OBITUARY.

SIR WILLIAM BOWMAN, Bart., F.R.C.S., F.R.S., LL.D., M.D.

It is with the deepest regret that we announce the death of Sir William Bowman, which occurred from pneumonia on March 29th, at his country house Joldwyns, near Dorking.

He was born in 1816, at Nantwich, his father being Mr. J. Eddowes Bowman, a banker, but better known as a botanist. Indeed, from the fact that the son at the commencement of his professional career was a poor man, it would seem not improbable that the father had been more interested in natural science than in business.

No doubt the habit of accurate observation and the keen interest in all scientific subjects, which were characteristics of William Bowman, were largely due to the influence and example of his father; and if he had a natural tendency towards science, this would have been fostered by his school life at Hazlewood College, Birmingham, where, unlike most schools of the period, much importance was attached to natural science.

That a youth with such proclivities and training should be attracted to the medical profession was only natural. William Bowman entered as a pupil at the Birmingham General Hospital, and, as was usual in those days, was apprenticed to a well-known surgeon, Mr. Hodgson. Already he began to show evidence of the extraordinary power he always possessed of going thoroughly into every subject with which he was concerned; and while at Birmingham he wrote several monographs in manuscript, one being on the epidemic of influenza in 1833. This and the other papers which he wrote at this period were not published, and we believe, by his desire, will not be included in his works, which are now being collected.
About this time, however, he wrote on some affections of the larynx, and illustrated his paper with some coloured drawings; these observations, with the drawings, were published in Ryland's *Diseases of the Larynx*, and are still recognised as being extremely accurate.

In 1838 he came to London, and joined King's College, where, two years later, he was appointed Demonstrator of Anatomy. Here he did not confine his studies to the coarser branches of the subject, which at that time were generally held to constitute the whole of anatomy proper, but studied with the microscope the finer structure of the tissues. The microscopes of those days were clumsy instruments compared with those of to-day; and those made in England, with their complex arrangements for stage movements and adjustments, were inordinately expensive; to a man, however, of Bowman's temperament, difficulties only existed to be surmounted, and he introduced foreign instruments, which were less complicated and cheaper, and, while studying histology himself, he taught the students.

In 1838 he visited the hospitals of Holland, Germany, Vienna, and Paris. On his return in 1839 he acted as Professor, Demonstrator of Anatomy, and Curator of the Museum. His colleague in the dissecting room was Mr. (now Sir John) Simon. In 1848 he was associated with Dr. Todd as joint Professor of Physiology and General and Morbid Anatomy. In 1856, when the claims of private practice became too urgent to enable him to devote all his time to his duties at King's College, Dr. Lionel Beale was appointed Bowman's co-professor. At the time of his death Sir William Bowman was still associated with King's College as a most energetic member of its Council, and chairman of its Medical Committee.

There are many who as his pupils can still tell of his earnest enthusiastic work as a teacher, and of the influence for good he exercised in this position. In his teaching, as in his scientific research work, he exhibited that character of determination and thoroughness which, even at this early date, marked him as a leader in the medical world. It was shown to be not at all abated in his latest composition, which was the obituary notice of Donders, which he wrote for the Royal Society, and which was published in the *Proceedings* of that Society last year. Like Donders, and like another English physiologist recently deceased, Wharton Jones, he combined his work in physiology with that of a specialist in practice, and
all three selected the ophthalmological branch of the profession. Specialism, however, did not narrow the scope of Bowman's views or interests; it is true that he gave up his professorship of physiology and his active work in the field of research, but he still continued to stimulate others, and his words of encouragement to the younger school of physiologists, with whom he never lost touch, will be gratefully remembered by all who received them. His striking and impressive figure was regularly seen at the meetings of the Physiological Society and at the Royal Society. It was only a few weeks ago, at one of these meetings, when the functions of the kidney were under consideration, that Sir William Bowman, the "father of the kidney," as Professor Michael Foster playfully dubbed him at the time, entered into the discussion and made appropriate congratulatory remarks to the author of the paper.

In 1840 he wrote the article "Surgery" in the *Encyclopædia Metropolitana*.

It is half a century ago (1842) that the Royal Society awarded its medal to Bowman for his contributions to science. It is no small praise to say that the discoveries he made are still accepted by the physiological world, and that there is little likelihood they will ever be upset. There are comparatively few of the so-called discoveries of science that are remembered for fifty years; the discoveries and their authors are alike forgotten. There are still fewer that stand unshaken after that lapse of time.

