

lieve, somewhat soothed the patient; but she suddenly expired three days afterwards, May 20th, having lived a few days less than seven months after losing her limb.

On May 23rd, assisted by Dr. McGibbon and Dr. Moore, I inspected the body. There was a considerable quantity of bloody serum in each pleura. The right lung was contracted to nearly one-half its normal size, and changed into a solid fleshy mass, very like a large compressed clot of fibrine, without any apparent trace of lung-substance at all. On section of this mass, the knife grated on some hard particles, which were found to be spicula of bone, and which pervaded the mass abundantly. I carefully examined parts of this transformed lung, under the microscope, and found that they consisted of a multitude of fine and closely packed fibres, with numerous cancer-cells floating in juice around them. Similar cells were found in the fluid taken from the pleure.

In the left lung, the disease had not proceeded so far as in the right. There were several large nodules of cancerous matter, containing spicula of bone, in the anterior part of the lung; but, at the back, the pulmonary tissue was little affected. It was only congested, and its bronchial tubes were filled with thick mucus.

I may add, that the greater part of the morbid mass described above, is now preserved in the Pathological Museum of the Royal Infirmary, and is a good example of the somewhat rare occurrence of osteoid cancer in the lungs. Of course, in this case, it was a secondary affection, having existed primarily in the femur; yet it seems strange that the girl was apparently in perfect health a fortnight before her death, and that she had none of the usual marks of the cancerous cachexia even at the last. I cannot but think that she was really quite free from appreciable disease, at the time referred to; and that, after an ordinary exposure to cold, she was seized with acute pneumonia; but that the exudation then thrown out into the lung became rapidly cancerous from some inexplicable abnormality of the blood, which had been latent until that time. How the disease resumed its original type, and how it increased so very rapidly as to kill the patient by positive destruction of great part of the respiratory apparatus, in so short a period, while the stump, and other parts in the neighbourhood of its former outbreak, remained perfectly sound and healthy, I have no ground even for a conjecture.

#### ON THE CONSTITUTIONAL ORIGIN OF SOME AFFECTIONS OF THE DEEP TISSUES OF THE EYEBALL, ILLUSTRATED BY THE OPHTHALMOSCOPE.

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In a paper upon the Ophthalmoscope, which I read before the Liverpool Medical Society nine years ago, and which was afterwards published in the *Liverpool Medico-Chirurgical Journal*, the following sentence occurs. "The simple invention, therefore, of the professor of Königsberg, bids fair to open up a new era in the diagnosis of some of the obscurer forms of eye-disease, and to impart to our knowledge of their immediate causes somewhat of that clearness and precision which the microscope has done with regard to diseased structures in other parts of the body." I scarcely need to say how amply this anticipation has been fulfilled. Earnest and zealous labourers at home and abroad have indeed achieved marvellous triumphs by the aid of this instrument. Light has been thrown upon much which was previously dark and unseen. What were formerly matters of conjecture can now be regarded as well-established facts; and, touched by the "Ithuriel spear" of the ophthalmoscope, diseases have started from their dark recesses in the hidden textures of the eyeball, and been made to yield up their features in minutest detail to the practised observation of the physician and the skilful pencil of the artist. To be enabled thus to localise and depict disease is no mean attainment; and, when we consider the bearing which these discoveries have upon practice, the result is still more remarkable. Causes of defective sight, various in their character, and allied with textures in the eyeball the most dissimilar, which were formerly grouped together under the general and unmeaning name of amaurosis, can now be clearly distinguished from each other, and referred to the tissue with which they are immediately connected. Diseases, also, affecting the general system, as gout and rheumatism, and more especially syphilis, are now found to exert their baneful influence upon the hidden as well as on the visible structures of the eyeball; and even affections of the brain itself, there is good reason to believe, impress the evidence of their existence upon the nervous tissue of the disc and retina.

