of heart *post mortem*, the pulse was 50, and the tracing apparently always anacrotic. The third case had marked aortic stenosis, no regurgitation, a much enlarged heart, and constantly showed the bisferiens condition of pulse.

The next case is most interesting; a man of 49, with fibrosed kidneys, marked mitral stenosis, the aortic valves thickened, allowing slight regurgitation, but with absolutely no stenosis; he was first admitted with a bisferiens pulse (64 to 84); the condition of the arteries is not mentioned, but, if they were rigid from the prolonged high tension of the contracted granular kidney, the anacrotic intraventricular pressure curve could reach the pulse. When next admitted the man had pericarditis and heart failure, with a very rapid pulse not giving an anacrotic trace; either the fever of pericarditis had lowered the vascular tension, or else the mitral stenosis prevented the filling of the ventricle at the rapid rate of heart beat, and the intraventricular pressure was lowered, and the pulse therefore not bisferiens.

In none of the above does Dr. Steell state whether the pulse in both wrists gave the same tracing, but his fifth case corresponds to my second in having an anacrotic tracing in the left wrist, but a tracing of aortic regurgitation in the right. There was a large heart—20 oz.—tricuspid regurgitation, mitral stenosis, and very marked aortic regurgitation, the orifice being a thickened ring easily admitting one finger, so that there was no real stenosis, though, as Dr. Steell remarks, the orifice was smaller than normal, while the ventricle was much larger. The patient had, besides rheumatic fever, suffered from scarlet fever, followed by dropsy, 14 years before; the condition of the kidneys *post mortem* is not mentioned, but if diseased the increased peripheral resistance so caused would help to account for the bisferiens pulse. In the last case in the paper both pulses gave anacrotic or bisferiens tracings; the fall between the two cusps in the right tracing is much greater than in the left, so that the bisferiens condition appears more marked in the right pulse than in the left. But the fall before the diastolic wave is also greater on the right side, and it appears to me that this means that the column of blood is not so well sustained on the right side as on the left, and that the main blood stream is again carrying a truer tracing of the intraventricular blood pressure to the left pulse. In this case there was very marked aortic regurgitation, no definite stenosis, but a very large left ventricle; also parenchymatous nephritis, which by raising the peripheral resistance must have led to the development of the bisferiens pulse. These last two cases also strengthen my conviction that the difference between the right and left tracings, which was present in my cases of bisferiens pulse, will be found to be the rule rather than the exception.

REFERENCES.

¹ *Practitioner*, 1890. ² *The Pulse*, p. 26. ³ *Lancet*, 1894.

THE VISION OF SCHOOL CHILDREN.

By J. ACWORTH MENZIES, M.D. EDIN.,
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IN the BRITISH MEDICAL JOURNAL of June 18th, 1898, Mr. Arnold Lawson has published an Abstract of a Report on the Vision of Children attending London Elementary Schools. The report was the result of an inquiry held at the request of the Education Department, and embraced seven typical elementary schools. In some American cities such an examination is carried out annually under the supervision of an officially appointed oculist. The importance of such an investigation to the cause of education and to parents, teachers, and the children themselves is so obvious that it scarcely requires to be dwelt upon. The headaches consequent on refractive errors, and their disappearance when the errors are corrected are well known, and a diagnosis of stupidity has frequently to be reversed after the use of suitable glasses. As to more remote benefits many a boy would be saved from entering on an unsuitable career if he knew at the outset that for him in the near future spectacles would be a necessity for close work. One frequently meets with cases of men discharged, say, from the railway service, because presbyopic changes, superadded to a congenital hypermetropia, prevent

them at a comparatively early age from passing the "dot test." Or it may be a mechanic who loses his employment shortly after completing his apprenticeship, because he cannot do his work efficiently without correcting glasses. In such a case a skilled workman must learn a new trade in which spectacles are no disadvantage, or become a labourer, because he did not discover in time that he was hypermetropic.

The importance of examining the refraction of all children's eyes becomes more apparent when the proportion of cases of defective vision is realised. Mr. Lawson, in 2,014 London children, found only 698, or 34.6 per cent., with normal vision in both eyes. My own examination of 398 Rochdale elementary school children gives 177 normal, or 44 per cent. In addition to these I found 126, or an additional 32 per cent., who would have passed Mr. Lawson's test as normal, that is to say, they read $\frac{1}{2}$ with each eye, but I found on testing with weak convex glasses that they had a small amount (1D or more) of manifest hypermetropia. Allport found out of 25,696 children in the Minneapolis public schools, 8,166, or 32 per cent. defective, but he does not seem to have tested for low degrees of hypermetropia, and probably the percentage of emmetropic children was much lower than 68. Another consideration which makes it desirable that the vision of each individual should be tested at as early an age as is practicable is that a child, or a grown-up person for that matter, may be quite content with defective vision through ignorance that the vision of others is any better than his own. This is the case especially in the minor degrees of astigmatism.

