institution of such an epidemic, but in the present state of public and professional opinion, it is not possible to relax any of the usual precautions; the well-known fact that scarlatina varies so much in virulence in different epidemics makes it compulsory to treat the disease with respect. In conclusion, I would suggest that from a financial point of view, it is most desirable that an attempt should be made to come to some definite conclusion as to the duration of the period of infectivity in scarlatina.

Dr. Klein and Dr. Mervyn Gordon have been making investigations on the bacteriology of scarlatina, and have, I believe, come to the conclusion that the micrococcus scarlatinae is the active agent in this disease, that it can easily be found in the throat secretions, and is rarely to be found in the nose, in the ear discharges or in the cuticle. If these observations are correct, the time is approaching when it may be possible to materially limit the detention of scarlatinal cases in quarantine, and the present rule-of-thumb method of detaining patients till desquamation and ear discharges have ceased may be superseded by the more precise and scientific proceeding which now obtains in diphtheria. The saving in time and money to the community if it is possible to shorten the time of isolation and limit the number of return cases will be enormous.

Health authorities might also take into consideration the possibility of economizing public funds by providing, on the sites of fever hospitals, an annexe for convalescent desquamating patients, which need not be constructed on such expensive lines as is necessary for the treatment of the disease in its acuter stages.

## THE SURGICAL TREATMENT OF ABDOMINAL ANEURYSM.

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In discussing the subject of abdominal aneurysm I will not refer specially to aneurysm of the iliac arteries, as I think that ligature or possibly Matas's operation, referred to later on, would be the only methods of operative treatment considered at the present day. With regard to aneurysm of the other smaller abdominal vessels, ligature or excision appears to be indicated if a surgeon should meet with one of these rarities. Henry Morris states that there are only 21 cases of