Though, in the main, Bowman's research work was histological, it was that kind of histology which is absolutely essential to the understanding of function. It falls into three chief categories: his work on the kidney, on the structure of muscle, and on the eye. Bowman's capsule, Bowman's sarcoïd elements, and Bowman's membrane will serve as reminders to many generations of the relation between the organs we have mentioned and the labours of the scientist whose loss we have now to deplore.

It is true that our knowledge of the structure of the kidney tubules, and the course of the circulation through the kidney, and the theories of kidney secretion deduced from such anatomical data have been amplified by Ludwig, Heidenhain, Nussbaum, and others; but, nevertheless, the fact still remains, as we have already stated, that Bowman laid the foundation of our exact knowledge on the subject, and no essential part of his observations has ever been contradicted.
Much the same may be said about his work on the structure of striped muscle. Bowman was the first who subjected this tissue to a thoroughly scientific microscopical examination, and the first to formulate a rational theory to explain the appearances seen, and the alteration that occurs on contraction. Merkel, Engelmann, and Krause followed and contradicted each other mutually on minor points of detail; and to-day, with all the improvements of modern histological research at hand, history is repeating itself; while Carnoy, Melland, Rollett, Schäfer, Haycraft, and others are continuing the process from different standpoints. But through it all, the sarcous element lives, and, no doubt, will form the battle-ground of many a rival theory yet.

His work on the structure of the eye is intimately associated with the more practical part of Bowman's life. It has the same permanent place in scientific history and literature as the discoveries already mentioned.

About 1842 or 1843 the health of Dalrymple, who was still a young man and becoming well known, gave way to such an extent as to compel him to retire from ophthalmic practice, and in 1843 to resign his surgery at Moorfields; this led the more prominent members of the profession to consider how his place could be supplied, and we believe that it was mainly in consequence of their suggestions that Bowman took up the study of diseases of the eye.

He became a Fellow of the Royal College of Surgeons in 1844. In 1846 he was appointed assistant-surgeon to the Royal London Ophthalmic Hospital, and in 1851 he was appointed full surgeon. He still, however, maintained his connection with King's College; in 1840, when King's College Hospital was established, he was appointed one of the assistant surgeons, and full surgeon in 1856.

In 1847 he read a paper at the British Association at Oxford, "On some Points in the Anatomy of the Eye, chiefly in reference to its Powers of Adjustment" — a most valuable contribution to the anatomy of the ciliary muscle.

The year 1851 was an important one in many respects: was the year of the Great Exhibition, and distinguished foreigners were flocking to London from all parts. But it was also the year which, owing to Helmholtz's discovery of the ophthalmoscope, was to mark an epoch in the history of ophthalmology. In this year Donders and Graefe both visited London for the first time, and were much with Bowman both at Moorfields and at his house. Here was formed a firm and
intimate friendship between the three men, each a leader in his own country. Unfortunately von Graefe died in 1870, but the intimacy between Bowman and Donders continued till the death of the latter in 1889. Last year, under the initials "W. B.," Bowman wrote his life. Perhaps we cannot do better than quote his own words as to this meeting in London of the three friends. "Donders always spoke of his London visit as having had a great influence in moulding his after-life. It brought him at least one thing for which he had great reason to be thankful, the friendship of von Graefe, an association soon to be fraught with splendid results for the expanding science of ophthalmology, for these two men, both of the first capacity, laboured ever afterwards to advance it as brothers in council, freely communicating their ideas to each other, always in perfect harmony of aim. While von Graefe was able to tell Donders of the European hospitals he had been visiting and of the new clinical ideas he was maturing, as well as of the construction in that year, by Helmholtz, of a dioptric apparatus for rendering visible the fundus of the eye, Donders could on his side explain many discoveries of his own in the physiological field, and among other things declare the true nature of the act of accommodation, quite recently disclosed by Cramer under his own inspiration and in his own laboratory." It was unfortunate that Bowman, writing anonymously, could not give his own impressions of this meeting, but we have the evidence of both the others as to the zeal with which they followed Bowman's practice at Moorfields, and we may be sure that his interest in the new ophthalmoscope would be at least as keen as theirs, while the physiology of accommodation was a subject on which, as far back as 1847, he had written, giving anatomical details of the parts concerned in the act, which afforded the foundation of subsequent discoveries.