The importance of detecting defective vision early in life is then, it seems to me, sufficiently obvious. The difficulties in the way of doing so are few. The method followed by Mr. Lawson is simple, and easily carried out. If adopted by the managers of schools throughout the country it would mark a distinct advance in the performance of the duties of those who have the care of children.

Early in the present year I undertook the investigation of the eyesight of children in the Rochdale Parish Church School at the request of Archdeacon Wilson. I carried out the entire investigation personally, first testing each eye of each child by means of Snellen's types and trial lenses, and then examining with the ophthalmoscope and retinoscope those whose vision was subnormal.

For convenience I may follow Mr. Lawson's method of classification in tabulating my results, except that I shall group all the cases of astigmatism together. Further, among the cases which I have grouped as hypermetropic some would probably, on careful examination, prove to have a certain amount of astigmatism. The percentage figures are approximate.

TABLE I.—Normal Vision.

	Boys and Girls.	Per Cent.	Boys	Per Cent.	Girls.	Per Cent.
Normal vision in both eyes ...	177	44	96	48	81	41
Ditto but slight Hm...	126	32	45	22	81	41
Defective vision in one or both eyes...	95	24	59	30	36	18
Totals ...	398	—	200	—	198	—

TABLE II.—Showing the Various Errors of Refraction and the Relative Frequency of One Form of Error to Another (Cases 221).

	Boys and Girls.	Per Cent.	Boys.	Per Cent.	Girls.	Per Cent.
Hypermetropia ...	165	75	66	63	99	85
Astigmatism ...	40	18	29	28	11	9
Myopia ...	16	7	9	9	7	6

TABLE III.—*Showing the Relative Frequency of Each Error in all Cases of Normal and Subnormal Vision (Cases 398).*

	Boys and Girls	Per Cent.	Boys.	Per Cent.	Girls.	Per Cent.
Hypermetropia	165	41	66	33	99	50.0
Astigmatism	40	10	29	14.5	11	5.5
Myopia	16	4	9	4.5	7	3.5

I had not an opportunity of using atropine, and so I am unable to give a table to compare with Mr. Lawson's as to the number of cases of hypermetropia of 4 D and over. Thirteen of the hypermetropes, 7 boys and 6 girls, had convergent strabismus, which in 1 girl had been operated on.

With regard to myopia, there were only 3 cases over 3 D.

No.	Sex.	Age.	Myopia.
1	F.	8	4 D, R. and L.
2	F.	12	4 D, R. and L.
3	M.	13	13 D, R. and L.

Included in the above tables are 13 cases of nebula or other opacity of the cornea. This rendered the vision defective, but I ascertained the refraction by retinoscopy. Of these 13 cases, 7 were emmetropic (2 boys and 5 girls), and are included under the normal vision group, 3 were astigmatic (1 boy and 2 girls), 2 were myopic (both girls), and 1 girl had 1 D of manifest hypermetropia.

It is interesting to notice that the Rochdale Parish Church School, which is a new building and a model school as regards lighting, fittings and ventilation, yields almost identical results as regards refractive errors with the Stephen Street School examined by Mr. Lawson. In the Rochdale School 177 out of 398 pupils have normal vision, in the Stephen Street School 174 out of 392. The Rochdale School has, however, only 16 cases of myopia, as against 24 in Stephen Street. It is not easy to compare the figures as regards hypermetropia and astigmatism, for my work was done before Mr. Lawson's paper appeared, and I did not think it necessary at the time to separate accurately the cases of moderately high simple hypermetropia from those complicated with astigmatic errors.

Five of the children whom I examined were already provided with glasses. The parents of those not so provided, and whose sight was defective, were informed by letter of the advisability of having suitable spectacles prescribed by a medical man or at an ophthalmic hospital.

The results of my investigation may be interesting as supplementing Mr. Lawson's work with similar statistics from a Lancashire school. I have already referred to the fact that an annual examination of the eyesight of the children attending the elementary schools in some American cities is carried out under the supervision of an "oculist to the Board of Education." An excellent statement of the method followed in Minneapolis will be found in the *Educational Review* for September, 1897, in a paper by Allport, the Board of Education oculist for that city. It is to be hoped that the School Boards of this country will in time follow the enlightened example of those in America.

