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PART FIRST.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Amaurosis from Pressure on the Retina: the Symptoms, Causes, Pathology, Diagnosis, and Treatment of some of the Affections reducible under the foregoing Head.* By EDWARD OCTAVIUS HOCKEN, M.D., M.R.C.S.L., F.R.M.C.S., &c. &c.

THE imperfection or loss of vision which results from pressure on the retina, is not recognised as so common a variety of amaurosis as many of its other forms. It may be either temporary or permanent. It includes pressure on the convex and concave surfaces of the retina, either by sub-choroid or sub-sclerotic dropsy,—elongation and compression from orbital diseases,—by general hydrophthalia, or by dropsy only of the vitreous humour,—from a depressed lens, aneurism, or simple enlargement of the ramus centralis retinæ, or of the other retinal vessels,—enlargement of the choroidal vessels,—the pressure of any foreign body,—by effusion of blood in or upon its surface,—and by the deposition of lymph.¹ I shall confine my present remarks to the complete elucidation of the subject of hydrophthalia, viz., an in-

¹ *Vide* Author's "Treatise on Amaurosis, &c." p. 147, and *Lancet*, vol. ii, 1840-41, pp. 154, 157.

creased collection of fluids in the eye-ball, whatever their situation may be.

I will first touch on the symptoms, causes, pathology, and diagnosis of dropsy of the vitreous humour, and then prove my deductions by the narration of cases; premising that the term "general hydrophthalmia" is understood to include enlargement of the anterior chamber, and, consequently, dropsy of the aqueous humour. Such cases are comparatively rare. In simple dropsy of the vitreous humour, there is also general enlargement of the whole globe, preternatural convexity of the cornea, but with the addition of diminution of the chambers, and protrusion of the lens and iris forwards.

Dropsy of the vitreous humour.—The incipient symptoms are frequently obscure,—slight pain and dimness of vision, which, as the affection increases, changes to a myopic character, and characteristic phenomena develop themselves. The eye-ball becomes evidently enlarged, extremely hard and resisting, and altered in shape. From the *vis a tergo* the lens and the iris are pushed forwards, which may, even in the more advanced stages, come in contact with the internal surface of the cornea. The cornea becomes preternaturally convex, and finally opaque, from irritation and interrupted nutrition; the sclerotica is thinned from distension and separation of the fibres, and enlarged in proportion to its thinning; and from this process being most considerable in the inter-spaces of the recti muscles, the eye acquires a somewhat square form. The iris usually retains its healthy colour, whilst the pupil is dilated and motionless in proportion to the degree of distension present, and to the insensibility of the retina. As the sclerotica thins, so does the choroid become apparent; and as the thinning is always uniform, and affects the whole tunic equally and conjointly, so is the discoloration general and uniform. Thus the eye-ball acquires a bluer colour than natural, which gradually increases with the distension, until it attains an intense blue shade in the advanced stages of the complaint. The motions of the eye are limited, and finally performed with much difficulty; the hardness of the globe increasing in proportion to its distension, so as, when very severe, to endanger the continuity of the tunics. The eye is evidently enlarged from the commencement, and at length so much so, as scarcely to be contained in the orbit or covered by the lids.

The patient tells us, that at first his vision was defective, and he himself myopic; that this increased, till at length complete amaurosis was induced. The pain during the progress of the affection is deep-seated and tensive, situated in the eye and brow. During the early stages, the patient complains of a deep-seated feeling of pain and tension in the eye-ball; but as the vitreous humour increases in quantity, the pain and tension

become violent, and sometimes maddening. Occasionally, so severe is the pain, that Beer knew a man who punctured the globe with his pen-knife, "in the intensity of his agony."

Causes.—The disease has no connexion or relation whatever with general dropsy, but seems to originate in some local morbid action, induced in disordered or cachectic constitutions. I saw one case in a decidedly strumous child; and in another, which I shall presently dwell upon, it came on after a severe attack of influenza. The exciting causes are obscure, but seem to be such as usually induce a low insidious form of inflammation in the other textures of the eye.

Pathology.—The disease appears to be seated in the hyaloid membrane, which secretes an inordinate quantity of its contents. Is this morbid process, by which the vitreous humour is thus augmented, inflammatory? I incline to the opinion that it is, but most intractable in kind. And thus I may state, that chronic local hyperæmia would give the best definition which I entertain of its nature,—not but that there may be an active and acute inflammation of the tunica hyaloidea, speedily inducing hydrophthalmia. Mr Middlemore, who narrates such a case, supposes with Scarpa, that weakening of the sclerotica from blows and other causes, is usually connected with its pathology.

Diagnosis of hydrophthalmia generally.—This is by no means an unimportant part of the subject, since many cases of protrusion of the globe forwards from orbital disease, or from any *vis a tergo*, are by no means dissimilar in appearance, if the diagnostic points be not clearly known. All danger of deception may be entirely avoided, by attention to the following particulars:—*1st*, The appearance and conditions of the eyeball itself; *2d*, The state and position of the lids and structures, intermediate between the orbital edges and tarsal cartilages; *3d*, The presence or absence of a circumscribed tumour, displacing and fixing the globe. The first set of symptoms is by far the most important, as I shall endeavour to prove, in a diagnostic point of view, and essential to the presence of hydrophthalmia; for in all cases where any doubt can exist, we must look to the condition of the eye itself. Where hydrophthalmia has advanced sufficiently, so as to cause protrusion and enlargement of the globe, the sclerotica must be greatly thinned by absorption and separation of its component fibres, and, consequently, present a proportionately blue colour, and more or less alteration of its normal shape; this, I say, must be, and always is present. Again, in dropsy of the vitreous humour, the posterior chamber is abolished, and the iris thrust forwards; the anterior chamber is diminished, and the cornea preternaturally convex; the eye acquires a stony hardness. In general hydrophthalmia, the anterior and posterior chambers are likewise enlarged, and from the fact of an equality

of pressure both on the anterior and posterior surfaces of the iris, there is no displacement of that membrane. In exophthalmia,¹ the eye likewise is abnormally resisting, but never to a similar extent or degree. The textures are quite free from similar lesions, as in hydrophthalmia; the sclerotic is not thinned nor discoloured; whilst the anterior and posterior chambers are undisturbed. How important, then, are these differences. They are invariable, and therefore most truly diagnostic. I shall proceed, in the second place, to show that Dr O'Beirne's statements are, at all events, not always correct.

