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19.—JOHN SCOTT, 1798-1846

BY

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It must be about nine years ago that I was asked by Dr. Alban Doran, who was engaged in sorting and cataloguing the collection of old surgical instruments in the museum of the Royal College of Surgeons, to pay him a visit and see if I could help in identifying some of the old eye instruments. Among others I was shown a small knife, which reminded me of a hedger's bill-hook, sharp on the convexity instead of on the concavity; and I was able to refer Dr. Doran to Scott's monograph on cataract, published in 1843. I never gave another thought to the matter till I read the affectionate reference to him in Dalrymple's atlas (*Brit. Jl. of Ophthal.*, Vol. X, p. 245).

I had some difficulty in running Scott to earth, *i.e.*, in finding an obituary notice. The *Lancet*, Vol. I, p. 279, 1846, gave me the fact that Mr. Scott had recently resigned his office of Surgeon to the Royal London Ophthalmic Hospital; but it was in connection with a "grouse" on monopoly in hospital staff appointments, typical of those stormy times of medical journalism. From the same source I found that Mr. James Dixon had succeeded to the vacancy;

while from the *Medical Times and Gazette* I obtained the fact that Mr. Caesar H. Hawkins had succeeded to his vacant post on the Council of the Royal College of Surgeons.

Mr. H. E. Powell, of the Royal Society of Medicine, suggested that I should consult the Surgeon-General's catalogue, and this gave me the reference to an obituary notice in the *Medical Times and Gazette*, Vol. XIV, p. 135, 1846. I found later that this notice had been printed practically *verbatim* into the Medical Directory for 1847; but I had missed it there in a rather hurried search.

This notice bears evidence that it was written by someone who knew Scott well, but it can hardly be described as *nil nisi bonum*, for I have rarely, if ever, read a more spiteful obituary. I abstract it as follows :

He was a son of Mr. Scott, surgeon of Bromley, and was born in 1798. Educated at a private school at Sevenoaks and later at The Charterhouse, he was apprenticed to Sir William Blizard, Surgeon to the London Hospital. After having taken his qualification at the Royal College of Surgeons and at the Apothecaries Hall, he joined his father in general practice at Bromley; but he was "restless, energetic and ambitious," and after his marriage to a Miss St. John, he gave up general practice and settled in the City as a surgeon. He was elected surgeon to the London Hospital and to the Moorfields Hospital. The obituary states that his chief *forte* was rapidity in diagnosis. "As an operator, bold but not cool, rapid without being dexterous." He was said to have been the first English surgeon to perform the operation for removal of the maxilla. "Verbose as a lecturer," he appears to have been more successful as a clinical teacher; while he was very expert at strapping and bandaging. "As an author he could not, however, expect to be very successful, being neither an extensive reader, a close reasoner, nor a deep thinker." He was an honest, but very irritable man; "he seemed fond of children yet had no family." He was apt to assume a sense of superiority to his colleagues and was usually antagonistic and in opposition to them. "Men in general practice rarely, if ever, called him in a second time." He is said to have had no sympathy with humanity. He was tall, thin, and active, with sharp, rigid, features, and possessed a quick, grey-looking eye.

His death occurred at Brighton, April 11, 1846; he was survived by his father and a sister. He died rich and having bequeathed a jointure to his widow "he left the bulk of his fortune to charity, entirely omitting those by which he rose to eminence, and chiefly selecting those of an evangelical order."

His will was proved in London in April, 1846, by his executors, among whom were two parsons. He is described as late of Park

Lane, but dying at Brighthelmstone, *i.e.*, Brighton; so he must have left the City.* The estate was sworn at £100,000.

The Lancet of May 9, 1846, has a note that Mr. John Scott, late Surgeon to the Ophthalmic Hospital, has bequeathed a large portion of his immense fortune to various public charities.

Scott was elected Assistant Surgeon to the London Hospital in 1827, Surgeon in 1831, and resigned in 1845. He was a member of the Council of the Royal College of Surgeons, 1844-1846. Mr. Percy Flemming informs me that Scott was appointed to the staff of the Royal London Ophthalmic Hospital in 1827, and that he resigned in 1846.

