the capsule freely and carefully, the dangers of scratching the iris, obscuring the operation with blood, oppressing the eye, breaking up the lens, and thus exciting the first steps of what may prove a destructive inflammatory process, are self-evident.

Since the above was written, I have had further opportunities of testing both Schufte's and Mooren's operations, with excellent results. I may also mention that, at the recent Heidelberg Ophthalmological Congress, Professor Jacobson stated that, in 140 operations, he had only lost three eyes. In one remarkable case, a patient, aged 85, was kept narcotised for three hours, and inhaled upwards of six ounces of chloroform. In an animated discussion which ensued, concerning various points connected with extraction, the general feeling appeared to be in favour of iridectomy only in special cases such as I have pointed out above. Von Gräfe also expressed an opinion contrary to the generally received notion, that of two cataracts the less ripe one afforded the best results from operation. Mr. Critchett, at this meeting, also stated that he had met with such success with Schufte's method and his own modified spoon, that he now never thought of performing the usual flap operation.

PROTRUSION OF THE EYEBALL: BEING THE SUBSTANCE OF A LECTURE.

By HAYNES WALTON, F.R.C.S., Surgeon to St. Mary's Hospital, and to the Central London Ophthalmic Hospital.

PROTRUSION OF THE EYEBALL.

PROTRUSION of the eyeball arises from several mechanical causes, which are very dissimilar in their kind, and in each there is an amount of detail that could never be supposed by any one not much engaged in ophthalmic practice.

Every one does not know the difference between a protruded eyeball and an enlarged one, and an error is very excusable in the inexperienced. Congenital enlargement has been met with, but very rarely; and, while the proportions of all parts remain the same, the greater absolute magnitude is very apparent. Enlargement from disease always carries the evidence of diseased action, if not in the altered form of the cornea, or in the increased size of the chambers of the eye from greater aqueous secretion, certainly in the bulging and altered colour of the sclerotics. In mere protrusion of the eye without distinction of causes, the upper eyelid covers the eye, and hangs down lower than usual, is more or less paralytic and puffed, with its surface generally of a dusky red colour, and traversed by large veins. On the other hand, in actual enlargement the eye is remarkably uncovered, and presents a staring appearance, while the upper eyelid is merely pushed forward and retained in that position, but is in other respects unchanged.

For the sake of convenience, I shall arrange the causes that thrust the eye out, under those that exist within the orbit, and those that are external to it. It occurs to me to remark that, in no other subject in the range of ophthalmology is the knowledge of anatomy and surgery so needed, alike for diagnosis and for treatment. He must be a well educated and practical surgeon, accustomed to surgical operations in general, who is justified to undertake all the instances of disease that should come under this classification. It is here that the limited province of the

"oculist" of old is so apparent. First, then, of causes within the orbit.

Venous Congestion. Under this head I venture to place the projecting eyeballs of the anæmic person. Different opinions still prevail about the origin of it. However, I believe in the cause assigned.

Few persons can have failed to notice in some females, for the most part pale, more or less prominent eyes, which are usually rolled about in a vague and hysterical manner, especially while speaking. There are marked degrees of the prominence. Sometimes you are attracted by a peculiarity merely, and you look twice before you are sure what is wrong; and sometimes the prominence horrifies you at a glance, and disagreeable enough it is then. The eyelids are generally puffy, and the conjunctiva reddened, and the pupils dilated. Males are not exempt from the disease; but so seldom does it occur in them, that I have never met with an example.

Associated with protruding eyeballs is enlargement of the thyroid gland; not always, it is true, but nearly always. I have not seen it absent, and the increase seems due to the simple enlargement of the glandular structure. In a single case only that I find on record, was the goitre of the cystic variety; and here it was very large.

There is generally some heart-disturbance, or, more correctly, disturbance of the circulation. The cardiac impulse is great; the sounds are loud and audible over the entire chest; and in the large vessels a systolic venous murmur is perceptible. It is difficult to judge of the natural pulse, as there is such susceptibility to excitement, that the asking of a few questions produces emotion.

My colleague, Mr. R. Taylor, has published an analysis of twenty-five cases, collected from his own practice and that of others. Of these, twenty were females and four males; of one, the sex is not mentioned, but from the context, the patient appears to have been a male. Three deaths occurred, in each instance in males. In two, there was a *post mortem* examination. Both of these had long suffered from extensive organic disease. In one, related by Sir Henry Marsh, there was considerable dilatation with hypertrophy, chiefly of the left side of the heart, and some amount of valvular disease, chiefly of the right. The right internal jugular vein was very much dilated. In the second, detailed by Dr. Begbie, the heart was large and soft, and flaccid; all the cavities, but especially the ventricles, were dilated; the valves were larger than usual, having accommodated themselves to the increased size of the cavities, but they were otherwise normal. The internal jugular veins were much dilated.

As a rule, however, it does not appear that organic disease of the heart is at all necessary to the production of this peculiar condition of the eyeball. The palpitation, which is invariably complained of, is due to anæmia. This, in the few instances in which the affection occurs in males, may result from extensive disease of the internal organs, from extensive and long continued loss of blood from piles, or from any other cause productive of destruction of the red corpuscles. In females, the starting point of the disease is almost invariably some form of exhausting discharge in connection with the uterine organs.

I cannot say that the impairment of sight is a consequence of this affection. It has never existed in any of the cases that I have so examined; in fact, there is no disease of the eyeball proper.