These prefatory remarks seem not inappropriate to the following details, which have been suggested by an observation in Mr. Macnamara's *Lectures on Diseases of the Eye*, a work which, I think, has not hitherto, in this country at least, received the attention which it merits. In these lectures he dwells especially upon the use of the ophthalmoscope, in elucidating the various causes of defective vision which cannot be thoroughly appreciated by any external sign of their existence. In Lecture IV, at page 83 of the volume, he says: "Opacities and other degenerative changes in the vitreous are, however, by no means always the result of syphilitic disease, but occur in connexion with a general impairment of nutrition and poverty of the blood." In illustration of this statement, he gives some cases in detail, and mentions, as one of the ophthalmoscopic signs, the following appearances. "Occasionally, colourless flocculent bodies are seen stretched across the vitreous chamber, like a thin veil in front of the retina. These consist probably of the cellular structure of the vitreous, rendered opaque by degenerative changes, its nuclei being surrounded by a fatty material, which is the direct cause of the haziness observed with the ophthalmoscope." I refrain from any remark upon the opinion which Mr. Macnamara expresses as to the cause of the appearances in question, except to say that it is not unlikely the true one. But, be that as it may, the following cases seem to illustrate the condition of the general system to which he refers, and they presented appearances in the deep textures of the eye very similar to those which he describes. Before giving the cases in detail, I may say that I had repeatedly observed the gauzy haziness deep in the eye, as revealed by the ophthalmoscope, before meeting with Mr. Macnamara's book, and had observed also that it occurred in persons generally of feeble vital power; but I was unable to refer the opacity to any individual tissue, and Mr. Macnamara's remarks, therefore, struck me forcibly, as throwing additional light on what I had hitherto regarded as a puzzling question. Of the five following cases, two are of special interest, as exhibiting not merely the symptoms, constitutional and local, of the condition in question, but also the improvement consequent upon the adoption of the tonic treatment recommended by Mr. Macnamara, and which the state of the patient clearly indicated; two others, marked by the same symptoms, I lost sight of while under treatment, and the result cannot, therefore, be spoken to; and one is at present under my care in the Eye and Ear Infirmary, and has hitherto progressed favourably.

CASE I.—Sept. 12th, 1867. A. G., aged 29, unmarried, teacher in a school in the Isle of Man, of medium height, moderately stout, pale complexion, and rather delicate aspect, three years ago caught cold from being wet, and had never felt so well since. About six months ago, she thought that something entered into the left eye, which affected vision. She came hither, and underwent some treatment at the Eye and Ear Infirmary, but the sight continued to decline. At present, she was able to read the large type of a newspaper for a short time only, prolonged attention inducing pain and indistinctness of sight. When placed with her back to a window, while I stood before her and very near, she was able to distinguish my features, but at half the breadth of the room, which was of moderate dimensions, she saw me very indistinctly. On looking at a candle or gas-light, it appeared dispersed and broken, and dark in the centre, and she was unable to indicate exactly the position of the light. Her general health was said to be pretty good; but the catamenia were more frequent than usual with her. In the *right eye*, the pupil was closed—the result of inflammation in early life. It was operated upon for artificial pupil in London nine years ago; but she merely distinguished light and shadow. On examining the *left eye* with the ophthalmoscope, the pupil dilated, the disc was dimly discerned through a gauzy veil of opacity, which covered the entire area of the pupil. This veil appeared to be thickly sprinkled over with minute opaque specks, not unlike a sheet of oiled tissue-paper dusted with black pepper. She thought that vision was improved by the dilatation of the pupil. This patient was put upon a tonic plan of treatment—the perchloride of iron and good diet, with an occasional alterative pill, equal parts of blue pill and the aloetic; and, when I last saw her, September 16th, previously to her return home, I advised cold affusion to the eye several times daily. Some weeks afterwards, I heard from her that her sight was much improved; and more recently I received a note dated February 4th, 1868, in which the following sentence occurs: "My eye is wonderfully better; I can use it quite nicely now. Still it is not well; but, before the midsummer holidays, I trust it will be perfectly restored. I still use the belladonna-drops, and take the iron medicine." Not having had an opportunity of examining this patient's eye again, I cannot speak as to what improvement has taken place in the ophthalmoscopic signs; but no doubt the gauzy haziness must have lessened considerably, or she would not have been able to use her eye as she describes.