Second, *the state and position of the lids, and the structures intermediate between the orbital edges and the tarsal cartilages.*—Dr O'Beirne remarks, that “it is obvious that the following are the only certain means of distinguishing real from apparent enlargement of the eyeball, viz.

“In hydrophthalmia, the eye is completely uncovered; in exophthalmia it is more covered than usual.

“In the former, the upper eyelid is pushed upwards, but unchanged in all other respects. In the latter, it hangs lower than usual, is more or less paralytic and puffed, and its surface is of a dusky red colour, and traversed by several enlarged veins.”²

These statements of Dr O'Beirne, I believe to be most frequently correct; yet, nevertheless, as hydrophthalmia may and does co-exist with enlarged and tumefied lids, preternatural vascularity, and a partially paralytic condition, (probably from the weight being more than the levator palpebræ can constantly support,) as I shall proceed to show, they (taken singly) do not deserve much reliance as diagnostic symptoms, certainly not to the extent that Dr O'Beirne feels inclined to repose in them. I shall endeavour to prove that the condition of the structures intermediate between the tarsal cartilages and the edges of the orbit are of much greater importance.

Before narrating the case which will bear me out in these propositions, I may state, that in it and other similar instances, the tumefied, vascular, and inflamed condition of the lids extended no higher than the tarsal cartilages,³ and was evidently co-existent with, and dependent on, inflammation of the palpebral conjunctiva.

CASE 1. *Hydrophthalmia of both eyes in a cachectic constitution—œdema, and inflammatory congestion of the lids, as high as the reflection of the palpebral conjunctiva—transparent elevation of the con-*

¹ Not the results of accidental violence. In exophthalmia, the eye may be so inflamed as to obscure the subjacent textures.

² Dublin Medical Journal, vol. xviii., p. 97.

³ This is not *absolutely* correct in *all* cases; the vascularity and swelling are gradually shaded off in that situation; they do not terminate abruptly.

conjunctiva around the cornea by sub-conjunctival fluid.—Mary Tree, aged 54, was admitted on the 5th of September 1840, with hydrophthalmia, affecting both globes. She was a tall, stout, leucoplegmatic individual, with great softness and want of tone in the textures generally, without any dropsical effusion elsewhere; her appearance and complaints plainly indicated a very unhealthy and cachectic condition of the constitution, the skin being pale and yellow, the tongue coated, the digestion disturbed, and the secretions and excretions inveterately foul. Her usual occupations and habits were regular, and not unhealthy.

The previous history she gave of the affection, was the following: that during the last epidemic prevalence of influenza (1837), she had suffered severely, and recovered finally with great prostration of strength, and a shattered constitution. During the convalescence she became affected with pains in the eyes, and dimness of vision,—the organs being red and intolerant of light, and that ever since that period her vision had failed gradually, attended with enlargement and protrusion of the eye-balls. She knew of no exciting cause which had preceded the symptoms. Do not these facts seem to confirm the view I took of its pathology, viz. its inflammatory nature, and the predisposition of a deranged constitution?

At the time of her application, the eye-balls were greatly enlarged, and protruded considerably from the orbits; the right eye in particular. Under ordinary circumstances they were but partially covered by the lids, *which were stretched over their upper circumferences, being in a tumid inflamed condition, as high as the reflection of the conjunctiva.* By a voluntary effort the lids could be raised for a short time, but, on its remission, occupied again their previous position, and by voluntary contraction of the orbiculares palpebrarum they could be completely closed, so as to cover the globes. The irides were thrust forwards, almost in contact with the neural surfaces of the corneæ; they were somewhat discoloured, nearly obliterating the anterior chambers, especially in the right eye, whilst the corneæ were abnormally convex, greatly diminished in size, opaque around their junction with the sclerotica, with two or three opaque spots on their surface; the sclerotica was *uniformly* distended and thinned, presenting a deep blue discoloration from the subjacent choroid appearing through it; being darkest at or around the ciliary ligament, whilst the eye-balls were mis-shapen and restrained in their motions. The conjunctivæ were extremely vascular and thickened—that lining the lids especially so—and elevated around the cornea by a transparent collection of fluid, confined by a perfectly transparent portion of conjunctiva. Epiphora existed, and on a superficial examination the eyes seemed to swim in water; but

this was found to result, on a careful inspection, chiefly from the transparent sub-conjunctival effusion.

The patient complained of nearly complete loss of vision, and deep-seated pain and tension in the globes. There was pain in the head and bones, and, as I have previously stated, great disturbance of the general health, denoted by a cachectic look, a feeble full pulse, and derangement of the secretions and excretions.

The *dignosis* was founded on the "appearances and condition of the globes," which I have stated as most diagnostic, and never deceptive, whilst the condition of the lids was exactly the reverse to what Dr O'Beirne has laid down as a law in cases of hydrophthalmia.

The treatment adopted in this instance was counter-irritation, and the strictest attention to the general health; a blister was opened at the back of the neck, mercurials administered in alterative doses, and stomachic aperients directed according to circumstances.

She applied again on the 21st, with little or no alteration in her symptoms; but during the few months which have intervened her health has somewhat improved, and she professes to have received some slight benefit (spring of 1841.)

Remarks.—In this case the disease *occupied both eyes*, which, judging from the aggregate of the cases I have witnessed, is most common, if not invariable; whilst, on the contrary, exophthalmia is almost *invariably confined to one*. The state of the eyelids depended, I presume, on the inflammation of the palpebral conjunctiva extending to the anterior textures; *but this condition of the lids exactly simulated what Dr O'Beirne states to be confined to cases of exophthalmia*, and although presenting evident marks characteristically differing from the congested lid of the latter affection, *especially in extent*, still none have been even alluded to in the paper to which I have referred; and, therefore, in similar cases to the one now detailed, the deductions are altogether inapplicable and incorrect.¹ I have already stated that these assertions of Dr O'Beirne are frequently in the main correct, but they are so only in cases free from conjunctival complications affecting the lids.

All the symptoms indicating true enlargement of the globes were present, as well as such derived from the *vis a tergo*. The

¹ By examination, we find, that the eye-balls of individuals of the same period of life are nearly of the same real or actual size, although, during life, their apparent magnitude varies much; hence, it will be obvious, that the apparent size is dependent on the situation of the eye-balls in the orbit, and the extent to which the organs are uncovered by the lids,—the more superficially placed, and the more uncovered the larger they appear, and of course *vice versa*.

condition of the conjunctiva immediately surrounding the cornea was very peculiar, and so transparent as to allow the deep-blue bulging of the ciliary ligament to be distinctly seen; this chemosis (?) and the inflammation of the lids and conjunctiva, showed a greater amount of disease than usually attends the progress of hydrophthalmia. I shall reserve my observations on treatment to a subsequent part, when I can speak connectedly on the subject, although our prognosis is always most unfavourable in confirmed cases.

