given justly on such grounds; but who can deny that discs so suffering may not ultimately return to a condition of health, and to a due performance of their proper functions?

In a future paper on the subject, I hope to adduce evidence regarding the condition of the optic disc after railway concussion.

ART. XX.—*On Essential Phthisis Bulbi.* By H. ROSBOROUGH SWANZY, M.B., L.R.C.S.I.; Assistant at Prof. von Graefe's Ophthalmic Hospital, Berlin.

THE name Essential Phthisis Bulbi has been applied by Prof. v. Graefe (*Archiv. f. Ophthalm.*, xii. 2, page 256) to a peculiar affection of the eye, in which the principal feature is a great and sudden reduction in the tension of the eyeball, followed by a more gradual return to the normal intra-ocular pressure.

The form of phthisis bulbi with which we usually meet is the result of an inflammation of the internal membranes—for the most part a purulent irido-choroiditis. It appeared that a somewhat similar condition as regards reduction in size and change of shape, but above all, as regards diminution of tension, might occur without any pathological change in the interior of the eye, and hence the name essential phthisis bulbi.

Of this affection there have been, until now, two cases published, the first by von Graefe (*loc. cit.*), the second by Nagel (*A. f. O.* xiii. 2, page 407). The patient in von Graefe's case was a peasant who had received an injury from a goat's horn, the result of which was a small conjunctival cicatrix and the occlusion of the inferior lachrymal canal. Nagel's case was that of a patient upon whom he had performed the simple operation for strabismus. The following is a case which I have had the opportunity of observing in Prof. v. Graefe's clinique:—

Frau Tschenisch, aged thirty-seven, blind in consequence of a cataracta matura on each eye. She had not been previously short-sighted. There was no sugar in the urine. The perception of light and the projection were good, and the phosphens precise.

The extraction of both cataracts was performed on the 24th May, 1869, by Prof. v. Graefe. In consequence of the youth of the patient, and the absence of any other discoverable cause for cataracts, von Graefe diagnosed a diseased vitreous humor, and

prognosed the probable prolapse with loss of a portion of it during the operation. At the delivery of the lens a considerable loss of vitreous took place in both eyes. In consequence of this the eyes became very collapsed; however, under a tight pressure bandage they regained their normal consistence within forty-eight hours. The further process of healing was quite normal, the only thing to be remarked being that the wound in the left eye did not simply unite, but a half transparent substance became formed between the edges of the wound, similar to what is seen in cystoid cicatrices after iridectomy for glaucoma. In this case, however, there was no ecstacy of the cicatrix. The space between the edges of the wound was about a quarter of an inch wide. This is a form of union of the wound which I have repeatedly seen after cataract operations, without ever any evil results.

After the operation the patient was kept for three weeks in a darkened room, inasmuch as eyes after cataract operations, attended with loss of the vitreous, are liable for a long time afterwards, on exposure to light, to an irritation which may have serious consequences. I then moved her into a lighted room, where, next day, both eyes became irritated, ciliary neuralgia, a flowing of tears, and a slight pericorneal injection. I ordered her at once to go to bed in a dark room, and gave her a subcutaneous injection of morphium. A few hours afterwards the symptoms had vanished. Both eyes had been equally irritated. Two weeks afterwards I allowed the patient to commence once more to accustom herself to the light; and this was done in the most careful way, by allowing her to spend a short time each day in a half-lighted room.

Everything went now well until the day six weeks after the operation (5th July). At the morning visit she complained of a sensation of pressure in the left eye, which she had first observed an hour before on getting out of bed, and said that she saw somewhat more indistinctly with this eye. In the anterior chamber there was a small hemorrhage. A traumatic separation of the retina struck me as probable, and on palpation of the bulb I found its tension most remarkably reduced ($-T_3$). The patient denied a trauma; and, as she was a very sensible woman, I could not take it for granted—unless, indeed, it might have occurred during her sleep. Besides the hemorrhage in the anterior chamber and a slight pericorneal injection, there was nothing abnormal to be seen on the exterior of the eye. The wound was not burst, and there was no wrinkling of the cornea. There was no flowing of tears nor any

