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NORMAN HENRY ASHTON CBE
11 September 1913 — 4 January 2000

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Elected FRS 1971

BY PHILIP J. LUTHERT AND CYNTHIA MEDFORD LANGLEY

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Norman Ashton, the first ophthalmic pathologist in the UK, spent his career furthering the understanding and treatment of eye disease and exercising the political acumen to garner the funding necessary to advance this new field. His demonstration of the obliteration of growing retinal endothelial cells caused by the excessive administration of oxygen in premature infants is perhaps his best-known work. Apart from this, his casts of the choroidal and trabecular meshwork circulation and Schlemm’s canal were the first to display the exact anatomy of these structures to the ophthalmic community. Studies of the pathogenesis of cotton wool spots, neovascularization and microaneurysms and the behaviour of retinal vessels contributed lastingly to the understanding of retinal vascular disease. With associates he demonstrated the role of the endothelium in the blood–retina barrier. Investigation of diabetic, hypertensive and other retinopathies provided fundamental contributions to the comprehension of these conditions. Original studies established an insight into amoebic ocular infections, ocular toxocariasis, nosematosis and a collection of eye diseases in animals and fish. Fight for Sight and the European Ophthalmic Pathological Society owe their beginnings, in large part, to his foresight and energy. He is remembered as a worthy researcher, a witty speaker, a respected supervisor and a kind man.

EARLY YEARS AND EDUCATION

It is a particular pleasure for me to meet tonight your current Club President … an expert I understand in mathematical statistics—a subject of considerable value in medical research—but one that I have always found rather tedious. There is a lot of statistical evidence against statistical evidence and I side rather with Rutherford who said that if your experiment needs statistical analysis—you’ve done the wrong experiment.

N.A. at a speech to Aberdeen Grammar School Former Pupils Club Dinner, 1986.
Norman was the second son of Henry James Ashton, a poulterer from Chelsea, and Margaret Ann née Tuck of Portland Road, a dressmaker. It is through his elder brother, Horace Martin Ashton, that Norman is survived by two nieces.

During the boys' childhood Henry Ashton served in the army. Upon his return he was promoted to manager of Phillips, the provision merchants where his own father was still employed as a poulterer. The upstairs of this grocer, accessible only by entrance through the shop, served as the family home for many years. Although money was hardly abundant, the Ashton's were better off than many and Norman did not lack for basic necessities. He had a fond relationship with his mother and an active interest in school and the workings of the natural world. From his childhood he recalled only one very unpleasant experience, a recurrent nightmare of a man 'walking towards me with a perforated eye leaking jelly from the wound. It was horrid—but strangely shades of years to come.'

Margaret, who had been in the employ of Madame Handley Seymours in Hanover Square (providers of services to both Queen Mary and Mrs Winston Churchill), left this position to establish a dressmaking business of her own, eventually employing staff in a room of the house above Phillips, including three sewing women and a daily cleaner and nursemaid, to tend to Horace and Norman. It was with income from this business that she was able to pay for elocution lessons when it became evident that Norman showed promise as an orator. Regarded as something of a prodigy, he was asked to appear in concerts around London and in Dickensian and Shakespearean roles, with Shylock as a specialty.

The 11-plus exam results did not earn the young Ashton a place in grammar school and he was sent instead to West Kensington Central School where he pursued interests in history, chemistry, biology, art and acting. He won the Elocution Prize every year but remembered biology as his 'great obsession'.

It is not without some regret that he described aspects of his education. He resented the early categorization of pupils fostered by exams as it had deprived him of a classical education. Nonetheless he was successful at school. Upon his leaving, a letter from the Assistant in Charge states, 'No pupil leaves this school with better wishes for a successful career, and we feel that no pupil is more likely to cause these wishes to be realized' (Connelly 1930).

At home, he turned a spare room of the family home into a laboratory. Using benches built for him by his brother and a collection of empty sweet bottles he conducted his first experiments. This early effort expanded over time and before he had left home his small laboratory contained, among other items, a bacteriological incubator, centrifuge, cages of mice, snails and frogs, and a human half skeleton and skull.

