Such, in brief, has been my experience of the treatment of whooping cough by belladonna and sulphate of zinc. Which of these two had the greater share in the favorable results I am unable to say, since they were not in any case disassociated; but as similar results have followed the exhibition of belladonna alone in other hands, it is reasonable to conclude that this was the more active agent. It ought perhaps, in fairness, to be recorded that some cases which were cured at the beginning of the winter showed a tendency to a return of the disorder when the cold north-east winds of March set in. Few of these came under treatment, as the relapse was not of a severe character; when, however, belladonna was given, its effects were marked and immediate.

From the limited data afforded by fifty cases of whooping cough, it would be presumptuous in me to speak authoritatively as to the propriety of this or any other mode of treatment; nor should I have obtruded these observations were I not impressed with the conviction that the belladonna treatment is not so generally, or at least so universally, accepted as it deserves; and in this I am borne out by the fact that in one of our best modern works upon the diseases of children—namely, Dr. West's—the very name of belladonna in connection with whooping cough does not once occur.—*London Lancet.*

A FEW REMARKS ON ASTIGMATISM.

By J. F. Bumstead, M.D., Surgeon to the New York Eye Infirmary.

I do not propose to write a complete essay on astigmatism. As the term, however, may be new to some readers, a few words in explanation of its meaning may be desirable.

The surface of an ordinary double convex lens may be supposed to have the curvatures of all its sections equal. This is, indeed, essential to make such a lens a useful optical instrument; for suppose the curvature of one section to be greater or less than that of another—in other words, suppose the optician to have ground the two surfaces of the lens unevenly—no clear and distinct image of any object can be obtained through it, because the rays of light striking upon different portions will be unequally refracted, and will fail to come to a focus and form an image in the same plane.

Now simply substitute the word *cornea* for the word *lens* in the above remarks, and you have an explanation of astigmatism. A typical cornea, one of the refracting media of the eye, may also be regarded as a surface of revolution with the curvatures of all its sections equal;* hence rays of light proceeding from a luminous

* Strictly speaking, the normal cornea is not a surface of revolution, since the curve of the horizontal plane is usually less than that of the vertical; but the difference is only regarded as a disease when it exceeds ordinary limits and is capable of being corrected by cylindrical glasses. In this paper, which is intended to be purely elementary, normal astigmatism may be ignored.

point and striking upon various parts of its surface are equally refracted, and passing through the other dioptric media of the eye, are brought to a focus at one point within the globe. But in the astigmatic eye nature has not ground the cornea in an equal manner; its curves vary to a greater or less degree; thin sections cut in various directions and placed one upon another will be found, if critically examined, not to correspond. Hence rays of light proceeding from a luminous point and passing through such a cornea, are not brought to a focus at a single point within the globe, but each distinct place of refraction has its own focus; and hence the origin of the name (probably not the best that might have been chosen) from *a*, privative, and *stigma*, a point, signifying without a point or focus within the eye to which rays of light converge.

Nature preserves a certain regularity even in the irregularity we are now considering. She does not select at random one of the infinite number of planes which may be supposed to pass through the antero-posterior axis of the eye, as the one which shall present a curve greater or less than the normal curve of the cornea; but it is commonly either the vertical or the horizontal plane, or one nearly approaching them, which is thus defective. Suppose it to be the former, or vertical plane, and suppose also that the curve of the cornea in this plane is too convex; then the rays of light entering the eye in this plane will be too strongly refracted, and will come to a focus in front of those rays which enter in the horizontal plane (supposed to possess the normal curve); in other words, the patient will be myopic in the vertical meridian of his eye, although his sight is normal in the horizontal meridian; and when looking at a distant object, he will see its lateral edges distinctly, while its upper and lower edges will be blurred. Again, instead of being too convex, the curve in the same plane may be too flat, when the rays of light in the vertical meridian will come to a focus behind those of the horizontal meridian, and the patient will be hyperopic in the vertical plane; or, again, the vertical meridian may be normal while the horizontal meridian is either myopic or heperopic; while, still again, both the vertical and the horizontal meridian may vary from the normal type, both being either myopic or hyperopic, but each to a different degree, or the one may be myopic and the other hyperopic. Thus it will be seen that the term astigmatism, although always applied to a variation in the refractive power of the eye in different planes, may include a considerable variety of pathological conditions.

