Douglas Argyll Robertson, 1837-1909 Discoverer of the pupillary syndrome

A. LENNOX THORBURN

From H.M. Prison, Stryal, Cheshire

Douglas Moray Cooper Lamb Argyll Robertson was born in Edinburgh and went to school at the Edinburgh Institution. He had a strong surgical background. His father and two uncles were Fellows of the Royal College of Surgeons of Edinburgh and his father, John Argyll Robertson, had been President; with others, he had established the Edinburgh Eye Dispensary.

Douglas Argyll Robertson graduated MD in 1857 from the University of St Andrews after a four-year course, and in the same year, took the Licence of the Royal College of Surgeons of Edinburgh. After a year at the Edinburgh Royal Infirmary, he decided to specialise in ophthalmic surgery. In those days this choice was a departure from the normal practice of concentrating on general surgery while undertaking several forms of specialist surgery. It could also be financially hazardous, and this narrow avenue in surgery was not popular with many of the profession; Britain in this respect lagged behind European medicine and surgery. Argyll Robertson travelled to Berlin and Prague to meet ophthalmic surgeons, and to study and work under them. There were many excellent physicians and surgeons on the continent in the latter half of the last century, attracting brilliant young men; foremost in ocular surgery were Von Graefe and Von Arfelt.

Argyll Robertson was greatly impressed by Von Graefe and Von Arfelt and he modelled his own technique on that of Von Graefe. He returned to Edinburgh committed to a career in ophthalmic surgery. In 1862 he became a Fellow of the Royal College of Surgeons.

Argyll Robertson was friendly with Dr (later Sir) Thomas Fraser who had demonstrated that the extract of the Ordeal Bean of Calabar in West Africa contained physostigmine (eserin) and was a powerful miotic. Dr Fraser told Argyll Robertson about its powers, and almost immediately the ophthalmic surgeon experimented on himself. Argyll Robertson clearly recognised the value of this drug particularly for glaucoma, and his papers on the Calabar Bean as a new ophthalmic agent were read to the Medico-

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Chirurgical Society of Edinburgh and appeared in the *Edinburgh Medical Journal* (Argyll Robertson, 1863a) and the *Boston Medical Journal* (Argyll Robertson, 1863b). These made him famous almost overnight.

By 1866, he was established as assistant ophthalmic surgeon at Edinburgh Royal Infirmary. He also taught at Surgeons' Hall and had busy sessions at the Eye Dispensary.

1869 and 1870 were probably the most momentous years of his illustrious career.

While examining a man suffering from spinal disease he noticed that although this patient's pupillary reaction was lost to light, the accommodation reaction was preserved. While examining three more patients suffering from spinal disease (one he found to have locomotor ataxia) he made the same observation. He was surprised to find in several patients that their retinal reflex was intact; curiously enough he never commented on the irregularity of the pupils.

Several years before, Romberg (1840), and Fallot (1844) had noted that in certain cases of spinal disease the pupils were small and failed to react to light. They had noted nothing further.

Argyll Robertson (1869) published his clinical findings in the *Edinburgh Medical Journal* and this led to the eponym Argyll Robertson pupil. Every modern textbook of medicine, no matter the language, features the Argyll Robertson pupil.

His hypothesis was that the lesion triggering the syndrome was situated in the spinal cord and fitted the discoveries in the sympathetic system of Budge and Waller (1851) and of Bernard (1852). Argyll Robertson claimed that, in darkness, the sympathetic fibres dilate the pupil but light paralyses this function and so the pupil contracts, only to dilate again when the light—the paralyzing agent—is removed. When the sympathetic fibres were destroyed the pupil would be small in the dark also, and so the paralyzing action of the light could not be shown. Destruction of the sympathetic fibres would suffice to explain both the absent light reflex and miosis.

Argyll Robertson did not appear to grasp the significance that his pupillary discovery was associated with syphilitic spinal disease. This is borne out when one studies the conclusion in his monograph—namely, ‘As regards the nature of the spinal lesion in one case, the characters of locomotor ataxia were well marked, in the others the form of spinal affection is doubtful’ (Argyll Robertson, 1869). A scrutiny of the clinical notes of these four patients shows that all four were undoubtedly tabetic and came to him because of failing vision.

Eighteen years passed before there was acceptance that his finding was usually associated with syphilis and it was Dr Erb of Heidelberg, the famous neurologist, who supported Argyll Robertson’s work and converted many authorities to think of syphilis whenever the syndrome was found (Erb, 1881).