CASE II.—Dec. 19th, 1867. A. M., aged 19, a girl of colour, rather

short, spare, and somewhat delicate in appearance, was employed in a cap-manufactory, in a department which was not trying to the sight. Her general health was said to be good. A fortnight before I saw her, she first noticed dimness of the *left eye*, which continued ever since, but was said to vary in degree. On the morning of Dec. 19th, she observed the appearance as of a star before this eye in rapid rotatory motion, which had not been seen before. The *right eye* was healthy. Examined with the ophthalmoscope, the pupil partially dilated, a filmy minute globular opacity was distinguishable in patches, obscuring the view of the disc, and rendering vision dim, especially of objects situated beneath the level of the pupil. This patient was also put upon a tonic plan of treatment—cinchona, with the liquor hydrargyri bichloridi; also an occasional alternative pill, and the cold affusion, as in the former case. She very soon began to improve in sight; and on January 27th, 1868, when examined with the ophthalmoscope, the opacity was found to have entirely disappeared, the disc was distinctly visible, and vision was stated to be as good as ever.

The next two cases may be briefly disposed of, as I cannot speak as to the result of the treatment employed.

CASE III.—May 1867. Mrs. R., aged 26, about medium height, pale complexion, dark hair, and feeble aspect, said that she felt weak, and had suffered a good deal of mental anxiety. Her father died of consumption when she was an infant. Her sight had been failing for several months past, and all objects appeared as if seen through a smoky medium. Vision with the *left eye* (which, I presume, was the only one affected, although it is not stated in my notes) was so defective that she could not distinguish my features. Examined with the ophthalmoscope, the pupil dilated, the disc was distinctly visible through a fine gauzy film, which presented the appearance as of dust sprinkled upon a transparent surface. At the inner side of the disc, close to the base, there was a small linear-shaped black opacity. For this patient I prescribed the citrate of iron and quinine, three grains thrice daily, and good diet, with some wine; rest of the eyes, especially at night; avoidance of fatigue; and the use of blue tinted glasses. As I did not see her again, I hope the means employed were beneficial.

CASE IV.—Nov. 1866. Henry Reid, aged 33, engineer, and married, of medium height, moderately stout, light hair and eyes, rather feeble aspect, said that he had fever in Calcutta four years ago, and was ill for about two months, but did not think that his sight was affected after he recovered. However, he had never felt so well since. A little extra work made him "nervous and shaky, out of breath, and fatigued." He did not appear to have had any venereal affection, or to have taken mercury. He complained of dimness of sight in the *left eye*, of one month's duration; but said that it attained its present condition in the course of a week. Placed with his back to the light, he saw me rather indistinctly with this eye; there was a general cloud over the field of vision, darker towards his left hand. He was able to make out the heading of a newspaper, but nothing more, the letters appearing as if seen through a gauzy veil. In looking at the sky, he observed numerous dark specks gathered round a form which moved slowly about, and the same appearance was noticed in looking at a white surface, as paper. Examined with the ophthalmoscope, the disc in the left eye was very dimly discernible through a gauzy veil, with opaque striæ crossing it, and some opaque spots upon it. I gave this man cinchona, with liquor hydrargyri bichloridi, but cannot speak as to the result, not having seen him again.

CASE V.—March 24th, 1868. Joseph Austin, aged 36, a tailor, had been a fortnight under treatment in the Eye and Ear Infirmary. He was of medium height, spare habit, and rather exhausted appearance. He said that he had been a good deal addicted to the intemperate use of strong drink and tobacco; and, during the last six months, had often been without a sufficient supply of food, from inability to work at his trade. He had never been able to see well with the right eye; the pupil was contracted, irregular, and filled with lymph, to which the iris was adherent; and he merely distinguished a very bright light. Vision had been in this state for ten or twelve years past. About four years ago, on getting out of bed one morning, he found the sight of the left eye to be indistinct, and he was unable to thread a needle. He had been indulging in strong drink for some days previously. The sight continued defective for about a year, so that he was unable to work, when it partially recovered, and he resumed his trade during four months, when it failed again, and he was idle from necessity during five or six months. After this, vision again improved, and he worked for some weeks; but during the last six months he has not been able to use his eye for more than one or two hours at once; after this, the sight became confused, and he missed his stitches. He had noticed numerous muscæ, of a dark colour, floating in the air. Examined with the ophthalmoscope, in the left eye, the pupil dilated, the same gauzy film was observed, partially obscuring the view of the disc. Since his admission to the