I may now say a word or two on the latter division of this second part,—the condition of the structures intermediate between the orbital edges and the tarsal cartilages. *In hydrophthalmia these are free from disease; in exophthalmia tumid, œdematous, discoloured, and preternaturally vascular.*

CASE 2.—*Congenital exophthalmia—strabismus convergens of the right eye—swelling, congestion, and partial paralysis of the upper lid, &c.*—Whilst writing these observations, I saw a child, with my friend Mr Coward of Hoxton, in whom this was clearly marked. A little boy of five years of age, had been affected with exophthalmia from birth; the father stated that the eye (right) was higher and “larger,”¹ than the fellow-organ at birth. The protrusion of the right eye had gradually increased, more so within the last two years, but had never been attended with any pain. The symptoms, on examination, were great protrusion of the organ, strabismus convergens, and dilation of the pupil; the upper eyelid was greatly swollen, covered with large tortuous livid vessels, and hung in front of the eye, covering it to a considerable extent; the conjunctiva generally, but especially of the lids, was inflamed and vascular, and protruded forwards on the lower and outer side, so as to be seen even without depressing the lower lid. The most particular point, however, was, *that the structures, as high as the orbital edge superiorly, were, as well as the lids, swollen, congested, and marked by varicose vessels.* When I speak of the vascularity reaching only to the upper edges of the tarsal cartilages, in hydrophthalmia, (see former case,) I do not mean, as I have already explained, that it terminates there abruptly, but only that it does not extend much higher, being gradually shaded off in that situation.

The patient was affected with true strabismus, not luscitas, (or immoveable distortion,) as when directed he could turn the eye outwards completely, and the external circumscribed swelling presented, on examination, no feeling of a defined tumour, but only a soft puffy swelling. The eye itself was unnaturally tense and resisting, not nearly so much as in hydrophthalmia, resulting, as I have before explained, from the same force which protrudes

¹ Vide Lancet, vol. ii. 1840–1, p. 146.

the globe; in appearance, there was nothing unnatural; the sclerótica was sound, and of a healthy colour; the iris not forced forwards; the cornea of its natural convexity, size, and transparency; the chambers normal; the pupil dilated and sluggish in its movements.

The child complained of no pain in the eye or head; its vision was defective, but by no means lost; and its health had been pretty good since birth. The strabismus probably resulted, not from pressure, but from the defect of vision interfering with the accurate use of the other eye. This case requires no comment; in it were seen all the symptoms peculiar to exophthalmia, characteristically proving the truth of my observations, and, in themselves, clearly diagnostic from those of hydrophthalmia.

My third and last division of the subject of diagnosis, treats of *the presence of a circumscribed tumour displacing and fixing the globe*. It behoves us, in every doubtful case, to examine the nature of the swelling, and ascertain its uniformity, since the majority of cases, attended with exophthalmic protrusion, are occasioned by a circumscribed tumour, or a tumour larger at one than another part. When such is evident to the eye of the observer, there can be no doubt about the matter; but in the early stages of the affection, we may be unable to discover its existence by the eye alone, although present, and forcing the eye-ball in the opposite direction. This may be accounted for by the comparatively small size of the swelling, and the fact of its being involved in the surrounding tumefaction. But the touch may here make manifest what the sight, without its assistance, either proved inefficient to discover, or suggested doubts to the mind of the observer; the part at which the protruding growth will ultimately show itself, feels, by careful manipulation, elevated and resisting,—it conveys the idea of some hard circumscribed growth imbedded in the surrounding soft textures. This is precisely the exact state of parts, and is therefore truly diagnostic.

Such a tumour displaces the globe in the opposite direction; thus, in the case just narrated, the tumour existed at the lower and outer part of the orbit, whilst the globe was ordinarily turned upwards and inwards, not, however, fixedly so in the patient; indeed, as I have before remarked, it was doubtful whether it resulted from pressure or from the defect of vision. When very slight, the protruded eye-ball would be turned out of its axis, but inconsiderably, and its motions limited to but a slight degree; yet this proposition would always hold good, namely, that the protrusion would be most considerable in *the opposite direction* to the situation of the expelling force; and hence, that the presence of a circumscribed tumour, discoverable by the united powers of touch and vision, displacing and comparatively fixing the eye-ball, may with advantage be enumerated

among the diagnostic symptoms of hydrophthalia and exophthalmia.

I will now examine the evidence we possess of hydrophthalia being an inflammatory disease; and first, its occasional appearance from acute inflammation.

Acute hyaloiditis—paracentesis oculi—atrophy of the organ.—A gentleman¹ complained of great pain in the globe, with a sense of tension, and great dimness of vision, occurring, as he stated, without any cause with which he was acquainted. On examining the eye, the iris was found to be somewhat convex, the pupil slightly dilated, and sluggish in its motions, and it had also a very dull and cloudy appearance; the globe of the eye was exceedingly firm and hard. Acute inflammation of the hyaloid membrane was suspected, and therefore bleeding, the use of mercury, and the application of blisters to the nape of the neck, was forthwith suggested and employed, but without any apparently beneficial result; for the eye-ball increased in firmness, and became evidently enlarged; the pupil became contracted and immoveable, the iris was almost in contact with the cornea, the lens was becoming opaque, and vision was nearly destroyed. The pain in the eye, the orbit, and the head, were almost insupportable. The eye was then tapped with a fine grooved needle, leeches were applied to the temples, and mercurial ointment, blended with opium, was rubbed over and around the situation of the supra-orbital nerve. After repeated tapping of the eye, the disease terminated in collapse of the eye-ball; and it is extremely probable, from the state of the patient's vision, that the retina was first compressed, and then absorbed, together with the hyaloid membrane and its septa. At all events, where great dimness of vision occurs in connection with an increase of the vitreous fluid, and independently of any proper and sufficient indication of inflammation, either of the choroid or of the retina, there is satisfactory evidence that such dimness of vision arises chiefly from compression of the retina; and if it continue on the removal of the compressing cause, there is very good reason to believe that the compression it has already sustained, has either induced an immediate state of atony, or has caused its partial or total absorption.