THE BEGINNING OF A CAREER

Indeed, the first special eye hospital in England was established by William Rowley at Holborn, London in 1771. It was called the St. Johns Hospital for Diseases of the Eyes, Legs and Breast. It closed after two years. Not for want of members.

N.A. at the American Ophthalmological Society 125th anniversary meeting, 1989

His early interest in science provided direction for Norman in choosing a career, and although he had been working towards his Cambridge Certificate he left school without it at the age of 15½ years to take a position as a junior assistant in a private laboratory in London. Daily tasks of
the post included washing glassware, sterilizing equipment, making media and taking trips to the abattoir to collect the ox hearts used to make nutrient broth. It was here that he developed a lifetime laboratory habit of cleanliness, sterility and orderliness, and his supervisor noted he had a greater ‘scientific bent’ than he had seen in a junior in 20 years of experience (Layng 1931).

Norman continued his education at evening classes and passed his matriculations course at Regent Street Polytechnic. Many such years of full-time work followed by full-time study lay ahead, leaving little room for social activities. So deprived of extracurricular involvement was he that he remembered being shocked to observe the sport and social life of other students on a visit to the campus of a neighbouring school.

After three years, having grown restless with his limited duties within the laboratory, Norman sought a position at Princess Beatrice Hospital that offered eventual advancement to Senior Technician. Leaving the private realm proved a bit of a jolt because the new laboratory was far more primitive than the old one, and in Ashton’s words, ‘reflected the status of the Pathologist in those days’. Undaunted, Norman proceeded to redecorate the laboratory and plant a herbaceous garden and a rowan tree in the yard.

The move to Princess Beatrice proved advantageous. Here Norman learned enough about clinical pathology to be appointed to the role of Assistant Pathologist on the day he qualified in medicine. Unfortunately, the hours involved in fulfilling the duties of his post proved so demanding that he was forced to switch his polytechnic course to another programme in which exams could be taken in stages. It saddened him not to be able to take his degree in medicine, and well into his thirties he felt inferior that he had qualified through the conjoint board and not the university even though the courses were identical.

James Ashton and his wife, Margaret, laughed when their son of 18 years returned home from work to announce that his supervising pathologist thought he should become a doctor. Margaret was always supportive of her son, however, and continued to pay his fees out of her dressmaking business as he left polytechnic and went on to King’s College, London. He later repaid her after he had qualified in medicine. It was at King’s he first made a play for animal rights. He recounted a conversation with his physiology professor, a man, in Norman’s opinion, rather unrestrained on the matter of experimental and demonstrative sacrifice. In response to the invitation that anyone concerned with animal experiments should seek the professor after class, the student Norman emboldened himself to ask, ‘Sir, I can quite see the need for animal demonstrations, but do we all have to pith a frog—would not one example be enough?’ The response to this query, ‘Go away Ashton, and don’t be stupid!’ left little changed in physiology lectures, but left the student with the feeling that he had ‘done his bit for frogs’.

Westminster Hospital saw the beginnings of the extracurricular activities that earned Norman notice on a social scale. The Broadway, the hospital magazine of which he soon became editor, published a series of cartoons he had drawn of the staff, as well as poems and articles. He initiated and produced the staff and student Christmas show, a production of Cinderella. The following year saw the first rendition of Ashton’s Aladdin, performed later in the military to much applause and an accompanying promotion.

His observations during this time are a remarkable note on some of the changes seen in the medical environment. Having been appointed to a non-paying, non-resident post of Junior Casualty Officer for the compensation of free meals and beer, he later recalled of the time:

Today the conditions in the casualty would appear rather crude. The patients were among the great ‘unwashed’ and the smell in the surgery was most unpleasant. A patient with an injured ankle would have washed only that foot and be most embarrassed when both socks were removed for comparing the ankles.
It was not merely the physical environment that stood in sharp contrast to the standards of his later career, for he also recorded, 'Anaethesia in casualty was very primitive—we simply administered nitrous oxide through a mask, and when the patient went blue, proceeded with the operation. It was quite frightening and occasionally fatal. I was always terrified of giving an anaesthetic after the casualty period.'