THE PASTEUR INSTITUTE OF MARSEILLES.—The following statistics relative to the work of the Pasteur Institute from the date of opening (December 9th, 1893) to January 1st, 1898, have recently been published by MM. Livon and Alezais:—1893 (22 days): Number of persons treated, 16; no deaths. 1894: Number treated, 268; 3 deaths (1.12 per cent.). 1895: Number treated, 355; no deaths. 1896: Number treated, 249; no death. 1897: Number treated, 318; 2 deaths (0.63 per cent.). This gives a total of 1,206 persons treated, with 5 deaths, a percentage of 0.41.

ON A CASE OF CYSTITIS OF THREE YEARS' DURATION DUE TO THE TYPHOID BACILLUS.

By THOMAS HOUSTON, B.A., M.B.,

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A PATIENT suffering from symptoms of cystitis was admitted to the wards of the Belfast Royal Hospital, under the care of Professor Byers. A careful examination of the bladder, kidney, and the uterus having revealed nothing which could throw light on the origin of the cystitis, I was asked by Professor Byers to make a bacteriological examination of the urine.

The urine was of a turbid, opalescent appearance, strongly acid in reaction, and contained a small quantity of albumen. On centrifugalisation, the sediment was found to consist of numerous squamous cells such as are found on the mucous membrane of the bladder, numerous leucocytes with polymorphous nuclei and granular protoplasm (eosinophile and basophile); some bacteria were also recognised in the deposit.

I proceeded to isolate the micro-organism in question, and, suspecting the presence of the bacillus coli communis, I made agar plates with one, two, and three loopfuls of the urine. On the following day the plates showed colonies, all of the same appearance. Nine of these colonies were taken at random, and planted by the stab method on glucose agar, and incubated at 37° C. To my surprise all these colonies grew in an opaque, whitish line exactly resembling the growth of Eberth's bacillus, and without forming any gas. I then planted the bacillus on gelatine, broth, potato-gelatin, agar (stroke culture), potato, and milk. It resembled in every cultural respect the typical bacillus typhosus. Microscopically the bacillus proved to be actively motile, and when stained by both Pitfield's and Van Ermengem's methods showed numerous wavy flagella (12 to 16). A broth culture was kept for six days in the incubator at 37° C., and tested for indol, but gave no reaction. The original milk culture was kept more than two weeks in the incubator, and showed no sign of coagulation; while the gelatine stroke culture has now been kept for four weeks, and there is no liquefaction. Thus in all respects microscopically and culturally the bacillus isolated is the bacillus of Eberth.

The patient's blood was also examined. It was taken in the usual way, and with the bacillus isolated from the urine gave a well-marked agglutinating reaction at a dilution of 1 in 100. The other laboratory cultures of the typhoid bacillus also reacted with the blood of this patient, while several varieties of the bacillus coli, on which serum from a case of typhoid fever has often marked agglutinating power, failed to give the reaction clearly.¹

As this result was so unique, and in order to exclude any possibility of error, I a second time obtained a sample of the urine with the most aseptic precautions possible (that is, boiled glass catheter, sterilisation of orifice of urethra, etc.), and again succeeded in getting in the plate colonies of a pure cultivation. The colonies are proved to be those of the bacillus of Eberth. The blood was also tested a second time, and again reacted with the bacillus isolated from the urine and with the other laboratory typhoid bacilli. It showed on the second occasion a slightly increased tendency to clump the laboratory cultures of the bacillus coli communis. The power of agglutinating the coli communis cultures was, however, still much less than was commonly seen in typhoid fever.

The patient has been six weeks in hospital without abnormal temperature or other symptoms pointing to typhoid fever. Her history for the last three years, obtained with great care, is as follows:

M. R., aged 35, three years ago was living in a house where two children died, one of bronchitis and the other of diarrhoea (patient's diagnosis). She helped to nurse these children; shortly afterwards she suffered from frequent micturition. This trouble developed gradually, and was afterwards accompanied by pain. She consulted a doctor and was sent into hospital (medical wards) in December, 1895, where she was treated for three months for painful and frequent micturition. At this time there was an occasional passage of blood by the urethra. She left hospital considerably improved, but still suffering from frequent micturition. She returned to her work, but again in May, 1898, she had to consult a medical