Let me now speak from my own experience of chronic hyaloiditis, and its diagnosis. I will presently narrate a case of well-marked hydrophthalia from chronic hyaloiditis, which will, I trust, at all events prove that the pathology or nature of the affection is occasionally an inflammation of that tunic, leading to an increased secretion of its normal contents. But I would inquire, must we always call disorganizing processes, attended with

¹ Vide Middlemore's Treatise, vol. ii. p. 327.

an increased fullness of the vessels of the part, inflammation? If so, then is dropsy of the vitreous humour, always an inflammatory condition of the hyaloid membrane; but if we answer the question in the negative, then may we regard the disease to consist usually of an insidious, chronic, intractable, and disorganizing process, specifically marked by increased secretion. We do most truly see such processes at work under various circumstances, as I have now alluded to, and yet without the shadow of a title to the epithet inflammatory. The processes which spontaneously occur in advanced or old age, give rise to changes in colour, transparency, texture, and size. As instances, I may enumerate the enlargement, &c. of the prostate, the opacity and change of structure in the ciliary circumference of the cornea, constituting arcus senilis, the haziness or changes which so frequently originate, at this time of life, in the lens and humours, the retina, and pigmentum nigrum, from the same causes,—are not inflammatory. Again, at any period of existence, tumours originate in various parts of the body,—parts undergo various transformations, and still are not of an inflammatory origin; so that mere change of structure, size, and situation, is not *necessarily* connected with inflammation.

The following case probably implicated the retina, which may have assisted in the production of the amaurosis, conjointly with pressure on its concave surface.

CASE 4.¹ *Enlargement and blue discoloration of the right globe—inflammatory halo around the cornea—atrophy, with a shining, shrunken, capsular cataract of the left organ.*—Elizabeth Ward, 21 years of age, a full, florid, unhealthy-looking person, is rather stout, with a thick, short neck, and small thick features. She has been subject to frequent attacks of giddiness, and is extremely nervous and excitable. The left eye was lost during childhood from a blow: it presented, during her present condition, a shining, shrunken, corrugated, capsular cataract,—the *cataracta arida siliquosa* of German authors; the eye-ball was sunk in the orbit, and considerably atrophied.

Preceding and incipient symptoms.—She states that she was always near-sighted, (at least as long as she could remember,) but could see perfectly when objects were placed sufficiently near. Her present symptoms came on suddenly, in the November of the year 1839, whilst actively engaged in digging potatoes. She suddenly found her sight to become dim and indistinct whilst thus employed; her sight became affected without any other well-marked symptom, and has continued to deteriorate gradually from that to the present time, (May 1840.) The augmentation of the amaurotic symptoms has been occasionally attended with

¹ Vide Author's Paper, Lancet, p. 223, vol. ii. 1840-41.

sensations of muscæ, sparks, &c., deep-seated pain in the eyeball, and occasional pain in the ear, frequent headache, vertigo, and pain over the brow.

Present symptoms.—She states that her sight is very imperfect and confused, but less so during the morning; that on first entering a brightly lighted apartment, her sight is somewhat improved, but that as the light is painful to her, she sees best, for any continuance, in a comparatively darkened apartment. She has almost constantly unpleasant sensations of dark or luminous bodies flitting before the eye; sometimes a thick mist seems to intervene between herself and surrounding objects; her head and brow pain her, especially the former, from excitement; her general health is otherwise good, but she professes herself to be “weak and nervous.”

The aspect is not vacant, and the axes of the eyeballs correspond; but the pupil (right) is dilated, and its motions slow and limited, whilst the iris is protruded forwards, with diminution of the chambers; the eyeball is preternaturally protuberant and exposed—much firmer and harder than natural; the lids healthy, but forced asunder by the globe; the sclerotica *uniformly thinned*, and of a deep blue colour, from the appearance of the subjacent choroid; anterior ciliary vessels formed a slight, but well-marked zonular halo around the circumference of the cornea, and a few dilated conjunctival vessels passed inwards from the recti branches. Her pulse was excitable and quick, but readily compressible; the appetite and digestion good, the bowels open, and the catamenial flux normal in quantity and regular in appearance. When first treated, in November 1839, she states, that the general dullness of sight yielded to hemiopia¹ on the right side of the affected organ, by the application of leeches; but that hemiopic condition of vision lasted only ten days or a fortnight, when the original derangement of vision returned.

Diagnosis.—The diagnosis founded on the symptoms of pressure in, and enlargement of the globe, protrusion of the iris forwards, and diminution of the chambers, and the absence of obvious displacement of the retina, was, dropsy of the vitreous humour from chronic hyaloiditis; amaurosis from pressure on the concave surface of the retina; complication of the retina in the inflammatory process.

The *treatment* employed consisted chiefly in local blood-letting, by cupping at the back of the neck, the colocynth and tartarised antimony pill, in the proportion of one-twelfth of a grain of the

¹ This, I think, incontestibly proves, that the blindness was not occasioned primarily by pressure from dropsy of the vitreous humour; its sudden occurrence, also, whilst using exertion in the bent position, looks more like amaurosis from congestion.

latter to five grains of the former—v. grs. quâque nocte—vel p. r. n., &c. &c.

Not the slightest improvement resulted from these measures, and the patient was discharged at her own request, after some months' residence as an in-patient of the West of England Eye Infirmary.

Remarks.—The inflammatory nature of the affection was diagnosed, from the small, straight zone of vessels, which surrounded, but fell short of the cornea, the false appearances of light, and the pain over the brow, whilst the seat of the inflammation was inferred from the certainty that dropsy of the vitreous humour existed, and the usual phenomena of retinal complication. Again, we have a striking instance of the diagnostic symptoms exemplified; the uniformity of the sclerotic attenuation, yielding chiefly in the recti interspaces, and the complete failure of common methods of treatment. The advantage of a comparative examination into the degree of resistance offered by the *two* globes to the examining fingers, was lost in this case, since the left eye had been atrophied from childhood; but this was of little importance, as I have already explained, as an accurate estimate may be formed simply from a practical knowledge of the hardness of the healthy globe, this being nearly alike in all adult eyeballs. A few dilated vessels ramified in the conjunctiva oculi, but that reflected on the lids, was free from complication; hence the eyeball was preternaturally exposed, and the upper eyelid uncongested. In such cases it is that Dr O'Beirne's observations have any value.