other symptom of irritation. The ophthalmoscope discovered many opacities in the vitreous humor, but no separation of the retina. Fingers could be counted at 3', and large type read without a convex glass. The field of vision was free. I must here remark that I had, until now, made no ophthalmoscopic examination of the eye, nor had I tested with precision its power of vision, having previously had no particular object in doing so. I thought it better, with such irritable eyes, to postpone the more exact examination as long as possible. It may therefore be, that the opacities in the vitreous were there beforehand, but the fact that there were no opacities in the vitreous humor of the other eye speaks somewhat for the contrary. Before the attack the patient could count fingers at 3' by candle light; it had therefore produced at least no very considerable reduction in the acuteness of vision. Not seeing any indications for an active treatment I merely ordered her to lie in bed in a darkened room, and to carefully protect the eye. In the evening no change had taken place.

On the 6th, at the morning visit, I found, to my astonishment, an evident increase of the intra-ocular pressure. At the evening visit it had increased still more ($-T_2$). The hemorrhage in the anterior chamber had disappeared. The patient said she could see to-day again clearly. The field of vision free. Fingers at 3'. On the 7th the consistence of the eye was still harder. On the 8th it was quite normal. Nothing to be discovered with the ophthalmoscope.

On the 9th the left eye had again become very soft, although not so very much as on the 5th—perhaps ($-T_2$). Yesterday, after the evening visit, the patient had a sensation of prickling in the eye and slight ciliary neuralgia, which did not last long. To-day she complains somewhat of seeing sparks before the eye, and there is an unimportant flowing of tears. She has that same peculiar sensation of pressure in the eye as with the first attack. There is no hemorrhage in the anterior chamber. No separation of the retina. There is no increase to the opacities in the vitreous humor. Fingers counted at 2'. Field of vision free.

10th.—Morning: Slight increase of the intra-ocular pressure. Evening: Pressure still increasing. The subjective perceptions of light are to-day less than yesterday.

11th.—The pressure higher. The flowing of tears and subjective perceptions of light have ceased.

12th.—The intra-ocular pressure has reached its normal height.

15th.—The consistence of the eye is again very soft ($-T_2$).

16th.—Morning visit: The internal pressure of the eye has increased considerably. Evening visit: The pressure is normal. With this attack the patient had no other sensation than that of a gentle pressure in the eye. The eye was not in the least irritated.

23rd.—Since the 16th the pressure has remained normal. To-day, at the evening visit, it did not amount to more than ($-T_3$). The eye remained at this tension until the evening of the 27th, when I was able to observe a slight increase in the internal pressure.

On the 28th the pressure had distinctly increased ($-T_1$).

On the 29th, however, the pressure had again sunk to ($-T_3$).

On the 31st (morning visit), pressure somewhat elevated. At the evening visit the eye had again attained its normal consistence. These last two attacks were only attended with a slight diffused redness of the sclerotic and the sensation of pressure.

On the 4th August, the intra-ocular pressure remaining normal, and the patient's means not permitting of a longer stay in the hospital, I tested exactly her power of vision before discharging her, whilst, at the same time, I sought her out suitable spectacles. The acuteness of vision of both eyes was exactly the same—namely, at 14 feet, with $+4$ Snellen xl.; therefore more than $\frac{1}{3}$; with $+2\frac{1}{2}$ No. 5 of Jaeger was read at 7 inches. In the left eye the opacities of the vitreous had decreased. The fundus oculi was normal. The incomplete acuteness of vision of this eye is accounted for by the opacities in the vitreous, and a thin secondary cataract, which partially covers the pupil. The acuteness of vision of the right eye corresponds to a more extensive secondary cataract. The wound in this eye is simply united.

A short time ago I had a letter from the husband of the patient; he is a postman in the country, and writes:—"A fortnight after her arrival the eye got worse than ever it had been in Berlin; it felt as if it would burst, flowed over with tears, and was quite soft; however, by quietly remaining in bed, it became again better, and retains still its proper constitution." The correctness of this observation with regard to the softness of the eye may be depended on, as the very intelligent patient had become aware of its occurrence while in the hospital.

