Case 5.—It will be seen that this is a case on the borderline between the territory of the rhinologist and the ophthalmic surgeon, and is representative of what is an important and not rare group; a class of case where, when the disease progresses to a serious and dangerous degree, the cause is likely to become revealed, but a number of cases occur which belong to this group where the only sign is slight proptosis which persists perhaps for a few days only and subsides, leaving no disability, and the basic cause unrevealed. I believe such cases are due to an infiltration of the orbital tissues by toxins spreading into them from adjacent air sinuses, the nasal symptoms being so slight as to have evoked no particular discomfort.

WILLIAM PORTERFIELD, M.D.

BY

R. R. JAMES

LONDON

Porterfield’s claim to remembrance rests upon his “Treatise on the eye,” which was published, in two volumes, in 1759. I have found considerable difficulty in obtaining any facts about him. One would have thought that it should have been possible to get details of the life of one who was President of the Royal College of Physicians of Edinburgh in 1748, but such is not the case. Porterfield’s name does not occur in the Dictionary of National Biography, nor have I found it in any of the ordinary books of medical biography at my command. My knowledge of his life is almost entirely derived from Innes Smith’s Register of English-speaking Students at Leyden and from Dr. John D. Comrie’s History of Scottish Medicine. Porterfield’s parentage has so far baffled research. No doubt he sprang in the first instance from the well-known family “of that ilk” which was long settled in Renfrewshire. Innes Smith gives Ayrshire as the place of his birth.* Facts about the Porterfield family are obtained from Crawford’s History of the Shire of Renfrew (1818), in which the descent from Stephen de Porter, who had a charter for Porterfield from Robert, Earl of Strathern, c. 1362, is traced. I feel sure that William Porterfield satisfied Sir Walter Scott’s dictum. There are a number of Porterfield wills in the Glasgow Commissary Court but, so far, the will of William Porterfield has not been discovered. Dr. Comrie informs me that he is sometimes confused with Walter Porterfield, who joined the College of Surgeons of Edinburgh in 1684. I have wondered whether William

* The Porterfields of Hapland descend from Gabriel, son of Master John of that ilk, and Jean Knox. Paterson’s History of Ayr and Wigton (1866).
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may not have been a son of this Walter. Of the wills in the Edinburgh Commissary Court I note that of Mr. Walter Porterfield, of Colmistone, June 24, 1665.


It will be seen that he must have been born about 1696; and that he was of good professional standing at home when he entered Leyden. Doubtless it was the reputation of Boerhaave and his teaching that induced Porterfield to take this post-graduate course. Dr. Comrie informs me that he was appointed Professor of Institutes of Medicine and of Medicine in the Town’s College at Edinburgh in 1724, and he appears to have held the post for two years, but it does not seem to be certain that he gave any lectures at this time. He is described in his commission as being “disengaged from the necessary business of all other public professions.” This has led Dr. Comrie to think that he may, to a large extent, have given up practice; but the fact that at some time before he published his book, he had undergone amputation of one of his legs may possibly have had something to do with it.

I find that he had the licence of the University of Edinburgh to practise on June 8, 1721; and the Edinburgh Marriage Register, printed by the Scottish Record Society, 1908, tells us that William Porterfield, M.D., married Mrs. Elizabeth Brown, widow of David Henderson, of Tunnochside, March 20, 1743.

Reverting for a moment to the question of his amputation, he refers, in dealing with the perception by the sensorium of the picture formed upon the retina, to the cases where “a person, after the loss of his limb, has the same perception of pain, itching, etc., as before, and feels them as if they were in some part of his limb, tho’ it has long ago been amputated, and removed from that place where the mind places the sensation. Having had this misfortune myself, I can the better vouch the truth of this fact from my own experience; for I sometimes still feel pains and itchings as if in my toes, heel, or ancle, etc., tho’ it be several years since my leg was taken off.”


The first volume contains upon the title-page an extract from Newton’s “Opticks,” query 28; the second volume has an extract from the Latin Cosmotheoros Hugenii, p. 40.