As regards the effects produced by the application of leeches, we can only imagine that cerebral congestion was primarily induced by the exertion and position whilst at work, in a probably predisposed individual, and that the means employed partially relieved this condition, whilst the congestion of the vessels of the eyeball continued, and ultimately led to the subsequent effects. I shall not here digress on any theories relating to the production of hemiopic vision, such as Wollaston's opinion of the decussation and ultimate distribution of the optic nerves, &c., but simply remark, that it here existed on the right side,¹ the left half of objects only being seen, its short continuance, and the return of complete dullness. Was this return the consequence of the commencement of the subsequent inflammatory process? During the patient's residence in the West of England Eye Infirmary, scarcely any fever could be said to exist; in fact, the general health was but little deranged; she was, however, decidedly hysterical.

¹ Mr Abernethy ludicrously related the account of an attack of hemiopia which he had himself suffered from, by saying, that in his own name he could see as far as the "ne," but not a bit of the "thy."

I will proceed to consider general hydrophthalmia, after I have spoken somewhat of diagnosis.

Mr Dalrymple has offered some remarks on the foregoing case, which, as coming from a gentleman alike distinguished for his scientific and practical acumen, it becomes me to notice. In a letter to the *Lancet*¹ he remarks, that "the infrequency of death from, or during ophthalmic disease, and the great difficulty of obtaining a deliberate examination of the organs of vision under any circumstances, have been the obvious causes of the incompleteness of the morbid anatomy of the human eye. Hence the assumption of peculiar conditions of the organ, when the subject of affections of the posterior and more hidden tissues; and hence the localizing the seats of inflammation, which are neither proved by post-mortem results, nor by symptoms and appearances observed during life. These remarks are hazarded in consequence of reading in your last number a case of so-called hyaloiditis, by Dr Hocken.

"I by no means wish to deny that such a disease may not exist; on the contrary, any tissue organized as the hyaloid membrane indubitably is, may be the subject of inflammatory action. I beg, therefore, simply to observe, that I do not see any symptom or detailed appearance in the case of Elizabeth Ward, that warrants the assumption of hyaloiditis.

"The case appears, from its early history, as the author justly observes, to be one of congestive amaurosis, probably congestion of both choroid and retina, subsequently proceeding to chronic inflammation of those tissues. The dark and luminous spectra attest this fact. The eyeball enlarges, the iris is projected forwards, and the patient becomes perfectly amaurotic. This is the result of pressure undeniably. The hardness of the globe, the blueness of the sclerotic, sufficiently indicate the increased volume of fluids within the eye. Where, however, is there any thing to affirm the supposition of the pressure being on the concave surface of the retina, or, in other words, of an increased quantity of the fluid filling the hyaloid cells? In all matters professedly incapable of demonstration, it behoves us to be cautious how we assume the existence of morbid changes, which are, to say the least, excessively rare, and especially in a case like the present, where no evidence appears to support the presumption.

"It may be asked, why in this case the pressure may not have existed on the *convex* side of the retina, from an exudation of fluid between the choroid and retina. I have, by a fortunate chance, in my possession two preparations, which indicate the morbid change to a very marked extent, in which the earlier ob-

¹ P. 270, vol. ii. 1840-41.

jective and subjective phenomena accord with those detailed in the case of Elizabeth Ward.

“ In the one, the subject, a child, died of acute hydrocephalus, the ophthalmic disease, however, long preceding the cerebral mischief. The child became gradually amaurotic of one eye; the globe enlarged, was hard and resisting; the iris was pressed forwards nearly in contact with the cornea; the pupil was dilated; the same halo of sclerotic vessels surrounded the cornea; the same frontal pains and vertigo were present. The admission-paper of the patient was at once marked chronic choroiditis. These symptoms were soon merged in the acute cerebral disease of which the child died.

“ On examination it was found, as regards the eye, that a considerable effusion of fluid existed between the choroid and retina, to such an extent, as not only to enlarge the globe and press forward the iris, but to *compress the retina into an almost solid cord in the centre of the eye,*¹ and cause a *total absorption of the vitreous body*, or, at least, of its fluids. The lens had *ultimately* become opaque, and was thrust forward in contact with and carried onwards the iris, to the total obliteration of the anterior chamber. The morbid fluid was collected in a watch-glass, and coagulated by heat into a solid mass of albumen.

“ In this case, the amaurosis combined with a hard and distended globe was the result of effusion, but, at the same time, a total obliteration of the natural fluids, the vitreous and aqueous, was demonstrated by the post-mortem examination.

“ The second case, the preparation of which I also possess, occurred in the practice of Mr Tyrrell, and has been alluded to in that gentleman's excellent work on diseases of the eye, (vol. ii. p. 71.) In this case the vitreous fluids had considerably wasted; the retina was compressed and puckered up from effusion between it and the choroid; but in the progress of the disease, although the globe had been enlarged, as indicated by the preparation, absorption of the contained fluids had preceded the patient's death; and the globe, from a firm and resisting one, had become flaccid.

“ I am much more inclined, therefore, to look upon the case of Elizabeth Ward as one of chronic choroiditis, than as inflammation of the hyaloid membrane, more especially as the early symptoms all tend to that conclusion. The mere distension of the globe is not pathognomonic, and may depend on more causes than increased vitreous body; while the *succession* of symptoms—an important matter in all obscure diseases—lead naturally to the inference, that congestion of the choroid merged into chronic in-

¹ I have taken the liberty of placing this passage in italics, as it seems to me of as much importance as the following clause.

flammation of that tissue, and ultimate effusion between it and the retina.

“ I hope that so diligent and acute an ophthalmic observer, as Dr Hocken has shown himself in his papers upon amaurosis, will not lose sight of this interesting case ; and should chance throw in his way the opportunity of investigating the morbid structures of this eye, that he will favour the readers of your Journal with details that cannot fail to be interesting in the present imperfect condition of ophthalmic morbid anatomy.”¹

The observations of Mr Dalrymple are doubtless valuable, yet so far interested that he has a theory to support, (at least I presume so) namely, the collection of fluid in Jacob's membrane, which, according to this gentleman, is a closed serous sac. As regards myself, I seek but the establishment of truth ; I have no theory to support, and of course it would make no difference to me whether the fluid were collected anterior or posterior to the retina ; but as I cannot exactly accord with Mr Dalrymple's views, I will proceed to show how, and in what manner, a diagnosis may be formed in the living eye, between enlargement of the vitreous body, and chronic choroiditis, leading to an increased secretion of fluid behind the retina.

With Mr Dalrymple I am ready to acknowledge,² that the unfrequency of opportunities in making post-mortem examinations of the apparatus of vision, has hitherto retarded, and at the present time still continues to retard, a certain and definite knowledge of the pathology of the deeper-seated tissues ; but I would maintain that careful and *accurate* observation during life is most frequently sufficient.