What is very remarkable in this case, and in which it differs most from the two cases already published, is the absence of any change in the form of the eye by such great reduction in its internal

pressure. In the former cases there was a wrinkling of the membrane of Descemet, which produced a diminution in the acuteness of vision, besides a great flattening at the insertions of the recti muscles. Nothing of the sort was present in our case. The cornea retained its usual brilliancy; and although pressure on the eye produced a corresponding depression, this became filled out again as soon as the finger was removed. Neuralgic pains formed a principal symptom in von Graefe's case; here, in the five attacks observed in the hospital, only one was attended with pain, and it was of no greater moment than a slight ciliary neuralgia.

It is also remarkable, that the only sensation which the patient constantly experienced with these reductions in the tension of the eye should have been one of pressure, as if the eye were too large or too full. This may perhaps be explained by the pressure produced on the ciliary nerves by the swollen choroidal vessels, swollen in consequence of the hyperemia *ex vacuo* which must have existed. The effusion of blood into the anterior chamber with the first attack was, without doubt, caused by the sudden hyperemia *ex vacuo*; it probably took place from one of the vessels of the iris.

It is not easy to account for these vacillations in the intra-ocular pressure. That a nervous disturbance plays the principal part in producing them must be admitted; but what the nature of this disturbance may be we cannot say. We cannot explain them by means of a reflex irritation of the trigeminus; for Donders, and again lately, von Hippel and Grünhagen, have experimentally proved that irritation of this nerve produces an increase of the pressure. The latter authors have also shown that the result of an irritation of the sympathetic is a reduction in the pressure of the eye; but unless we accept a primary central irritation of the sympathetic we are again at a loss, for we cannot well conceive a reflex passing from the trigeminus to it. Such a reflex has certainly not as yet been proved to exist.

There is, however, another difficulty with which we meet—even supposing the nervous disturbance to be explained—and that is, in the vitreous humor itself. It is not easy to imagine how so much of the gelatinous substance of the vitreous can so swiftly be absorbed as to produce such sudden changes in the consistence of the eye. But if instead of the normal vitreous we have a true fluid, a serous exudation, which exists under conditions of constant absorption and transudation, then it is much easier to understand

how, surrounded by such a vascular membrane as the choroid, a large quantity of such a fluid may become quickly absorbed. And such we believe to have been present in our case. My friend Dr. Gouvêa has proved experimentally, and Prof. Iwanoff has shown (in a paper about to be published in the next *Archiv. für Ophthalmologie*), that in all cases of extraction for cataract attended with considerable loss of vitreous, the latter becomes separated from the retina, and the space left between retina and vitreous becomes filled with a serous exudation, the vitreous itself not being regenerated. In our case there was great loss of vitreous at the operation; we are therefore authorized to take for granted a separation of it, and the consequent serous exudation; and in this way is supplied what appears to be an important factor in accounting for the unusual phenomena of our case. Separation of the vitreous may occur idiopathically, and is indeed by no means an unusual condition, a very good power of vision being compatible with it. It is therefore possible that in the two cases already published a separation may also have existed.

ART. XXI.—*On the Cure of Uterine Epilepsy.* By LAWSON TAIT.

SCARCELY an article on epilepsy has been written which does not refer to cases of female epileptics, in whom menstrual irregularities are frequent, and cases have been frequently noticed in which exacerbations of the disease could be traced to irregular or deficient menstruation. Pregnancy, also, has been noticed to exert an influence, sometimes for good, sometimes for ill, over the poor epileptic. It has not been noticed, however, as far as I am aware, that deficient menstruation, or its total absence from the condition named by Sir J. Simpson, "infantile uterus," may be the direct cause of epilepsy, and that the rectification of this condition will cure the epileptic. I have twice met with cases where dysmenorrhea, from stricture of the canal, had caused epileptiform seizures; and in both these cases I effected cures by operative interference. But the following case will show clearly that even the formidable "*grand mal*" may be directly dependent on the condition of the uterus, and that it is capable of cure.

Jane C., aged twenty-five, a stout brunette, was sent to me from Barnsley, in April, 1868. Although presenting all the usual appearances of womanly development, she had never yet