Of the actual nature of the pathological change in the orbit causing the protrusion, we are certainly ignorant so far as demonstration goes. It has been attributed to inflammatory swelling of the orbital contents, not sufficiently active to produce suppura-

tion, or to cause effusion into the orbital cellular texture; and to loss of tonicity in the orbital muscles, so that the globes, as it were, drop forwards. The last is, perhaps, the least likely of these unlikely things. There is not any loss of voluntary power, which I think would be inevitable, were there loss of tonicity on the orbital muscles; and the freest movement of the eyes may be combined with the greatest protrusion. Again, in the most debilitating diseases, with perfect muscular prostration, the eyeballs do not protrude.

I am inclined to attribute the protrusion to congestion of the deep-seated veins of the orbit, which I think offers a better explanation than any other of the variable amount of the exophthalmia, and of the readiness with which the eyeballs can be replaced by gentle pressure. Mr. Taylor, adopting Dr. Marshall Hall's views as to the spasmodic contraction of the muscles of the neck in paroxysmal and convulsive diseases, suggests that this may be the cause of the impeded return of the blood from the head; and this view is supported by the fact that, in the only two *post mortem* examinations that have been made, the internal jugular veins were found to be much dilated, as though there had long been some cause of obstruction at the lower part of their course; and, as in neither case was there any solid growth which could have impeded the circulation, it is not unreasonable to suppose that the obstacle was due to muscular spasm. But if this were true, how is it that there is no cerebral congestion, when the return of the blood from the brain is so checked?

It has been supposed that, if venous obstruction be the cause of the protrusion, to enlargement of the thyroid gland must the obstruction be attributed. The reader must decide how much this is worth, when he is told that considerable protrusion of the eyes is met with when there is not any perceptible thyroidal swelling.

From what has been said as to the nature of this disease, it will be obvious that the treatment must be directed towards overcoming the exciting cause of the anæmia, which, in the great majority of instances, depends upon uterine disorder. In addition to the special means which may be adopted for this purpose, pure air, nutritious food, and some preparation of iron will be invariably found useful; and those who believe its efficacy, may apply iodine locally over the thyroid gland. I have not seen complete recovery in any case, although several are recorded; but I have met with considerable amelioration; and in all that I have treated, improvement has followed the steady employment of the means I suggest.

Abscess. An abscess may form within the ocular tunic, and the symptoms would be protrusion of the eyeball, and pointing or swelling externally between it and the eyelid.

Pus may be deposited in the orbital cavity without the ocular tunic, and whether it be acute, subacute, or chronic suppuration, the physical characters will be the same; namely, the bulging of the orbital portion of the eyelid corresponding to the seat of the suppuration. The formation of pus is, according to my experience, a common orbital affection; and when, with protrusion, there are the usual constitutional symptoms attendant on abscess—the pain, with or without movement of the globe, the redness and puffiness of the eyelid, and the throbbing—we should early endeavour to discover the deposit by an exploratory puncture, made, if practicable, within the eyelids, in the probable direction of the abscess.

Inflammation of the Orbital Areolar Tissue, Idiopathic and Traumatic. With the protrusion from this cause, there is always much swelling and redness of the conjunctiva—chemosis, as it is called. As an idio-

pathic affection in various stages, it is not uncommon. It would not answer any practical end to notice in detail the degrees of chemosis that occur; it is enough to say that in the worst cases it stands out as a vascular tumour, and thrusts the eyelids completely aside. It may be limited in extent, and confined to the upper portion of the conjunctiva. As in very slight cases there is but little protrusion of the eyeball, it may be the only objective symptom, and it is always the most marked one. There are rarely absent the pain and the constitutional disturbance.

The traumatic variety is that most frequently met with. It occurs after severe blows about the temples, or on the margin of the orbit. Of course, all the contents of this cavity are always more or less involved. With the protrusion, the eyeball is generally restricted in its movements; sometimes it is motionless. I have been surprised to find the vision affected in all the severe cases that have come under my notice; and in all that I have been able to watch, it has never been restored.

The treatment consists in rest, leeching, or cupping at the temple, and incisions into the chemosis. It is decidedly wrong to attempt to press back the swollen conjunctiva by pulling the eyelid over it and applying a compress, as the eyelid is apt to suffer, while the disease is not thereby arrested; and it is equally improper to excise any part of the membrane, as I have seen done, for contractions follow, and entropion is likely to ensue. It is not necessary to dwell on general treatment.

A very rare form of this kind of protrusion is hypertrophy of the orbital areolar tissue, just as occurs in elephantiasis. In the only case I have met with, there was no loss of ocular movements. The conjunctivæ were highly injected, of a coarser structure than natural, and bolstered out around their ocular attachments by the posterior swellings, which were dense and doughy. Vision was perfect. There was much pain. I lost sight of the patient. I learn from the few cases which are recorded, that the disease is progressive, and the conjunctiva becoming dry and cuticular, the cornea gives way by slough or ulceration, and the eyeballs collapse. Very severe pain had induced the surgeons to resort to extirpation.

[To be continued.]

NOTES ON HERNIA.

By JOHN THOMPSON, M.D., F.R.C.S., Bideford.

UMBILICAL hernia occurs with such frequency in infancy, that it might, without impropriety, be termed "infantile hernia". It is sometimes congenital, but most frequently first makes its appearance some months after birth, when the muscular movements of the abdomen and lower extremities become forcible. Probably, in most cases the umbilical aperture has not been thoroughly contracted, and an expansion rather than rupture of tissue takes place. I have been struck with the comparative rarity of the complaint after the first year, which is explained on the supposition that the orifice of the umbilicus is then fully occluded.

The appearance of this hernia in infancy is peculiar, presenting a protrusion like a filbert or walnut, seldom exceeding the latter in size, except it be congenital; its delicate softness and elasticity on touch exceed these properties in the finest caoutchouc manufactured. It is not often met with in the adult; but when it occurs, is generally in females who have borne many children, and are past the middle period of life. Its size may then vary from an orange to a