True, in hydrophthalmia from any cause, and from any situation, the accumulated fluid may occupy, the dilatation of the eyeball is effected, from the uniform pressure and distension such must exert, according to the known laws of accumulated fluids, (exerting an equal degree of pressure in every direction) whether the accumulation be blood, or pus, or serum ; yet we must remember that diseased actions, originating the secretion or effusion, may materially alter this general law ; for instance, whatever occasions a varicose condition of the choroidal vessels, although it may likewise produce an accumulation of fluid, prevents the *uniformity* of distension, and in place occasions *irregularity or hernial distension, and attenuation of the sclerotica*, in accordance with the irregular distension and uneven surface of the subjacent choroid. This very condition of the choroid is soon

¹ In the summer of 1841 I made diligent search after this patient, but was unable to ascertain any further particulars of her history.

² *Vide* Lancet, vol. ii. p. 318, 1841-42.

produced, either in acute or chronic choroiditis; and hence a valuable diagnostic point.

The diagnosis of an increase in the quantity of the vitreous humour, whether it does or does not own that local pathology, I have stated, from that accumulation of fluid effected by choroiditis, may be found in my third communication on amaurosis, in the second volume of *The Lancet* for 1840-41.¹ I there stated, that in dropsy of the vitreous humour, the sclerotica was dilated and thinned *smoothly and uniformly*; but that in choroiditis the *uniformity* was absent, the thinning being irregular; and hence the protrusion, first of the ciliary ligament, and then of portions of the choroid itself, constituting herniæ scleroticæ.

Another point to be borne in mind is, that ordinary hydrophthalmia is a disease of *both eyes*, (acute hyaloiditis may be confined to one,) choroiditis of *one*—disease not commencing in the fellow-globe, until it has progressed considerably in the one primarily affected. When such extension results, it follows the laws of *analogy* I have already laid down (*loc. cit.* p. 153—4) namely, that exactly the same diseased actions are set up, and the identical parts of the fellow-organ are deranged—whatever be the disease, or whatever parts may be the seat of such affections.

I have never myself found much difficulty in the diagnosis between an increased quantity of the vitreous humour, and collections of fluid behind the retina, when sufficiently far advanced to form any definite opinion at all. As Mr Dalrymple justly remarks, the retina is in such cases thrust forwards, producing a corresponding absorption of the vitreous humour in proportion to its advance, the retina eventually forming an almost solid cord in the centre of the eye. The very advance of the retina in these cases, is a proof of their nature. I recollect watching a case, in which this fact was beautifully and evidently seen, during some two or three weeks. The retina, rendered white and opaque, was gradually and visibly thrust forwards, approaching from the fundus and sides towards the pupil, increasing proportionally with the accumulation. At the termination of this time it began to diminish gradually, going on till the whole globe was rendered flaccid and shrunken, remaining partially atrophic; the patient retained imperfect vision of the organ. These *obvious* phenomena are not uncommon, nor exceptions to some general rule. I believe that they are invariable and diagnostic, sometimes proceeding to a very considerable length, as may be gathered from Mr Wardrop's remarks.

Mr Wardrop says,² that where the fluid collects quickly, it is accompanied by severe pain in the eye and head; the pupil becomes much dilated, and when the disease has far advanced,

¹ *Vide loc. cit.*, p. 156.

² *Morbid Anatomy of the Human Eye*, vol. ii. p. 72.

there is the appearance of an opaque body behind the lens, from the retina being compressed, which in one instance was mistaken for cataract, and an attempt made to couch it. This gentleman gives an illustration of this case. (Plate xvii. p. 289.) It is a vertical section of an eye, "where a watery fluid had collected between the choroid coat and retina, in such quantity as to compress the retina into a cord, and produce a complete absorption of the vitreous humour." He remarks that the eye in this instance appeared, on a superficial examination, to be affected with cataract, *a white substance being seen behind the pupil*. An attempt to couch what was conceived to be the opaque lens was made—a fruitless operation, which gave great pain.

What could have prevented a careful observer from detecting so important and obvious an objective symptom in Mr Dalrymple's case? where he states that the retina was compressed into an almost solid cord in the centre of the eye, and the vitreous humour totally absorbed—cataract not being developed until a very advanced stage, or, as Mr D. has expressed himself, "ultimately."

Hence I would remark, as a general law, applicable to all cases, that no important quantity of fluid could collect behind the retina, without displacing that tunic, and causing more or less displacement and absorption of the vitreous body; and that in all such cases the nature must be self-evident by a careful inspection through the pupil, where the *white advancing retina* may be recognised at the fundus and sides, since the same causes which displace, invariably render the retina opaque and white.

General Hydrophthalmia.—This is an affection in which the vitreous and aqueous humours are both morbidly increased. The pressure from behind is counterbalanced by the force exerted anteriorly; and hence the iris retains its normal relative situation from the *equality of pressure* exerted on all sides. To the symptoms of dropsy of the vitreous humour, are superadded those of enlargement of the anterior chamber. The cornea is thus rendered preternaturally large and convex, and in general with a tendency to central thinning and protrusion,¹ occasioning, in addition to the very imperfect vision, *visus obliquus*, when the patient attempts to view anything. I have remarked that nearly all of the few cases of this disease I have witnessed, were cases of dropsy of the vitreous humour, superadded to an original condition of myopia, with a large anterior chamber, and preternatural convexity of the cornea, this latter increasing in connexion with the superadded disease. General hydrophthalmia is a very rare

¹ I presume Scarpa alludes to this tendency when he says "that the eyeball assumes at first an oval figure, terminating in a point at the cornea." Translation by Briggs, p. 421, second edition.

disease ; so much so, that I do not remember more than two or three cases of this affection, out of the many thousand ophthalmic cases I have examined during the last seven or eight years. One of these I will now narrate. *General hydrophthalmia of both globes, more advanced in the right than the left organ—great imperfection of vision in both eyes—tendency to central thinning, and central protrusion of the cornea, occasioning marked visus obliquus.*

A respectable-looking woman, named Dorothea Baker, applied to my friend Mr Wormald, among the out-patients at St Bartholomew's hospital, complaining of great dimness of vision affecting both globes, on the 2d of December 1841. She was a pale cachectic-looking female of middle age (aged 50); her countenance sallow and anæmic, but the lips and lining of the mouth florid and natural. She stated, that she had been for a long time under treatment elsewhere, but had not had many active remedies employed, although her mouth had been made sore by mercury. She is a servant; and in the capacity of cook, has been employed for several years before large fires; but has, on her own account, worked at her needle as much as her other occupations would permit. About two years ago she felt herself unwell, but imagined that she had taken cold; and during this period it was that she first found her sight defective, and complained of aching and weariness in the globes, after she had been working some time with her needle. She states, that several years before this she had been in the habit of perceiving a sense of waving before her eyes, frequently with, but occasionally without, luminous spectra or dark muscæ volitantes, especially from derangement of her health, digestion, &c. Her vision has always, as far as she can remember, been myopic in both organs, and the vision of the left much more imperfect and obscure than that of the right.