**WORLD WAR II AND MILITARY SERVICE**

...all our rehearsals using ‘labeled casualties’ were dramatically realised and we found that just as truth is stranger than fiction, so reality is strangely unreal.

N.A., *The life of Norman Ashton*

The war years offered opportunities and new responsibilities that provided wide and unrivalled experience of surgery and medicine. Norman, like all consultant and medical staff, was enlisted in the Emergency Medical Service. During this time he became House Surgeon at Westminster, House Physician to Sir Stanley Woodward and Sir Adolph Abrams and the Paediatric Department, House Surgeon to the Ear, Nose and Throat Department and Skin Department, Medical Officer to the Venereal Disease Department, Senior Casualty Officer, Medical Officer in charge of the First Aid post, which included the Decontamination Centre, and finally, Resident Medical Officer, a senior post with 16 Housemen under his charge.

In the first year of the war, routine life changed little. The rehearsals for war proved nearly comical at times. Once Norman witnessed a male mock-casualty labeled *PREGNANT WOMAN BLEEDING* hop out of a stalled ambulance to wind the starting handle vigorously. Then in 1940 the raids on London began. Bombs and anti-aircraft guns fired throughout the night and the casualties were all too real.

In February 1941, a secondment brought the young doctor to The Kent and Canterbury Hospital, where he took a post as Director of Pathology. He was also assigned as Blood Transfusion Officer for East Kent. Nicknamed ‘Hell-fire corner’, this was the area thought most prone to German invasion. However, this excitement made not nearly the impression on the clean-habited new pathologist as did a confession of his senior surgeon. On the matter of asepsis, considered nonsensical by the senior, ‘he confided in me that he had several times experimentally rubbed a muddy hand across sutured operation wounds and found they fared as well as those enjoying aseptic routine’.

Norman’s days of conflict on the matter of animal treatment were not over either, and it was within his lodging house that he came near to argument with a senior professor for expressing an aversion to fox hunting, a matter that ‘proved to him I was no gentleman’. As the avoidance of such type of quarrel seemed integral to the progress of his career, Norman left a polite note to his landlady and promptly and quietly moved out.

But these acts, which went contrary to Norman’s thinking, were complemented by the experience of everyday heroes, and with respect and fondness he recalled his wartime secretary, a petite woman whom he credited with a skill for driving. Together the two delivered blood to areas where the warning flag was raised. During this period Norman performed one of the first whole-body transfusions of an Rh infant. The child survived and her picture remained on his desk for decades to come.

As the local pathologist, Ashton was called in on several police investigations. His experiences included a post-mortem examination performed on a stable bench and another on the
table of a small cottage. It also fell to him to crawl around the floor and under the bed of a murder victim *in situ* to locate the murder weapon. While he was wondering at the strangeness of the situation his fingers wrapped around the handle of a poker and he presented it to the police.

In 1946 the war was over and Norman was posted to the 34th General British Military Hospital in Freetown, Sierra Leone, as a full specialist pathologist. His lodgings consisted of a ‘cell’, which he brightened by painting a mural of the English countryside on the cement wall.

Next he was posted to Lagos, where he received his proper title of Major and took over an abandoned officer’s house for lodgings. Here he hired a private guard, reclaimed the garden from overgrowth and snakes, installed a bar and painted murals throughout the building rather than sleep in another cubicle nearer to town. The samples he sent home of tropical disease from this post remained in the collection at Westminster Hospital long afterwards.

For the Christmas show another performance of Aladdin was produced, to tremendous success. At the end of the show, the Commanding Officer informed him that a visiting General in the audience had instructed him on orders from Headquarters in London that Major Ashton was to be promoted to Lieutenant Colonel and Officer Commanding the Central Pathological Laboratory in the Middle East.

In Cairo, Norman worked to establish order, having found little upon his arrival, but soon he received orders to evacuate and move his laboratory to Fayed on the Suez Canal. Here German prisoners-of-war had built new laboratories on the grounds of the 19th General Hospital.