infirmary, on March 10th, he had been treated with tonics, and put upon a good diet with porter. He improved much in health and strength; and, when examined with the ophthalmoscope, three days ago, the film was found to be materially thinned and dispersed, and he was able to make out printed letters, which he could not do on admission. All objects now appeared clearer to him, the misty cloudiness that formerly obscured them having become much lighter.

Appended to one of these cases, I find a note stating that another example of the same ophthalmoscopic appearances had presented itself to me at the infirmary, affecting both eyes, but in different degrees. It occurred in the person of a workman, who had indulged much in strong drink and tobacco; but there is no further record regarding it.

And now, to sum up the matter: I do not claim very much for these cases; they have at least been faithfully narrated, and may be taken for what they are worth by those whose acquaintance with the ophthalmoscope renders them competent to judge. To me they are interesting, from the relation which they seem to indicate between a general condition of the system and a local change of structure; and I have no doubt but that, as the use of the ophthalmoscope becomes more general among the members of the profession, and a greater number of competent observers in consequence arise, we shall find these relations multiplied as regards the eye. Diseases, and deviations from health of lesser moment, which exercise a constitutional influence, and have not yet been recognised as affecting the structures of the eyeball, will probably be found to do so in a greater or less degree, and to imprint unmistakable evidence of their existence upon the delicate and many-tissued organ of sight.

#### NOTES AND OBSERVATIONS ON DISEASES OF THE HEART AND LUNGS.\*

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In the preceding papers, the sounds and murmurs emitted by the heart and arteries, viz., the audible effects of the several vibrations induced by the movement of the blood and by the disturbance and sudden arresting of its even flow, have alone been referred to. It is now proposed briefly to consider those vibrations which more particularly reveal themselves to, and are familiarly appreciated by, the sense of touch; viz., the recurring impulses and palpitations of the heart, and those recurring shocks, therefrom resulting, experienced throughout the arterial system. The impulse or beat of the heart, which, in a healthy and fairly nourished person, under circumstances of repose and in the recumbent position, is inappreciable to the touch, immediately becomes perceptible, on assuming the perpendicular position, in the space between the fifth and sixth ribs about an inch and a half to the left of the sternum. The phenomenon thus developed, though partly due to a slight tilting forward of the apex, is mainly affected by a change of shape in the heart itself, whereby it becomes rounded during the spiral contraction of its fibres. The amount of impulse, as well as the rhythmical action that characterises it, is liable, under a great variety of circumstances, to considerable and sometimes immediate modifications. The almost imperceptible beat may present the characters of an obvious blow or sharp shock, and, instead of being limited to a narrow space, may be diffused over a large amount of the parietes of the left chest. So, likewise, its rhythmical action may be notably accelerated or interrupted.

These variations in the force and rhythm of the heart's impulse are, however, in their general occurrence familiar to the observer of the action of this organ; and, as they will necessarily require much careful consideration in the sequel, when speaking of some of its disordered conditions, they need not be here further referred to. It is now proposed to pass on to a consideration of the vibrations felt throughout the arterial system, which we familiarly recognise and understand under the designation of the "pulse." When disease, with its several phenomena, is presented to us, we usually separate for special study and notation the modifications in the circulation of the blood, as evidenced in the frequency and character of the pulse. If this can be said of disease in general, it may more emphatically be said of diseases of its moving power, the heart itself; and hence, to a certain extent, the pulse has been regarded as one mode of interpreting the condition and action of this organ.

Before the adoption of the more modern means now employed in the investigation of the diseases of the heart, this was especially the case. Indeed, volumes have been written to show that the true appreciation of the pulse was an infallible means, not only of indicating the morbid

\* Continued from page 287 of JOURNAL for March 16th, 1867.