Fox (L.W.)
COMPLIMENTS OF
WEBSTER FOX
504 WALNUT ST.
PHILADELPHIA

[Reprinted from Dunglison's College and Clinical Record, June, 1896.]

INTRA-OCULAR GROWTHS.

BY L. WEBSTER FOX, M. D. (J. M. C., 1878),
OF PHILADELPHIA;
PROFESSOR OF OPHTHALMOLOGY IN THE MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA.

Gentlemen:—Since the introduction of the ophthalmoscope the interior of the eyeball becomes like an open book, so that "he that runs may read." You have extraordinary advantages in becoming masters of the art of ophthalmology. The large number of eye patients in the ophthalmological department of the hospital, nearly three thousand cases last year and every case examined in the dark room under the supervision of a trained expert, gives you an experience which rarely falls to the lot of medical students. I can assure you that it has given me much pleasure in seeing you so attentive to this practical instruction.

The subject of my lecture to-day is not only a very important one, but a very instructive one as well. You are thoroughly acquainted with the histology of the internal coats of the eye, and you also have seen many pathological specimens of the same. Not a few of you have also followed cases from the beginning of certain diseases to their ending.

One of the most common forms of growths

SURGEON GEN'L'S OFFICE
563
LIBRARY.

is a disease of the retina known as *Retinitis Proliferans*. Those of you who attended the dark-room class may recall a case in which large bands of connective-tissue growth seemed to spring from the head of the optic nerve and spread like a fan over the macula region and toward the anterior portion of the eyeball. This tissue, with its metallic lustre backed by the brilliant reflex from the retina, gave you a picture which you will not forget. I have seen many cases, from a minute band over the head of the optic nerve limited to this area to almost complete filling of the vitreous space.

In some cases the retinal veins and arteries are completely obliterated and in others a section of a vein appears or disappears like a loop. The veins are always enlarged at such points. Recently we had a case where a thin, narrow strip of this tissue sprang from the macula region of the right eye and passed directly forward to the ciliary processes; here and there thin strips were given off and extended into the vitreous and looked like hyaline casts.

These proliferations do not assume any particular shape, but they all bear a striking resemblance to each other. It is rarely that a mistake occurs in making out the diagnosis.

As to the pathology we are much in doubt. These cases come to the ophthalmic surgeon when vision is gone or the patient is suffering from pain. A strumous diathesis may be the

soil upon which the growths develop; syphilis may also be a causation, and yet I have seen these growths in perfectly healthy individuals without any taint in the system. Undoubtedly in many cases the development was pre-natal.

In not a few instances we have associated with the blindness great pain, assimilating neuralgia. I can recall such a case.

Treatment is of little avail. Iodide of potassium gave relief in one case within recent memory, but failed in others. The pain is caused, I believe, by the contraction of this cicatricial tissue. If the pain grows very severe we must enucleate the eyeball, or, as I did recently, perform a Mule's operation satisfactorily.

Sarcoma of the Choroid.—This woman whose eyeball must be removed is known to many of you. With the ophthalmoscope you could see an apparent detachment of the retina, but, as I explained to you, the projection which is situated in the lower and outer quadrant of the fundus has a grayish-blue color as well as a rounded appearance. The blood-vessels were full and ran backward in straight lines instead of undulating curves. In this projection the line of demarcation between the normal retina and separation was crescentic, and a bluish base running with curved line gave it the appearance of a rounded body. The line of separation in detachment is usually more irregular, and apparently the retina comes forward in undulating folds; the

blood-vessels are full and also undulating. In some cases they appear and disappear. Another differential point in the diagnosis was that in this projection of the retina it resembled a solid body, and the color was a mottled blue gray. In detachment, the retina usually has a semi-transparent appearance and

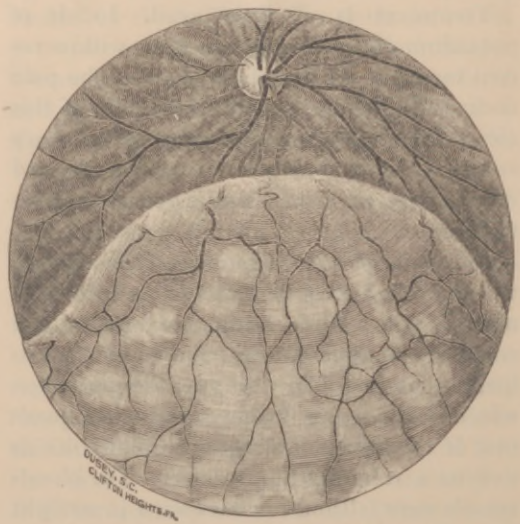

FIG. 1.—OPHTHALMOSCOPIC APPEARANCE.

the crests of the folds are of a silvery-white shade, gradually fading into blue or gray color, depending somewhat upon the pigmentation of the individual.

To recapitulate: In this projection of the retina we had the appearance of a solid body

with a distinct rounded outline, a mottled blue-gray color; blood-vessels full and running in straight lines and disappearing over the crests of the body; a well-defined space between the apex of the tumor and the still attached and normal retina. In a detachment of the retina we have the corrugated surface, a distinct blue and white color, blood-vessels running in corrugated lines; no space between the normal attached retina and its detachment, and there is a concavity or falling away from the line of demarcation.