Typhoid fever was increasing drastically. In the new location one of his chief duties was to test the standard of hygiene in Army units and all the food vendors used by the troops. By using standard measures Norman estimated it would take 1.73 years to perform all necessary testing to identify carriers. It was then that he hit upon the idea of pooling urine specimens. His method so decreased the length of time needed to perform the task before him that military procedure was changed as a result.

**INSTITUTE OF OPHTHALMOLOGY**

I have been addressed as ‘Professor of Pornology’; at the ‘Institute of Mythology’, even the ‘Institute of Upholstery’.

N.A. in a speech at the Royal Society of Medicine

After his discharge in 1947, Norman took a post as a part-time pathologist at the Gordon Hospital branch of Westminster Hospital. The Reverend Christopher Hildyard, Chaplain of the hospital and Minor Canon of Westminster Abbey, had become a great friend of the medical staff during the raids and so now invited Norman to join his two other boarders, both doctors, in his house in the Abbey Cloisters. Though this was meant as a temporary arrangement, Norman remained in residence in the Cloisters for the next 40 years, eventually becoming a Steward of the Abbey.

One year later Sir Stewart Duke-Elder (FRS 1960), who had been charged with establishing an ophthalmic institute for research, teaching and laboratory diagnosis under the planning of the forthcoming National Health Service, decided he wished to recruit a pathologist to devote himself to the study of the eye. Ashton was unenthusiastic about the idea because the
prevailing opinion of the day was that the eye was a dull fibrous globe that had already been fully explored. However, he was later to change his view (Ashton 1957):

How rich then is the eye in opportunity, containing as it does so many types of cell and so many specialized structures of its own, arranged with such nicety that pathologic changes may be seen, both in vivo and in vitro, with greater clarity than in almost any other tissue.

At his interview he was unanimously elected. Having accepted the post, he soon faced the challenge of establishing respect for his chosen field. The post included the duty of Consultant Pathologist to Moorfields Eye Hospital. On his first visit to Moorfields he was told that the staff room was only for Consultants and was directed to hang his coat in the lavatory. Not long afterwards, when, having replied to an Ophthalmic Surgeon on the matter of what it was he had come to the Institute to do, Ashton was slightly taken aback when the surgeon remarked, ‘Pathology? That’s swabs, isn’t it?’

In his endeavors to advance his field Ashton reasoned it would be prudent to identify himself with ophthalmologists as well as pathologists. Of the 27 learned societies he belonged to in the course of his career, in addition to serving as president of the British division of the International Academy of Pathology and the Association of Clinical Pathologists, he served at various times as president of the Ophthalmological Society of the UK, the Ophthalmological Section of the Royal Society of Medicine and the Oxford Congress of Ophthalmology. He was a popular speechmaker and made numerous appearances in the name of increasing awareness of eye disease and support for its prevention and treatment.

During the 30 years that Ashton headed the pathology department he trained the first generation of ophthalmic pathologists in the UK. Many of them remained to work with him after their training. It was at his encouragement that electron microscopy and the new disciplines of immunology, cell biology and molecular biology were investigated by researchers at the Institute. He gave numerous lectures and received many awards and honours in his career, among them the Edward Nettleship Prize for Research in Ophthalmology (1953), the British Medical Association Middlemore Prize (1955), the Proctor gold medal (1957), the Doyne Medal Oxford (1960), William Julius Mickle Fellowship (1961), Bowman Medal (1965), Donder’s Medal (1967), Wm Mackenzie Memorial Medal (1967), Knight of the Order of St John of Jerusalem (1971), CBE (1976), Fellow of the Institute of Ophthalmology (1978), the Gonin gold medal (1978), the Baron C.ver Heyden de Lancy Medical Art Society Prize (1978), the first Jules Stein award (with A. Patz) (1981), the Francis Richardson Cross Medal (1982), Lord Crook Gold Medal Spectacle Makers’ Co. (1989), the International Pisart Vision Award (1991), the Buchanan Medal of the Royal Society (1996) and the Helen Keller Prize (1998).