Besides his work on cataract he was the author of a treatise on diseased joints and a work on tic douloureux.

CATARACT

This small brochure of 71 pages was published by Churchill in 1843, price half-a-crown. My own copy is a presentation copy, with author's inscription to Sir Benjamin Brodie. The title page is as follows:

CATARACT,
AND ITS TREATMENT,
COMPRISING
AN EASY MODE OF DIVIDING THE CORNEA FOR ITS
EXTRACTION,
AND
APPROPRIATE MEANS FOR REMOVING THE DIFFERENT FORMS OF THAT AFFECTION.
By JOHN SCOTT,
SENIOR SURGEON TO THE ROYAL LONDON OPHTHALMIC HOSPITAL,
SURGEON TO THE LONDON HOSPITAL, &c.

The preface is from 10, New Broad Street, and is as follows: "I have long considered that the chief difficulty and the chief danger attending the extraction of cataract has arisen from the force that is necessary to transfix the cornea with the instruments commonly employed for that purpose; and that spasm of the recti muscles, induced by that force, compressing the iris between the hard lens and the side of the knife, and occasioning inflammation of that membrane, has been the chief cause of an unfavourable result of the operation. It therefore occurred to me that if these inconveniences could be obviated, the facility of performing the

*Scott is described as of 10, New Broad Street in the London Medical Directory of 1845. In 1846 he appears as of 17, Park Lane.

operation would be greatly increased, and its success proportionally augmented. With this view I have constructed the knife described in the following pages, and having now tested its utility in a great number of cases, I am anxious to afford to others the opportunity of using it with the advantage that I have derived from its employment."

The little monograph is well worth reading at the present time, not so much for any startling facts about cataract, but as showing the minute care which surgeons of an earlier day devoted to the question of the patient's general health prior to operation. I often think that they had the advantage over many of us to-day in this respect, and that our increased knowledge of pathology and bacteriology has inclined us to pay insufficient attention to a most important question.

Some of my readers who may not have given much thought to the derivation of the term cataract will be interested in the opening sentence. "The term cataract is derived from the Greek word *κατάρακτης*, a gate or portcullis ("Herodotus," Book V, Chap. 6) It is manifest that there is no analogy between an opaque lens and a waterfall, while that between a cataract shutting up the aperture of the pupil and a gate or portcullis is sufficiently obvious."

Cataract is sharply differentiated from false membranes in the pupil and is divided into hard, soft, and fluid. The first 17 pages deal with the general description of cataract; the different forms; symptoms; diagnosis of the different forms; diagnosis of cataract from other affections, chiefly glaucoma; the causes; prognosis; and congenital cataract. The rest of the pamphlet deals with the treatment.

"I consider that the operation ought rarely to be performed on an eye that retains a useful degree of vision, for should it unfortunately fail of success, the patient will complain that he has been deprived by it of the vision he previously enjoyed, and probably he will be slow to believe that he would at all events have lost his sight even had he not submitted to the operation."

Extraction in cases of congenital cataract "in which the centre of the lens only is opaque, its circumference still remaining transparent," is not recommended; "by the aid of belladonna he may retain useful vision for years, and the vision he will enjoy by the aid of convex glasses is so inferior to that through the margin of the natural lens that he will see worse than he did before the operation."

Early cataract could be removed by solution (needling), but Scott does not recommend this, unless "the circulation be so feeble that there is not sufficient power to heal the section of the cornea; if there be extensive synechia posterior, or any other reason to

JOHN SCOTT, 1798-1846.

forbid the extraction of the cataract, its early removal in the manner just alluded to may be had recourse to with advantage."