From the period alluded to (about two years ago), she has found the vision of both eyes become gradually more and more imperfect, chiefly, however, in the right eye; luminous bodies and a waving appearance were very troublesome at first, but they have at present ceased for a long time: she has always experienced more or less pain in the globes, which was deep-seated, and most severe in the right eye, coming on with greatest severity, and with a dull oppressive weight and aching over the brow towards night. This pain has gradually changed its character during the continuance of the affection, having become more constant in its presence, and much more tensive in its character. She describes it as very deep-seated—"at the bottom of the eye-ball," being a dull heavy pain, as of pressure, invariably increased nocturnally in connection with the derangements of sensation over the brows. She has been under treatment for some time, and has had her gums made sore by the employment of mercury, but has not been either bled or blistered.

On making an examination, on the day of her application, the unnatural prominence of the eye-balls, especially of the right organ, was most obvious at first sight. On closer inspection, we found evidences of enlargement in the globes: the anterior chambers were enlarged, and the corneæ much more prominent than natural, with central thinning, and tendency to conical cornea, much farther advanced, however, in the right eye; fundus of the right eye (which also applies to the left, with the fact, that all the phenomena were more marked, and farther advanced in the right) somewhat heavy; the eye-ball of a *uniform* bluish colour; cornea clear and transparent, but large and slightly conical; iris healthy in its appearance, both as regards brilliancy, colour, and relative situation, although, from the increased size of the anterior chamber, it was unusually distant from the inner surface of the cornea. A slight but indistinct zone of very minute straight vessels surrounded the cornea, and the eyelids were preternaturally loaded with blood, and large ramifying vessels. The organ was firm to the touch, and resisted compression with abnormal hardness. The pupils were dilated slightly above the medium size, and responded to the sudden alternation of light and shade, but imperfectly and sluggishly. The aspect of the patient, at a distance, was staring and amaurotic.

She complained of very indistinct vision with either eye, so that when a white dialed watch, with black figures, of large size, was shown her, she could with difficulty make out the situation of the minute and hour hands, but could not even perceive that a second hand or figures existed at all. She held the object close to the eye, and obliquely,—this being the only position in which she could see at all. The pain in the globes and over the brows was regularly present, and presented the peculiarities already described; and the sense of distension and pressure in the right eye was very annoying. The waving appearance had disappeared for some time.

Her general health was deranged: the tongue moist, and covered with a slimy yellowish fur; look cachectic; alimentary secretions foul; pulse soft and full. She was directed on the 2d of December—*Ferri sesquioxidi xv grs. hyd. c cretâ iij. grs. ter die.* Mr Wormald directed the foregoing remedies from the pallor and cachectic look of the patient, and on a theory that a complete change of treatment frequently cures, after the individual has pursued an antiphlogistic, or other plan of treatment, for any length of time. *December 6.* Remains *statu quo* in all essentials. To continue. *December 13.* Her general health is improved; the ophthalmic symptoms have not deteriorated. *Pergat. December 20.* A decided improvement in her appearance; vision nearly as before. To continue. *December 27.* States herself to remain as before; complains much of *visus obliquus*, chiefly with the

right eye; corneæ have a decided tendency to become conical. She imagines that the "protrusion" of the eyeballs continues to increase, but that her vision is not worse at present than it has been for some time. To continue.

Mr Wormald intends to administer turpentine, in small doses, by my recommendation, the effects of which I trust to watch carefully, although little prospect of good is held out by any treatment, general or local.

Remarks.—The diagnosis of general hydrophthalmia was made, in this case, from the obvious phenomena of general enlargement of the eye-ball which were present: considerable enlargement of the cavity containing the aqueous humour being superadded to those symptoms on which I have already dwelt in relation to dropsy of the vitreous humour. As we should have judged *a priori*, the equality of pressure prevented any displacement of the iris or lens,—the resistance of the increased volume of aqueous fluid pent up in a closed cavity (as it is termed), sufficing to counterbalance the distension and pressure originating in the *vis a tergo*; under these circumstances, the only relief to the constantly existing and distending power would be obtained in the augmented size of the eye-ball generally, by the yielding of the several tissues forming its parietes. An inflammatory halo surrounded the cornea; and there were many other definite symptoms of inflammation present, with considerable derangement of the general health,—a derangement which had commenced two years previously in a febrile attack, which the patient herself deemed to be the symptoms of "cold:" these facts accord with my previous observations. I need hardly repeat, that the simultaneous occurrence of the same affection in *both eyes*, although with a different degree of severity and rapidity, the *smooth and uniform* distension and thinning of the sclerotica in an advanced period of the disease, unattended by any advance of the retina, rendered *white and opaque* by disturbing causes, determined clearly in my mind, that the derangement was not choroiditis, and that the pressure existed anterior to, and operated on the concave surface of the retina, and not posterior to, and on its convex surface:—hence my diagnosis. The patient stated, that she had always been near-sighted, doubtless owing to a congenital convexity of the cornea, and the large size of the anterior chamber, the dropsy of the vitreous humour being superadded to, and increasing in connection with, an increase of the natural condition. The affection of the aqueous chamber, which came on with the disease of the vitreous humour, seemed to approach in character the ordinary process of conical cornea, the increased secretion, and effects of accumulation being conjoined with the tendency to central thinning and protrusion.

Cases of dropsy of both the aqueous and vitreous humour together, in the same patient, are, I am persuaded, very rare occur-

rences; the case I have just detailed, is one out of two that I have myself witnessed. Authors, however, speak of the affection as it were common; and although I cannot with Mr Middlemore say, I have never seen a case of general hydrophthamia, still I believe, with that gentleman, that they are extremely uncommon. In conclusion of the foregoing remarks, allow me to say a few words on treatment.