His staff at the Institute was loyal, many of them remaining with him for the duration of their careers. His secretary, Miss Evelyn Fitzgerald, worked for him for several decades and continued on as his personal secretary until he passed away.

One familiar story to those who knew Ashton concerned his acquaintance with a fellow speech-maker at the opening of the Alan C. Woods Research Building at the Wilmer Eye Institute in Baltimore, where he was a fellow in residence in 1953 and visiting professor of ophthalmology in 1959. The Johns Hopkins newsletter records the interaction as follows (Anon. 1964):

‘This is the first time I have been on a podium with a comedian—that is, an intentional comedian,’ said the doctor, with a British accent.

‘A few minutes later, that comedian, Bob Hope, remarked, ‘I have never been on with a funny eye doctor’.
In a letter following the event, A. E. Maumanee, Director of The Wilmer, wrote to Ashton, ‘at about the middle of your speech, Bob Hope leaned over to me and said, “I don’t know why you were worrying about whether Dr. Ashton followed me or not. You should have been worried about whether I had to follow Dr. Ashton”’ (Maumanee 1964).

Later, Bob Hope wrote to the director of the Wilmer and requested a copy of Ashton’s speech. ‘…I have been telling a lot of people about how great he was, what beautiful language he used and the laughs he gathered. In fact, I have been thinking of studying ophthalmology ever since I heard him’ (Hope 1964).

It was also during his years at the Institute that Ashton was contacted by a fish breeder who could not catch his stock with hook and line but only by net. Ashton became intrigued and it was from this investigation that he came to describe blindness caused by the trematode fluke and its invasion of the trout lens.

**OXYGEN AND PREMATURITY**

Painstaking observation, seamless integration of human and animal studies and incisive analysis of the data were the hallmarks of Norman’s scientific work. His main achievements involved investigation of the pathology of retinal circulation, but over the span of his career he turned his skills to a wide range of conditions.

Norman’s seminal observations on the vasculature of the retina were made relatively early in his career, using simple morphological techniques of light microscopy and latex cast and Indian ink visualization of retinal microvessels. The excitement generated by these early studies, combined with Norman’s skill as a presenter and orator, led to the rapid appreciation of the Institute as a centre for ophthalmic pathology, and a stream of international visitors followed. His classic, observational studies set the knowledge base for much current daily medical retina practice including diabetic retinopathy and hypertension, as well as rarer conditions such as hyperviscosity states and Coat’s and Eale’s diseases.

In the early 1950s Norman demonstrated the critical phenomenon of capillary closure in diabetic retinopathy and realized the link between this and the subsequent development of neovascularization. This set the scene for his most fundamental and influential studies on the pathogenesis of retrolental hyperplasia, now known as retinopathy of prematurity, a blinding disease that was then causing growing concern in the UK and USA. Norman recognized that the high concentrations of oxygen used in the treatment of premature babies led to paradoxical obliteration of retinal vessels, and the subsequent return to atmospheric levels yielded aberrant vasoproliferation.

Despite the fact that Norman demonstrated these phenomena in the kitten and later other species, the clinical community did not immediately realize the relevance of his animal model. In the 1954 International Congress of Ophthalmology he made use of his stage skills to convey his message by showing his film of the kitten research that clearly demonstrated vessels shutting down. He then ran it backwards to demonstrate them reopening.

The audience was almost entirely swayed, but still there was disension. In the face of this dramatic moment a well-established researcher spoke up to ask why his own rabbit experiments had failed to prove Norman’s thesis. Norman quickly responded, ‘This difference of opinion between (this colleague) and myself is like the battle between Goliath and David, but I am encouraged by the outcome of that particular contest.’
The mechanistic explanation he developed for these processes underpinned concepts of oxygen toxicity and hypoxia-mediated vasoproliferation before the knowledge of hypoxia-inducible factors and vascular endothelial growth factor, making a lasting impact on medical practice.