"Experience fully proves that in old people, whose powers are failing, warm weather is so very much more favourable for the healing of the section of the cornea than cold, that it is exceedingly desirable not to operate in winter." "I do not think it desirable to operate on both eyes at the same time. I am fully aware that if one eye be lost in consequence of the operation the second eye will rarely be confided to the same operator, and another surgeon will thus have the opportunity of acquiring considerable credit at the expense of his neighbour; but this consideration does not invalidate the arguments that have been used in favour of the single operation in regard to the welfare of the patient, in comparison with which the advantage of the surgeon deserves not a moment's consideration. I scarcely ever operate when one eye only is affected. The only exception to this rule is in the case of young persons in whom the cataract is soft and consequently white and very remarkable, and they are usually very desirous of getting rid of the appearance, notwithstanding they are fully given to understand that the operation will not be followed by any advantage with regard to their vision."

The three varieties of operation are extraction, depression, and solution. "A hard lens is unfavourable for solution. . . ." "It should therefore be an invariable rule to examine the eye when under the influence of belladonna before determining on the propriety of operating by extraction; and this is more especially necessary as iris adhesions cannot always be detected in the natural size of the pupil." Arcus senilis is no contraindication to the operation, but a violent cough is. "If the patient has any symptom of gout or rheumatism the operation must not be performed till they are removed; if the digestive organs be in an unhealthy condition they must be restored to their natural state. If a plethoric state of system prevails it must be reduced; and this will be done much more safely by abstinence, at the same time that the bowels are freely acted upon, than by suddenly reducing the volume of circulating fluid by the abstraction of blood. On the other hand, the circulation may be so feeble that there may not be strength in the system to institute the healing process in a structure of so weak vital power as the cornea. In such cases the patient's power must be restored as far as is possible."

Scott prefers the upper transverse section of the cornea; the instruments he advocates are as follow: A cornea knife, a blunt-pointed curved knife for enlarging the section if necessary, a curette for lacerating the capsule, a sharp-pointed hook for removal of the lens if a fluid state of the vitreous should prevent its being removed by pressure, and a pair of Maunoir's scissors.

"Those who have ever performed the operation of lithotomy with the gorget, and afterwards with the small beaked knife first used by Sir William Blizard, and have contrasted the force necessary to make the section of the prostate gland from without inwards by means of the former instrument, with the facility with which, the latter being introduced into the bladder, the section can be made from within outwards, will readily understand the advantages that attend the mode of operating I now propose, as well as the reasoning that has led to its adoption."

"The objects I propose to attain in the construction of the knife are first, that it shall be of sufficient length to traverse completely

PLATE I.

the anterior chamber and divide the nasal margin of the cornea; second, that it shall increase in width and thickness from point to heel enough only to prevent the escape of the aqueous humour in its transit across the anterior chamber, but that its width shall have no reference to the dimensions of the section that is to be made, as this circumstance, I conceive, has occasioned all the difficulty of its introduction and the chief danger of the operation; third, that it shall be of such a shape and figure that when introduced in the middle of the temporal margin of the cornea and carried across the anterior chamber it shall readily puncture the nasal side of that membrane, and when placed in this situation the cutting edge shall be so far beyond the pupillary margin of the iris, and opposed to so large a portion of its anterior surface as will prevent its escape beneath the edge of the knife to endanger its division in making the section of the cornea; fourth, that when the section of the cornea is thus about to be made the edge of the knife shall be opposed only to the margin of the section on either side, and not to any extensive portion of its internal surface, whereby its division would be attended with difficulty as is the case in using Beer's knife."

"In order to attain these objects the knife must describe a portion of a circle of larger diameter than that of the cornea; and after having tried a vast variety of shapes and sizes the one I now propose seems to me to fulfil the foregoing indications the most effectually. At first I used a much narrower and finer knife, but I found that in introducing a cutting instrument of such a length the aqueous humour was liable to escape unless it increased more rapidly both in width and in thickness. I have also tried one wider at the heel, but in that case greater force is required for its introduction, which is not counterbalanced by any commensurate advantage in completing the section, unless the cornea be of unusually large dimensions. The back of the knife describes a sixth part of the circumference of a circle the radius of which is ten lines. The chord of the arc formed by the back of the knife is, of course, also ten lines in length, being equal to the radius of the circle; it is therefore greater by four lines than the diameter of the cornea, and the blade is consequently quite long enough to complete the section of that membrane without difficulty. The knife is two lines in width at the heel, whence it gradually tapers to the point; it also increases uniformly in thickness, as well as in width, from the point to the heel, so as to occupy completely the aperture it makes in the cornea for the purpose of preventing the escape of the aqueous humour."