The picture of sarcoma of the choroid is one to make a permanent impression on one who is a student of detail. I must confess that the differential diagnosis between these two diseases is very difficult, yet in this case I do not hesitate to make the diagnosis at once. I have explained already to the patient the gravity of the disease, and that the sooner the eyeball was taken out the better, yet insisted that she consult other ophthalmic surgeons and have their opinions. She has taken my advice, consulted at least six or seven of our leading surgeons, and is here today to have the eyeball removed. Upon removing the eyeball we can only confirm our diagnosis. I cut the ball through the equator and turn it inside out.

The first coat which I remove is the retina, which you will notice separates quite freely. This growth, rising abruptly on one side, and tapering gradually toward the surface at-

tached to the choroid, is in my judgment a sarcoma of melanotic character.*

Sarcoma of the choroid is a very rare disease. This is the second case which has come under my direct charge in thirteen years of active practice, and I believe I am within bounds when I say that I have made upward of fifteen thousand ophthalmic examinations during that interval. While Clinical Assistant at Moorfields Hospital, London, during a service of two years, I can recall two cases. Whilst there, forty-six thousand new patients

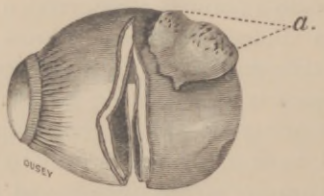

FIG. 2.

were entered on the Hospital books, but it is needless to say that a very insignificant number of these cases were examined with the ophthalmoscope, the conditions not calling for it.

My first case in this country was seen at the Germantown Hospital, nearly ten years ago. The patient, a German woman, sixty years old, consulted me for a partial dimness of vision in her right eye. Upon examination

* Dr. Alexander Klein made a microscopical examination which confirmed my diagnosis. Further description of same will be found in the "Ophthalmic Record," Vol. 5, No. 8.

with the ophthalmoscope I found a round body, over which the retina had the appearance of being tightly drawn—the solid appearance and mottled gray color led me to believe that I was dealing with a sarcoma of the choroid. The patient was kept under observation for some weeks. The growth seemed to get larger, and the patient also felt that the visual field was contracting. I advised enucleation, which was performed in the Hospital, and a section made of the eyeball, revealing a large, round growth, filling up one-half of the vitreous chamber. A microscopical examination showed that the tumor was a melano-sarcoma.

About a year after this a very interesting case of new growth on the iris came to clinic; it had the appearance of syphilitic gumma. I placed the patient upon mixed treatment, which, however, did not prevent the tumor growing. I made an attempt at its removal by excising the growth with a part of the iris. The microscope revealed that we had a pigmented sarcoma to deal with. The wound healed without any secondary results, but the growth returned, and after filling the anterior chamber, I removed the whole eyeball. The tumor involved the ciliary bodies, and cells were also found in the choroid. The patient lived for three years and died in the Hospital of involvement of the liver, in all probabilities a sarcoma, although no post-mortem examination was made.

All authorities agree upon its being a most malignant disease, and that sooner or later death ensues. When recognized, early enucleation may protect the patient, but the prognosis is always unfavorable, and if the growths are not arrested before death ensues, they develop to an enormous extent. I remember seeing a child three years of age, daughter of a druggist from an interior town of this State, with a growth from the orbit which attained the size of a pint cup in four months; and another case, an Algerian, where the tumor had grown even larger than the one just described. These growths were described by the older writers as fungus hæmatodes.

You may recall recently two cases of intraocular growths in children. The eyeballs were removed and examined microscopically; they proved to be true glioma. This disease is generally in its commencement unattended with pain, and the first sign of its existence will be detected in the pupillary aperture, which has a bright metallic appearance, deep-seated, with the pupil dilated and fixed; sometimes a deep-seated trabecular tumor is seen, over which a number of blood-vessels will be seen ramifying—this was particularly so in the patient referred by Prof. Isaac Ott. No inconvenience is produced by this disease in the first stage, and the mother of the child or friends discover its existence before the patient.

If allowed to remain the globe will distend and become discolored by inflammation and the pain becomes extreme, at last the iris and cornea give way and the mass projects externally, an ichorous discharge is poured out, repeated hemorrhages follow, and the patient dies.

Frequently wandering cells of the glioma find their way into the cranial cavity, producing a large growth in the brain, and death follows. This disease, in an advanced stage, can only be confused with abscess of the globe, but in abscess extreme pain is felt from the commencement, and excessive vascularity with chemosis accompanies other symptoms. Children in some rare cases are subject to an inflammation of the retina or anterior portion of the vitreous, or it may be an inflammation of the ciliary bodies, which deposits a morbid mass of cream color, it does not look unlike boiled rice. The eyeball has a perfectly normal appearance, but the same metallic reflection which is seen through the pupil in cases of glioma will also be observed in this disease. The first appearance, therefore, is nearly the same, but the process is widely different. Such a case was a little boy I showed you a few months ago. We still have the child under observation, and no changes, either in the morbid process or the eyeball, is observed. The disease is called pseudo-glioma.

In such cases it would not be proper to re-

move the eye at once, you must await developments, while in the true glioma it is imperative that enucleation take place immediately.

New formation of blood-vessels in the vitreous is a morbid process of very rare occurrence, yet in a comparatively short time we had three cases under observation. As to the origin, the histologist or pathologist does not give us much information. One can readily understand how a new blood-vessel may be formed on an inflamed cornea or in new tissue, but to form loops into a clean vitreous is still beyond our ken. As they do not restrict vision, we may look upon them as ophthalmoscopic curiosities.