TOXOCARA CANIS

...together we (with Dr Ian Duguid) discovered for the first time in the United Kingdom that puppy dog worms can cause blindness in infants ... Ian is now more widely known as a clinical ophthalmologist whilst I ... am left holding the worm.

N.A. at a speech at Aberdeen Grammar School Former Pupils Club dinner, 1986

Norman maintained an interest in infectious disease throughout his career and published on microsporidial disease, amoebic infection, cytomegalovirus retinitis, toxoplasmosis and even trematode cataract in fish. His most influential contribution, however, was the demonstration of Toxocara canis infestation in the eye in Britain and that it could manifest as a localized tumour-like growth within the eye. These observations led to a major UK campaign to educate the public on the risks to vision of exposing toddlers to puppies and to the importance of keeping the streets clear of dog faeces. His cooperation with the production of public awareness television programmes and short films helped this sight-saving discovery reach thousands, enabling prevention on an enormous scale.

The breadth of Norman’s papers includes important contributions in the realms of the pathophysiology of retinal vasculature, degenerative disease, glaucoma, inflammatory disease including uveitis and scleritis, infection and tumours. Despite earlier concerns that ophthalmic pathology had already been entirely explored, Norman later observed that there was so much that had not been addressed he could not but help stumbling on discoveries.

EUROPEAN OPHTHALMIC PATHOLOGY SOCIETY

...After my paper a grinning Asian with little knowledge (of English) came up to me and said, ‘Congratulations—your speech was absolutely superfluous. I do hope you will publish it.’ ‘Well—maybe posthumously’, I cracked. ‘Yes—yes, as soon as possible’, he said.

N.A., notes from a speech

Language was only one of the barriers to be faced when in 1959 Norman Ashton had the idea of establishing a learned society of European ophthalmic pathologists. Having returned from the USA, where he had been invited as Guest of Honour to a meeting of the ophthalmic club (later the Verhoeff Society), he began a correspondence with Willem Manschot and Ry Andersen with the purpose of setting up a similar annual meeting in Europe. On 10 and 11 April 1962 the European Ophthalmic Pathology Society (EOPS) held its first meeting in London.

The idea was for several specialist ophthalmic pathologists to choose one of their most interesting cases for the year and present it to the group, in this way expanding their exposure to the peculiarities and advancements within their growing discipline. Membership was limited to a maximum of 35 and was seen as a highly rated honour. Because membership was
dependent on certain criteria—specialist knowledge of ocular pathology, active engagement in the field, adequate laboratory facilities and access to sufficient pathological material to provide interesting cases—the EOPS also worked to establish a standard for European ophthalmic pathology.

In 1963 Ashton was elected president of the society and went on to serve as life president well into his retirement from the Institute. The EOPS has met every year since and combines this meeting every fifth year with the Verhoeff Society. Its contribution to the advancement of ophthalmic pathology is immeasurable.

**FIGHT FOR SIGHT**

Realizing the need for funding to advance the work of the Institute, in 1965 Ashton joined with others to found a charity whose sole purpose would be financial support of eye research within the Institute of Ophthalmology. Fight for Sight was established and Ashton later served as chairman from 1980 to 1991, when he became a Patron.

By the time of his retirement, contributions to Fight for Sight amounted to more than a million pounds. Ashton had successfully invited the Duke of York to become Royal Patron to Fight for Sight and had organized many fundraising activities. But probably the highlight of Ashton’s participation in fundraising occurred in 1967, with the launching of a film premiere of Charlie Chaplin’s ‘A Countess from Hong Kong’. Through contacts he had made while visiting Hollywood, Ashton was able to organize an event in London attended by royalty and celebrities. Tickets cost 50 guineas for the royal circle, and as a result thousands of pounds were raised. More importantly, the name of Fight for Sight was elevated to a level of awareness within circles that might benefit it the most.

As one of the foremost charities supporting eye research in the UK, Fight for Sight has raised millions of pounds and continues as a crucial resource for the Institute of Ophthalmology, funding the infrastructure that allows rare scientific independence in an environment often shaped by grant-awarding bodies.