An excellent history of our knowledge of astigmatism may be found in the well-known volume of Dr. Mackenzie upon diseases of the eye. The disease was first discovered by Mr. Thomas Young in 1801; a remarkable instance of it in his own person was reported by Mr. Airy, Astronomer Royal, in 1827; a few other cases were also brought to light by various observers; but neither the frequen-

cy, the symptoms, nor the treatment of the disease were fully appreciated until the publication, in 1862, of Prof. Donders's work, entitled "Astigmatismus und Cylindrische Glaeser." With regard to its frequency, Prof. Donders states that he has met with it on an average in one out of every thirty eyes that he has examined. The symptoms of this disease and the means of diagnosis will appear in the report of the following case:—

Mr. L. F., aged 38, a lawyer by profession, applied to me May 3d, 1863, for "dimness of vision," which had troubled him for the last twenty years. He had been under the care of several surgeons, who had treated him for "amaurosis" or "asthenopia." His own account of his symptoms was obscure and unsatisfactory, and amounted to this:—that he could not see well, especially after mental excitement or bodily fatigue; that, for instance, when trying a case in court, or after a late supper or excessive smoking, he found it extremely difficult to use his eyes; and that he had tried many kinds of glasses without benefit. Nor did the ordinary methods of examination afford any better clue to the nature of his disease. I found on trial that he could read No. 20 of Dyer's tables at twenty feet. His power of accommodation was normal for his age. There was no insufficiency of the internal recti, nor any defect in the other muscular apparatus of the eye. Upon examination with the ophthalmoscope, the fundus oculi and dioptric media appeared to be perfectly healthy.

Although puzzled for a moment at this result of my examination, the thought soon occurred to me that this might be a case of astigmatism, and I proceeded to question my patient more closely with regard to his symptoms. I asked him if, in looking at an object, he ever saw one portion of its outline more distinctly than another. He replied yes; that in walking through the street at night and looking at a lighted window, the upper and lower edges appeared blurred, while the lateral edges were distinct. Again, in looking at a sign across the street, there appeared a second series of letters, fainter than the true image, and overlapping the latter above and below, and he had observed that this was the case whether one or both eyes were open. This indistinctness of the outline of objects in a vertical direction never entirely disappears, but varies greatly according to the condition of his nervous system. Under ordinary circumstances, it is noticed only when looking at objects which present a marked contrast in color or brightness, as the lighted window and gilt letters upon a black sign, just mentioned; but let him be fatigued or excited, and the dimness appears to affect all objects—even the figures upon the carpet, the ordinary type of a book, or newspaper, &c.

Taking up Snellen's tables of test type, and selecting the one in which the letters are white upon a black ground, I now requested the patient to describe their appearance. He voluntarily placed

himself at a distance of about eighteen feet, and looking at the capital C of No. 100, told me that he saw a second image overlapping in a vertical direction the true image and with its upper edge about half an inch above the latter; also, when regarding the smaller letters of No. 20, he saw a complete reduplication of the figures projected upon the black ground above. In both instances the lateral margins of the letters remained distinct, and the effect was the same if either eye was closed. Having cut a narrow slit in a card, I placed the fissure in a horizontal direction before one eye, the opposite being shut, when the patient immediately exclaimed that the indistinctness of outline had disappeared; but on the contrary, it was heightened, when the position of the fissure was changed to vertical. Other similar tests were also applied. For instance, the holes in an ordinary catheter gauge held before an argand burner appeared to the patient not as circles, but as ovals with their longer axes vertical, and this direction was changed to the horizontal if he inclined his head to a right angle with the axis of his body; moreover, the normal circular image was brought out by looking through a slit in a card in the manner above described.