The book is not a text-book on diseases of the eye; it is an account of the anatomy and physiology of the organ and contains
a good deal of speculative philosophy. Porterfield tends to be rather diffuse in places and is apt to repeat himself, but it cannot be doubted that the book was a remarkable production for the age in which it was written. I believe it to be rather scarce. In the old catalogues of the Library of the Ophthalmological Society it was one of those marked with an asterisk, which meant that it could not be taken out of the library. My own copy was given to me many years ago by my senior colleague, Mr. Harold Grimsdale.

By the middle of the eighteenth century the knowledge of the naked-eye anatomy of the eye had made great strides; but though the position of the lens in the eye was well known, Porterfield still held the view that the coats of the globe were derived from the sheaths of the optic nerve, the sclerotic being derived from the dura, the choroid from the arachnoid, and the retina from the fibres of the optic nerve. He thought that the conjunctiva took its origin from the periesteam of the orbit; the internal membrane of the lids, which he recognised as joining with the skin at the lid edge, he says folds back again over the outward face of the eye above the conjunctiva, to which it adheres and with which it terminates at the limbus. And in a later page he states that the outermost layer of tissue is continued over the cornea. "This cuticle seems to be a production of the epidermis, or scarf-skin which at the edge of the eye-lids folds inwards, so as to cover the inside of the eye-lids, and at the edge of the orbit folds back again over the whole outward face of the eye." He adduces the varying positions of phlyctenulae on the limbus and in the cornea itself as a proof and refers to snakes which cast the cuticle along with their skins.

His account of the external muscles is good; he recognised the sphincter of the iris as well as dilator fibres and he refers to the muscular fibres of the ligamentum ciliare or ciliary body. He emphasised the fact, noted by Sorsby in the Short History of Ophthalmology, that the power of accommodation is lost after cataracts have been couched or removed.

He corrected the erroneous statement of Willis and Briggs that the optic nerve is inserted at the back of the eye in the optic axis; and he assumed that the retina is the percipient layer of the fundus, though he discussed at length Mariotte's view that the choroid was the percipient layer. With this view he cannot agree. Porterfield's theory of accommodation was that the crystalline is moved forwards by the contraction of the ciliary processes.

Coming to the physiology of vision, Porterfield deals fully with the properties of light. He notes the fact that the ancients knew all about catoptrics, but very little about dioptrics until the time of Kepler's discoveries. His account of the properties of light is obviously based on Sir Isaac Newton's work, and at his date
he could not have gone to a better authority. The following extract is a good example of his writing: "That great philosopher (Newton) having, in his *Principia*, shewn how far numbers and geometry would go in Natural Philosophy, has, in his Optics, manifested to the world to what surprising height even vulgar experiments, duly managed and carefully examined, in such hands, may advance it; for, to the honour of this great man, it is to be observed, that he was led to all his discoveries in optics, as he himself tells us, by observing the oblong form of the sun's image cast upon the wall of a dark room, by means of a prism placed at a hole in the window-shut. This was an experiment at that time well known to all naturalists; but it was reserved to Newton to discover, and, by his superior skill in geometry, to demonstrate, against all his adversaries, that this image, on the old principle of an equal refraction of all the rays, ought to be circular, and consequently, that this oblong form proceeded from a different refrangibility of the rays whereof the sun's beam consisted, by means of which refrangibility the rays of different colours were separated from each other, and exhibited apart in the oblong coloured spectrum. And, having made this fundamental discovery, he also confirmed it by experiments, and was thereby led to contrive many other experiments by which he has opened the whole mystery of light and colours; as may be seen in the afore-said treatise of optics."

Again, speaking of colours, he states that red acts with the greatest force and excites the strongest vibrations in the nervous coat of the eye; violet, the weakest and consequently produces only a weak, faint, dark colour; "but the green particles, being of a size equally distant from both these extremes, must, by exciting vibrations of a middling strength, produce a colour sufficiently strong and bright, while at the same time it does not offend the eye by its too great strength and vivacity; and this is the reason why green colours have in all times been esteemed useful to comfort, strengthen and preserve the sight."