By this time Bowman's unrivalled skill as an operator was fully recognised, and his private practice had already become considerable. Throughout his life he was rather an observer and an oral teacher than a writer. He never wrote for publication till he was sure of his facts, hence his writings are not so numerous as those of many others, but they have a more permanent value. His paper on the treatment of Lachrymal Stricture in the first volume of the Ophthalmic Hospital Reports is as true as when it was written, and the treatment there advocated is still that at present in vogue, modified in details only. In 1851 he had advocated
dividing the punctum for cases of epiphora due to eversion of the punctum; he now extended this to cases of stricture. Up to this time the treatment of these cases had been most unsatisfactory; the only probes that could be passed were those of the calibre of the canaliculus, and the unsatisfactory results were shown by the frequency with which it was found necessary to lay open the sac and destroy its mucous lining with the actual cautery. Styles were commonly introduced through the skin covering the sac, and, to avoid the disfigurement thus produced, the skin was sometimes brought together over the head of the style, which thus remained permanently imbedded. By the simple means of enlarging the orifice of the punctum larger probes could be introduced, and the stricture treated effectually without any external wound.

In 1857 von Graefe made known his discovery that iridectomy was a cure for glaucoma. Bowman not only adopted this treatment, but he strenuously urged it on the profession through several channels—namely, the Medical Times and Gazette in 1860, at the meeting of the British Medical Association in London in 1862, and in the Moorfields Reports in 1863. He modified Graefe's treatment of conical cornea by removing the apex of the cone with a trephine. A full account of this operation and of his views on other methods will be found in the report of the Fourth Ophthalmological Congress in London, 1872.

In 1876, being within a fortnight of his 60th birthday, it became necessary by the rules of the hospital that he should resign his appointment of surgeon at Moorfields. He was, however, an active man in full practice, and his fame as an operator attracted many to the hospital. Under these circumstances a section of the governing body hoped that it might be possible to allow him, while holding the appointment of consulting surgeon, to have a few beds; it was felt, however, that this would have created a dangerous precedent, and the proposal was accordingly abandoned.

In 1880 the Ophthalmological Society was founded. By universal consent Bowman was invited to be its first president. In the welfare of this Society he always took the warmest interest, and both during the three years he held the office of president and subsequently he aided it most liberally, both by contributing to its funds, by the presentation of bookcases to the library, and by his advice and assistance in every way. A little later the Society founded an
annual lecture—the Bowman lecture—to perpetuate the memory of his connection with the Society and his services to ophthalmological science.

In 1881 he was President of the Ophthalmological Section of the Seventh International Medical Congress, which was held in London, and the portrait-sketch on the preceding page represents him as he then was.

For many years he occupied a position in the ophthalmic world which was unique, but which might be, perhaps, best compared with that of Sir James Paget in relation to general surgery. While doing an immense practice himself, he was looked upon as a kind of universal referee, and in all cases of doubt his opinion was taken, and usually considered to be final. To some who knew him only slightly and in recent years, his manner seemed a little cold; but those who knew him best loved him most. As a consultant his kind and sympathetic voice pleased the patient, while his courteous manner, the consideration that he always showed to the opinions of others, and the cautious and deliberate manner in which he arrived at conclusions gave confidence both to surgeon and patient. Moreover, his immense experience, keen sagacity, and caution made his opinion extremely valuable.

About 1887 he began gradually to retire from practice, although until comparatively recently his opinion could still be obtained in consultation.

His retirement led the profession to show their appreciation of the work he had done by presenting him with a testimonial which took the form of a portrait by Mr. Ouless, R.A., which was exhibited at the Royal Academy in 1889. Lady Bowman, to show the appreciation with which this was regarded by herself and the members of her family, had a mezzotint engraving of it executed by Cother Webb and presented to the subscribers to the testimonial. Another admirable portrait was painted by Watts and engraved some years ago. This latter shows little more than the head, and the expression is animated. In Ouless's portrait, which is a three-quarter length in a sitting position, there is more sedateness and repose.

The funds subscribed for the presentation portrait by more than 400 persons—including distinguished representatives of medical, physiological, and especially ophthalmological science, in all parts of the civilised world—were sufficient not merely to provide the portrait, but also to defray the expense of re-
printing the most important of Sir William Bowman's original contributions to physiological and ophthalmological science and practice. Two friends undertook, at Sir William's request, one to arrange and edit the ophthalmological, the other the physiological, papers. We are informed that while the former have long since been in print, the physiological papers have, unfortunately, not been prepared for distribution, as was intended, during the lifetime of Sir William Bowman.

In 1840 his paper "On the Minute Structure and Movements of Voluntary Muscle" was published in the Philosophical Transactions. In 1841, the year of his election as a Fellow of the Royal Society, the Philosophical Transactions contained "An Additional Note on the Contraction of Voluntary Muscle in the Living Body." In 1842 he published his Observations on the Minute Anatomy of Fatty Degeneration of the Liver, showing that this condition consists in an excessive accumulation of the normal fatty constituents of the liver cells. The Philosophical Transactions of 1842 contain Bowman's famous and beautifully illustrated paper "On the Structure and Use of the Malpighian Bodies of the Kidney." For this admirable paper he was awarded one of the Royal medals. In 1843 the first part of The Physiological Anatomy and Physiology of Man was published by the joint authors, Todd and Bowman. The work was published in successive parts; the fourth and concluding portion did not appear until 1856.