It was now evident that my supposition was correct, and that there was a defect in the refractive power of the eye confined to the vertical meridian; it remained to discover in what this defect consisted, whether myopia or hyperopia, and also its degree. For this purpose I placed him under such conditions as would render the indistinct vision most marked, viz., with the slit in the card in a vertical direction so as to cut off the horizontal rays; and trying various glasses both convex and concave, I soon ascertained that several of the latter diminished, and that a double concave glass of 30-inch virtual focus completely removed the difficulty. My patient was, therefore, myopic to the extent of 1-30 in the vertical meridian of each eye, while his vision was normal in the horizontal plane.

In a second examination with the ophthalmoscope I observed a phenomenon which previously escaped me. If an astigmatic eye, owing to the defective refraction of its media, sees a circle as an oval, a circle at the fundus of an astigmatic eye should appear oval when seen by a normal eye, since the rays of light undergo the same refraction in passing from, as when entering, the organ of vision. Such a test is to be found in the circular outline of the optic nerve entrance. This test of astigmatism was first pointed out at the Ophthalmic Congress at Heidelberg, in 1861, by Dr. Knapp, who showed that in examining by the upright image, the diameter of the optic nerve entrance appears longest in the meridian of the greatest curvature of the cornea, and shortest in the meridian of least curvature; while the contrary is true, when the reversed image is employed—a statement which I was able to verify in the case of Mr. F.

Astigmatism is relieved by the use of cylindrical glasses—lenses,

the surfaces of which are cylindrical instead of spherical, and which therefore refract in one meridian only. In the present case, double concave cylindrical glasses of 30-inch virtual focus, with the axes of the cylinders horizontal, completely removed the defect of vision. When the use of glasses was first suggested to Mr. F., he did not hesitate to express his belief that they could be of no benefit to him whatever; but after a moment's trial he was convinced of the contrary, and expressed his delight with almost childish exuberance of joy at the relief which they afforded.

Cylindrical glasses cannot at present be made in this country, or at least in New York, to which my knowledge in this respect is confined; but they may readily be procured of Messrs. Paetz and Flohr, of Berlin, or of Natchez et fils, Paris. A complete set should be included in the armamentarium of any one who makes a specialty of eye diseases.

The defect in the conformation of the cornea upon which astigmatism depends, is congenital. I explain the fact that in the present instance it did not annoy the patient until about the age of eighteen, upon the supposition either that it passed unnoticed, or that, like hyperopia, it was compensated for by the high degree of accommodation of early life. The latter explanation is supported by the influence of mental excitement and bodily fatigue in aggravating the annoyance which the disease occasioned.—*American Med. Times.*

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, NOVEMBER 5, 1863.

DR. H. R. STORER ON CHLOROFORM IN MIDWIFERY.—Dr. H. R. Storer's paper on the employment of Anæsthetics in Obstetric Medicine and Surgery, published in last week's JOURNAL, is calculated to attract much attention, advocating, as it does, with much earnestness, the use of chloroform alone in this department of practice. Expressing opinions so directly at variance with those which the Editors of this JOURNAL have uniformly held and advocated, our readers will naturally look for some comments from us upon the subject. Without pretending to discuss Dr. Storer's argument in full, for we have as yet not had time for the mature consideration of all his theories, we propose briefly to refer to some of his points and statements.

First, as to the reported cases of death attributed to the use of chloroform in labor. These Dr. Storer dismisses with the simple statement that "to the present date, so far as I am aware, there does not exist on record, from the thousands of obstetric cases in which chloroform has been used, a single instance where death can be legitimately attributed to its influence." Now it really seems to us that in a question of such serious importance, in a paper of such an elaborate and positive