Helmholtz states that Porterfield proposed using Scheiner's experiment for measuring the range of accommodation distances, and designed an optometer on this principle, which was afterwards improved by Thomas Young. In speaking of the pupil and its motions, Porterfield states that with a very large pupil "the tender substance of the retina would have been fatigued, dried, burnt, or otherwise hurt upon a thousand occasions... for the humours of our eyes perform much the same effect with that of a convex lens or burning glass."

Jean Mery's observations on the living cat's eye under water are an early reference to the principles of the hydrophthalmoscope. He noted that in this experiment the entry of the optic nerve
and the vessels were distinctly seen; and Porterfield gives a nice little diagram to elucidate the optical principles. Just before this he allows himself to wander into the realms of fable; "there appears some ground for the fable in the Alcoran, which says that the cat is none of God's creatures, but that it was first produced in the Ark by the sneezing of the lion." Porterfield refutes the hypothesis of Briggs as to the reason of the single appearance of objects. This hypothesis is given in my account of Briggs in Brit. Jl. of Ophthalm., vol. xvi, p. 366.

There was, of course, much that Porterfield could not explain and he refers most of these difficulties to the will of God. But, even so, his book is a very remarkable production for the age in which it was written. He shows himself to be thoroughly abreast of his subject, and while referring to the views of his forerunners and contemporaries, both at home and abroad, he does not hesitate to disagree with their conclusions when they do not tally with his own ideas. I like especially the half humorous and half apologetic manner in which he corrects their mistaken notions. And the impression left upon my mind by a perusal of his book, is that William Porterfield was not only a brilliant exponent of his subject but also a very kindly Scottish gentleman.

If Mackenzie was the first British ophthalmologist to write a really good clinical text-book on ophthalmology, Scotland may well be proud of the fact that in an earlier age, Porterfield should have given to the world such a masterpiece.

I should like to express my thanks to Dr. Comrie, to whom I was introduced by Dr. Traquair; and I am grateful to my friend Mr. Harvey Bloom for his notes on the Porterfield wills and other references.

No portrait of William Porterfield is known to be in existence, and neither Mr. G. H. Viner nor myself have ever heard of his having used a book-plate. There are no letters of his in the Letter-Books of the Royal Society.

The Sloane MS. at the British Museum contains the following letter:

Sloane MS. 4048, fo. 72/3.

Sir,

The College of Physicians at Edinburgh receaved the verie valueable complement of the 2d Vol. of your Natural History of Jaimaica, etc. They had also a present formerlie from you of the first Vol. immediatly after it was published. I am ordeed by the Societie as their Secretarie and in their name to tender you heartie thanks for this and all your other favours bestowed on them. They are verie proud to have a person of so great
THE SURGICAL TREATMENT OF CHRONIC GLAUCOMATOUS OCULAR HYPERTENSION*

BY

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I.—Definition of glaucomatous ocular hypertension

Persons who present ocular hypertension following iritis, traumatism or tumour may have hard eyes and increased intraocular tension without necessarily being glaucomatous. While certain cases of this kind may be benefited by decompressive treatment, it is necessary to distinguish such conditions from true glaucoma and to define the signs of this affection, which illuminate its pathogeny and thus serve to direct its treatment.

(a) In glaucoma, ocular hypertension is an essential diagnostic sign, but one not exclusively peculiar to glaucoma. In the latter, the characteristic condition is not hypertension in itself, but the manner in which it occurs. Hypertension assumes a particular type in each of the several forms of glaucoma (prodromal glaucoma, chronic glaucoma with intermittent hypertension, chronic glaucoma with constant hypertension, irritative glaucoma, or acute glaucoma).

In prodromal glaucoma, ocular hypertension is of low degree. Subjectively, it is indicated by the appearance of a foggy or smoky veiling or by coloured arcs. Objectively, it presents pupillary

*For the thirty-third anniversary of subconjunctival and limbic sclerectomy.