In 1884 he was created a baronet in recognition of his scientific attainments and professional eminence. Honorary degrees were conferred upon him by the Universities of Cambridge, Dublin, and Edinburgh, and he was a member of numerous medical and scientific societies, both in this country and abroad. He was elected a Fellow of King's College in 1855, and in 1877 he was elected a member of the Council, in which capacity, as in various offices which he had previously held, his services to that institution were of inestimable value.

An intimate medical friend writes: He took a very active part in establishing St. John's House Sisterhood for Trained Nurses; this was the pioneer of many other similar institutions, and those who are old enough to remember the nursing which Dickens describes cannot be too thankful as medical men to the able assistance now rendered to the sick, rich and poor alike, as well as to themselves.

Sir William took a lofty view of his calling; he protested forcibly against the views of antivivisectionists, he practically charged them with stopping the gates of knowledge, neither going in themselves nor suffering those that were entering to go in. In an address in 1866 he said: "I see no reason to doubt that future ages will still accept the pious saying of one of old, that surgery is the hands of God; the human hands, apt images and reflex of man's whole being, from his morning hour of puling helplessness when the

\[\ldots\ldots\text{tender palm is prest}\]
\[\text{Against the circle of the breast}\]
through all his working day of time until they shall be uplifted once more, at last in joy and adoration, to hail a brighter and an eternal dawning."

And here was the whole man. He was essentially "thorough"—whether in religion, kindnesses (and they were many), other dealings with his fellow-men, consultations, as well as in his earlier work in anatomy, physiology, surgery, and the microscope.

Speaking on the subject of "Time" to the student of King's
College in 1851, he said: "The unavoidable distractions to which the practitioner of medicine is exposed require in him all the more heed to economy in the disposal of his time; and a loose, unpunctual habit, while it deprives him of the little leisure which he might otherwise enjoy, causes him also to be wasteful of the time of others."

Again, on books: "Let him turn to books, the solace and delight of the most excellent men in all ages, and a means by which he may adorn his mind, and store it with just and pleasing ideas, and render himself more fitted to associate on terms of equality with the scholar and the man of taste in any community in which his lot may be cast."

We are indebted to Sir James Paget for the following brief and sympathetic estimate of Sir W. Bowman's life and character: "A notable characteristic of Sir William Bowman's mind was his accuracy in observing and recording facts, and his habit of pursuing investigations to the furthest point attainable. This was shown alike in his practice and in the studies of his early life, and admirable examples of it are in the papers on the Structure and Movements of Voluntary Muscles, and on the Structure and Use of the Malpighian Bodies of the Kidney which were communicated to the Royal Society in 1840, 41, and 42. It may fairly be said that in his studies of these subjects is discerned and exactly described all that at that time was within the range of possible observation. The award of the Royal Medal of the Society in 1842 justified the reputation which he had already gained among the anatomical teachers of that time, and greatly increased his influence in his own and other schools. His method of scientific work was not materially changed when he may have seemed to have narrowed his field of study by limiting his practice to ophthalmic surgery, for his practice and all his writings showed not only that he applied a wide range of general knowledge in the study of his special subject, but that he made his special knowledge applicable in illustration of general principles. His writings on ophthalmic subjects may be called monographs, but they may teach a large part of all surgery; and there is no guesswork in them; they show, as did his whole life, that he was eminently an observant man of science, and even his favourite recreations showed the same—his plant culture and his constant observations of Nature. To those who knew him well it was often a subject of regret that Bowman's health, though never seriously disturbed, was never vigorous enough to justify him taking an active part in
the public or official work of his profession. If it had been possible for him to give time to work of this kind, few if any could have done more good, for he was always wise in counsel, calm, liberal, and a lover of peace. He maintained a very high standard of professional conduct, and never swerved from what he knew to be right, but he never sought self-advancement, and never seemed to wish to dominate. His influence would have been great and all good.

On first coming to London, Bowman lodged in Norfolk Street, Strand, and then in Craven Street; he subsequently moved to the late Dr. Robert Lee's house in Golden Square, and to Clifford Street in 1843. By this time he was able to have a house also at Hampstead. He retained the house in Clifford Street till within a few days of his death, but for some years past he has lived chiefly at his lovely home near Dorking, where he breathed his last.

In 1842 he was married to Miss Harriet Paget, and Lady Bowman still survives. The baronetcy descends to the eldest son, Mr. William Paget Bowman.