Treatment.—The rational treatment of any disease must be based on the three following points: First, a correct diagnosis of the disease itself; second, of its intimate pathology; and, third, an experimental knowledge of the action of particular remedies;¹ the whole being modified and adapted to individual cases. As I have before remarked, the ordinary treatment almost invariably fails to produce beneficial results, and ultimate recourse is had to paracentesis oculi, with repetition of the operation as often as the reaccumulation induces severe or urgent symptoms. Beer has even gone so far as to propose a section of the cornea as for the extraction of cataract, and through it to evacuate the lens, and the whole or chief part of the vitreous humours, so as to produce collapse and subsequent shrinking of the tunics, and, of course, perfect loss of the eye.

The plan I would recommend is the following:—If symptoms indicate the propriety of depletion, let a few leeches be applied to the temples at regular intervals, or a moderate cupping from the nuclea. At the same time, maintain an efficient extent of counter-irritation, by the seton or tartar-emetic ointment, at the back of the neck; regulate the functions of the bowels by suitable medicines; and let the general health be improved by every means in our power, which the particular example under treatment may allow. But what I would especially call attention to, is the remarkable influence which turpentine possesses over similar disorganising processes. I have too often witnessed its decided powers in very chronic changes to doubt its efficacy. Now, although I have, as yet, had no opportunity of fairly testing its effects in hydrophthamia, yet, from analogy, I infer that it would be most likely to stop the progress of the affection, or induce reparative processes; at all events, it merits a careful trial. How important would it be to find a method of treatment capable of even suspending the symptoms and preventing their advance! Turpentine, in small and regular doses, holds out the best chance of accomplishing these ends, if not of procuring a perfect cure.

The dose should be small, and continued regularly,—half a drachm to a drachm, two or three times a-day, in almond emul-

¹ Treatment founded simply on the last of these three divisions, is empirical and most dangerous, in passing from isolated facts to general application, inasmuch as it regards symptoms only, without reference to their pathological causation.

sion, containing a small quantity of the sesqui-carbonate of soda in solution, and some agreeable syrup to cover its unpleasant taste. Mr Carmichael's observations on its employment in iritis are judicious : he gives an excellent formula for its administration. I have seen this plan of treatment especially useful in the more chronic forms of choroiditis ; the natural appearance of the globes and healthy vision being restored by its continued and judicious employment. It succeeded in a patient in whom one eye was affected ; and the symptoms suspended, with the occurrence of an exactly similar disease in the same tissues of the opposite organ,¹ again yielding to the careful administration of turpentine.

Scarpa² asserts that, as far as he has consulted the result of the observations of the best practitioners upon this subject, he has not met with a single history correctly detailed of a cure of the *dropsy* of the eye by means of internal remedies,—a statement which but too truly coincides with my own inquiries and observation. The same author mentions that the disease is sometimes preceded by blows upon the eye or temple, or by *an obstinate internal ophthalmia*, and that occasionally the iris “ is in a singular manner tremulous on the slightest motion of the eyeball.” If such is ever the case, it must depend on either the destruction of the hyaloid membrane and the fluid character of its contents, or the increased size of the posterior chamber. In connection with the opinions I have already expressed, the following may appear interesting :—He says, “ in all the cases of dropsy of the eye which I have operated upon, or examined in the dead body, in different stages of the disease, I have constantly found the vitreous humour, accordingly as the disease was inveterate or recent, more or less disorganised, and in a state of dissolution.”

Sub-choroid and sub-sclerotic dropsy.—I shall terminate this paper by a few remarks on these effusions. They may be situated either between the sclerotica and choroid, between the laminae of the choroid, or between the choroid and retina. They invariably result from inflammatory action going on in the internal tunics of the eye, generally affecting the choroid coat chiefly. The severity of the pain and other symptoms depend entirely on the activity of the inflammation, and the rapidity with which the fluid collects. Unless they give rise to protrusion of the retina forwards, rendering it white and opaque, as it advances, it is difficult, nay impossible, to diagnose them in the living subject, inasmuch as the symptoms would not differ from mere uncomplicated inflammation of the internal tunics ; but this is always effected whenever the quantity is at all considerable. Should the

¹ *Vide* Author's remarks on the analogy of sympathy, *Lancet*, vol. ii. 1840-41, pp. 153-4.

² Scarpa, by Briggs, p. 423, 2d edition.

sub-sclerotic dropsy be limited by adhesion, a partial yielding of the posterior portion of that tunic might result, occasioning a form of staphyloma sclerotica not to be discovered in the living subject. (*Vide* figs. 9 and 10 in Scarpa's second plate.) The advancing retina, in these diseases, somewhat resembles, and has been mistaken for fungus hæmatodes, being forced forwards in the form of a cone, its apex being at the optic nerve, whilst its base surrounds the edge of the crystalline lens.

These cases affect but one eye at the same time, and they are altogether different in their pathology from dropsy of the vitreous humour, which affects both, and is invariably, according to my own observations, dependent on constitutional causes, perfectly dissimilar from ordinary dropsy. They should be treated of in connection with the affections of which they are only occasional symptoms; and accordingly, I shall omit their further consideration for the present. Acute hyaloiditis is, of course, curable by active antiphlogistic treatment; and hence the rationale of Dr O'Beirne's case.

ARTICLE II.—*Case of Snake-Bite Successfully Treated.* By FR. SIEVWRIGHT, ESQ., Surgeon, 9th Foot. (*Communicated by Professor Sir George Ballingall.*)

CAMP, ALLEKOLUM, on the right bank of the
Pooney River, 25th January 1837.

At 2 P.M., James Welsh, aged four years, only child of the mess-serjeant, 45th regiment, was wounded in the left foot by the bite of a poisonous snake, the cobra manille, about $3\frac{1}{2}$ inches in length, (considered to be of a more deadly nature than that of the large-hooded snake, the cobra de capella,) whilst amusing himself, playing with some wild fowl:—the viper had been attached to one of the birds. The wound was on the inner side of the great toe, or rather between the first and second metatarsal bones; the child screamed, and the father, who was present, observing what had taken place, destroyed the snake, and, as I fortunately happened to be passing the tent at the moment, he called me in. I immediately applied a tight ligature round the leg, a little way above the ankle, then cut out the bitten part, when, from the appearances underneath, the fangs having penetrated to a considerable depth, I was induced to repeat the operation; from the situation of the bite, the cupping glass could not be affixed,—this was, however, remedied by a native servant, much attached to the child, who applied his mouth to the wound and sucked it; the bleeding surface was then washed with aqua ammonia; the breathing about this period became stertorous and difficult, shortly increasing to a painful degree;