This was a propitious time for the discovery of the syndrome, as the profession was divided over the aetiology of tabes dorsalis and general paralysis of the insane. Were they separate diseases or were they different manifestations of neurosyphilis? Argyll Robertson evidently kept an open mind after his discovery, as the anatomy and physiology were imperfectly known. Babinski and Charpentier (1899) provided more evidence that syphilis caused tabes dorsalis and general paralysis of the insane, and the association was confirmed by the discovery of the Wassermann reaction (Wassermann *et al.*, 1906).

Although neurosyphilis was prevalent, Argyll Robertson never taught that this disease was always the cause of the pupillary syndrome, but rather it

was imperative to find or disprove neurosyphilis in these cases. He was ahead of his time in thinking, as we know today, that the Argyll Robertson syndrome is not due to one particular disease.

While working with Von Graefe in Berlin, Argyll Robertson had used the Coccious ophthalmoscope. This was a simple instrument suitable for either direct or indirect ophthalmoscopy; although primitive by today’s standards, it became an indispensable instrument for Argyll Robertson. Sir Clifford Allbutt (1871) recorded that the number of physicians using this instrument in England could be counted on the fingers of one hand.

At the age of 33, Argyll Robertson was appointed Ophthalmic Surgeon at Edinburgh Royal Infirmary and his days were fully occupied in operating and teaching. He was an exceptionally successful and brilliant surgeon helped by his ambidexterity.

He was fortunate to live in the same era as Lister and Simpson, the new exponents of antiseptic surgery and chloroform, the greatest aids to his own success in ophthalmic surgery. All three surgeons were contemporary at the Edinburgh Royal Infirmary and established that hospital’s reputation as one of the foremost medical centres in Europe.

Although busy in his professional life he developed great prowess in sport and the arts. At one time he was one of the judges for the Royal Scottish Academy. However, golf was his greatest recreation and he won five gold medals at the Royal and Ancient Club at St Andrews and several medals at the Honourable Club of Edinburgh Golfers. He also showed skill at shooting and fishing, and was elected a member of the Royal Bodyguard of Scottish Archers.

In 1882, Argyll Robertson married Carey Fraser of Findrach and Tornavein, Aberdeenshire, whose brother became Lord Robertson, President of the Appeal Court. Mrs Argyll Robertson proved to be a most charming and diplomatic hostess keeping open house with a good table and cellar, and she was a great favourite in Edinburgh’s social life. They had no children.

Honours both at home and abroad were bestowed on him. In 1886 he was elected President of the Royal College of Surgeons of Edinburgh and possessing a courteous manner and a fluency in both French and German, he was asked to preside over ophthalmic congresses held at Lucerne and Utrecht, and he proved to be a most able representative of Great Britain. He was appointed Surgeon Oculist to Queen Victoria in Scotland, and later to King Edward VII in Scotland. In 1896, the honorary degree of LL.D. was conferred on him by the University of Edinburgh.

He published nearly 50 papers between 1863 and

1896 on such subjects as: albuminuric retinitis, trephining of the sclera in glaucoma, arteroid hyalitis, conjunctival filariasis, miners' nystagmus, and lupus of the eye lid. They were all reprinted in ophthalmic hospital reports of the period.

In 1895 he became the first President of the Ophthalmological Society of Great Britain, chosen from surgeons practising outside London. In 1898, he was elected President of the Ophthalmological Section of the BMA, and in the following year he became President at the International Ophthalmic Congress. He was elected an honorary Member of the Neurological Society of New York, a Fellow of the New York Academy of Medicine, and the Society of Practising Physicians of Prague welcomed him as an honorary Member.

In 1904, at the age of 67, he decided to retire from his post at the Edinburgh Royal Infirmary, and to give up all his other honorary appointments and a very lucrative private practice drawn from all over Scotland. He resolved to go to St Aubyns in the Isle of Jersey, which would help his bronchitis. On his retirement his portrait, by Sir George Reid, RSA, was presented to him by colleagues and friends. A handsome replica hangs in the Surgeons' Hall, Edinburgh.

He died suddenly on 3 January 1909 while visiting India and his body was cremated at the burning ghat on the bank of the River Gondli. The name of Argyll Robertson is inseparably connected with the pupillary phenomenon, so important in the early diagnosis of tabes dorsalis, and his memory will be indelibly inscribed in the annals of medical science. His splendid work has placed him among the ranks of medical immortals.

This Scotsman has left a reputation and a name that will never die.

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