"The dotted line A is six lines in length, equal to that of the diameter of the cornea; it extends between the two points at which the back of the knife is placed in that membrane when it is trans-fixed by the instrument. From the centre of this line, which is also the centre of the cornea, to the cutting edge of the knife, is rather more than two lines; and since the radius of the cornea is scarcely three lines, when the knife is so placed there can be little danger of the iris falling forward before its edge, as the aqueous humour escapes in completing the section of that membrane."

"In making the upper section of the cornea with this knife it is to be held in the usual manner, between the thumb and two fore-fingers, the two other fingers resting on the patient's cheek, and the handle of the knife slightly inclined towards the side of the face, while the point punctures the cornea on its temporal margin; the handle of the knife is then to be brought upwards with a sweep as the blade traverses the anterior chamber; and when it has punctured the nasal side of the cornea the handle will be nearly at a right angle with the temple. The knife is then to be carried completely across the anterior chamber. In doing this great care must be taken to press firmly downwards with the back of the instrument so that the wound may not be unnecessarily enlarged by its cutting edge. This being accomplished the point of the knife will have reached the nasal canthus of the orbit, and its

PLATE IV.

cutting edge will be so far beyond the pupillary margin of the iris that it cannot be readily divided in completing the section of the cornea. The point of the knife is then to be carried upwards, the handle being slightly inclined in the opposite direction. The section of the cornea on its nasal side will now be complete, a

small portion at the upper and outer part only remaining to be divided; and this is readily done in the withdrawing of the instrument. In this way the cornea being transfixed by an instrument of such a size only as will prevent the escape of the aqueous humour, no unnecessary force is employed either in accomplishing this object or in preventing the eye from rolling inwards. The section is completed, not by thrusting a wedge-shaped knife through the anterior chamber the cutting edge of which divides the circumference of the cornea only by the force with which its back is pressed against the opposite side of the section, but by an instrument that accomplishes the division of the membrane independently of any such pressure on its back. No unnecessary force is therefore had recourse to, and consequently spasm of the muscles of the globe is much less liable to occur; the aqueous humour is much less likely to escape; and if it should do so the shape of the knife and its position in the anterior chamber are such, that the iris can scarcely fall forward before its edge; and even if this should be the case it will much more readily recede behind it under the slightest pressure of the finger on the cornea."

In those old days it was customary to bleed the patient the day before and the day after the operation. Scott found this to be unnecessary and harmful; he records his practice at the Royal London Ophthalmic Hospital "where in 50 consecutive cases" phlebotomy was not performed.

I have searched contemporary text-books without finding any allusion to Scott's cataract knife, and no diagram of it is included in the large page illustration in Hirschberg's *Geschichte*. I suppose that his colleagues did not think it worth trying, or perhaps they were satisfied with the Beer's knife and the flap extraction; it seems to me to mark a step in the progress of cataract extraction from the knives of Beer and Wenzel to the more perfect linear knife of von Graefe, modified by George Critchett; who, by the way, was apprenticed to Scott, *vide*, *Brit. Jl. of Ophthalm.*, Vol. VII, p. 353. For this, if for no other reason, it has seemed to me desirable to try and rescue Scott from oblivion by this short memoir.

The portrait of Scott is a photograph, taken by Miss Blake, of an engraving of his picture by H. Howard, R.A., which hangs in the London Hospital Medical College; for permission to have this photographed for reproduction I owe a debt of gratitude to Professor William Wright, Dean of the Medical School.

The diagrams 1 and 4 are reproduced from Scott's monograph by kind permission of Messrs. J. and A. Churchill.

Messrs. John Weiss & Son Ltd. inform me that an illustration of Scott's knife appears in an old book of pen and ink sketches of instruments in the possession of the firm. The book is dated 1849.