**RETIREMENT**

As my various afflictions vie to overwhelm … I have no intention of making my last entry my last exit.

N.A., *The Life of Norman Ashton*

With these words Norman Henry Ashton closed his still unpublished memoirs. Many years of illness and its ensuing discomfort and expense encroached upon his full and vibrant life until finally he passed away on 4 January 2000. However, between 1978, the year of retirement, and this time, his contributions to the field of ophthalmic pathology and society continued. In 1980 he was elected Visiting Research Professor at Merton College, Oxford. Later he applied for a grant on behalf of the Royal National College for the Blind to develop an electronic brailler, which was marketed in 1991. Elected Master of Worshipful Apothecaries, he spent a year giving numerous speeches of the highest calibre.

Having been elected chairman of Fight for Sight in 1980, Ashton held this post for 11 years of his retirement, resigning in 1991 after 26 years as a Trustee. Fight for Sight raised the
money to build new buildings at the Institute of Ophthalmology and in 1992 they named their new building the Ashton building.

For a while his work within Westminster Abbey continued and while serving as Deputy Chief Steward he was invited to a private audience with the visiting Dalai Lama at which, after having the sense he was boring his host, Norman happened on the topics of extra-sensory perception and the theism of pre-existence, and thereafter managed a most enjoyable conversation.

In 1992 he endowed an Ashton Lectureship in Ophthalmic Pathology at the Royal College of Ophthalmologists.

Ashton had painted for years, specializing in still lifes in oil. He continued with this as well as his hobbies as a fine cook and gardener. His garden within the cloisters attracted much admiration, and appeared in *Country Life* and other magazines. Although he never married, his social life was rich and he is remembered by many friends.

Although he remained largely quiet with regard to his own health, he was too ill to travel to Florida to attend the meeting of the Association for Vision Research in Ophthalmology at which he was to be presented with the Helen Keller award. The electors opted to bring the award to London, where they presented it to him at the Oxford Ophthalmological Conference.

Recognizing the scientific and historical value of his papers, Ashton made arrangements for their donation in his final years. His memoirs, personal papers, correspondence and copies of his speeches he gave to the Wellcome Trust library. A collection of 15 medals, representing his lifetime achievements, went to the Royal College Museum. The Institute of Ophthalmology library holds bound copies of his collection of publications.

For this respected man of translational research, death came ironically at the end of what he described as ‘various afflictions vying to overwhelm’. It is of note that the medical sufferings of all he chose to remember in his economical memoirs share the importance of space with contributions to humanity, political manoeuvrings and rollicking stories. Norman Ashton used his caring to leverage the gift of sight for countless numbers. His wit and charm and, most importantly, his sense of humour endured to the end.

… I remember once a Holborn librarian told me quite authoritatively that they filed *Times* Obituaries, but only those over 10 inches long.

On 26 January 2000, *The Times* printed an obituary of Professor Norman Ashton. It might have pleased him to know it measured 10½ inches.

**Acknowledgements**

Norman Ashton chronicled much of his life story upon his election to Fellowship of the Royal Society and then continued these memoirs in the subsequent years until five years before his death. Most of the historical information in this biography has come from these unpublished memoirs, entitled *The life of Norman Ashton—a chronicle with comments*. These careful records were donated by Ashton to the Wellcome Trust library, where the archivists and general staff were most helpful in retrieving files and even rushing the categorization to provide us with access to their collection. Karen Bonstein wrote an internal obituary and assisted with the retrieval of certain Institute records. Debbie Heatlie was a valuable resource within the Institute library. Paul Johnson shared personal memories and was kind enough to photograph a painting that Norman Ashton presented to him as well as a Christmas card photograph of another of his works. Rosalind Hart, Bob Alexander and Eddie French, also of the Institute of Ophthalmology, shared valuable impressions of the experience of being his colleagues.

The frontispiece photograph was taken in 1988 by Godfrey Argent, and is reproduced with permission.
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A full bibliography is available from the Royal Society’s Library at cost, and online at www.pubs.royalsoc.ac.uk.