

## OBITUARY NOTICES OF FELLOWS DECEASED.

JOHN THEOPHILUS BOILEAU, son of Thomas Boileau, at one time a well-known solicitor in Calcutta, and afterwards Chief Magistrate of that city, was born there May 26th, 1805. His maternal grandfather, Colonel Jessup, was an American Loyalist who suffered severely for the support he gave to the King's cause. The Boileau family are of Huguenot descent.

In 1819, when still much under fifteen, he was nominated a cadet to Addiscombe by Charles Marjoribanks of the E.I. Direction. Among his contemporaries were several whose names are more or less prominent in modern Indian history, such as Henry Lawrence and his elder brother George, James Abbott (of Khiva), with his brother Sir Frederick. Boileau, aged  $15\frac{1}{2}$ , passed out of Addiscombe for the Engineers, December 19, 1820, and after a short practical training on the Trigonometrical Survey, and at Chatham under Colonel Charles Pasley, went to India, arriving at Fort William September 22nd, 1822.

The Corps of Bengal Engineers was in those days a very small one, its cadre including only thirty-six officers, and, if they entered it with a somewhat imperfect training, the manifold and incessant work into which the young officers were speedily plunged afforded them at least a very varied experience. During the first twelve years of Boileau's service we find him engaged as executive engineer in the construction of fortifications, roads, barracks, an important church and gaol, a considerable suspension bridge, and what not, and (among other duties when stationed at Agra) on measures for the conservation of the splendid buildings left there by the Mogul dynasty, including the Taj itself.

He married in 1829, and made a voyage to Europe with his family in 1837. Whilst at home he published a work which has had extensive use among surveyors, and of which he had already issued a lithographed edition in India (1836). The London publication is entitled: "A new and complete Set of Traverse Tables, showing the Differences of Latitude and the Departures to Every Minute of the Quadrant, and to Five Places of Decimals; together with a Table of the Lengths of each Degree of Latitude and corresponding Degree of Longitude from the Equator to the Poles; with other Tables useful to the Surveyor and Civil Engineer. By Captain J. T. Boileau, H.E.I.C. Bengal Engineers. London: W. H. Allen & Co., Leadenhall Street, 1839."\*

\* A note in General Boileau's handwriting, dated 12th November, 1880, says: "These Traverse Tables were prepared to facilitate the computation of the areas of

It also exemplifies Boileau's constant activity of mind, that he published, at this early date, a report of his own "On the Practicability and Expense of a Plan proposed for Constructing Docks in Diamond Harbour on the River Hooghly, and for uniting them with Calcutta by a Railroad, together with an Estimate for the same."

It was at this time that the interest of the Royal Society in magnetic observation, which had been originally stimulated in 1836 by a letter of Humboldt's to the then President (the Duke of Sussex), and had been maintained by the zeal of Major Sabine, was at its height. The Society recommended the Court of Directors of the E.I. Company to take part in the institution of magnetic and meteorological observations, which (chiefly through the influence of Colonel Sykes) they decided to do. Boileau and two officers of the Madras Engineers, Lieutenants Ludlow and Elliott, were appointed to establish and take charge of observatories at Simla, Madras, and Singapore respectively, and all three went to Dublin in November, 1839, to receive from the late Rev. Dr. Humphrey Lloyd, of Trinity College, a course of that preparation for their duties which that eminent philosopher alone could then impart. Captain Boileau, before he left again for India, was elected a Fellow of the Royal Society, and also a Fellow of the Royal Astronomical Society.

The three Indian Engineer officers embarked in February 1840 for Madras, reaching that port in June, where they separated, and Boileau with his instruments proceeded to Calcutta. He reached Simla on the 24th of September, some weeks before the arrival of his assistants with the instruments. He had taken observations of dip on his palankin journey, by the way, at Allahabad, Futtehghurh, Bulandshahr, Karnál, Ambála, and Bár (at the foot of the hills on the road to Simla). He was also fortunate in securing for his magnetical campaign the hearty interest of the Rev. John Henry Pratt, afterwards Archdeacon of Calcutta, a man not less well known for his scientific acquirements than beloved for his character.

Captain Boileau selected for his observatory a site on what was then called Bentinck Hill, but which has since been known as Observatory Hill, and which in the rapid revolution of administrative events in

village lands by the officers of the Government Revenue Survey, and have gone through several editions. They are the first ever published for angular values to single minutes of arc, or to five places of decimals for distances. Their great utility, both for the above purposes and for surveying in general, has been acknowledged by letters from the United States of America, from the Brazils, from Australia, and from India." Boileau's tables are in habitual use at Cooper's Hill College. Traverse tables are intended to save the calculations of triangles in ordinary surveys, by showing by inspection the amount in linear measurement of the difference of latitude and departure (*i.e.*, of longitude) for any bearing and distance.

India has recently been selected as the site for the Viceroy's official residence.

The observations were continued from 1841 to 1846, though their maintenance had been occasionally menaced with interruption. This is referred to more than once by Boileau in the correspondence which he maintained, during the earlier years of his work at Simla, with Dr. Humphrey Lloyd. Under date 15th September, 1842, he writes:—

“We have now in Simla *all* our Chiefs, viz., Lord Ellenborough, the Governor of the N.W. Provinces, and the Commander-in-Chief. The Governor-General has not yet been to see my works, but he has expressed himself in such terms respecting the Observatory that if it is left to his Lordship's pleasure, the continuance of its observations will be short indeed. He calls the establishment of the Company's corresponding stations an English (or rather a Home) job; and I have not the least doubt that both himself and the Government of India at Calcutta are doing all they can with the Court of Directors to procure the abolition of the Indian Observatories. . . . . Government have twice applied to me to know how long my “experiments” and “the Magnetic Survey” are to continue, and I have both times replied that the series of corresponding observations upon which I was engaged could not terminate until the 30th June, 1844, *at midnight*.”

18th December, 1842: “We have got rid of all our great people, but my Lord Ellenborough has bid me attend his grand doings at Ferozpoore on Christmas Day, whither accordingly I am bound on the 21st. This will cause a delay of three days in our opening the New Year, but there is no help for it. The return of our armies from Cabul promises a lasting peace to India, and I hope will also extend, almost indefinitely, the existence of the Observatory.”

17th October, 1842: “I see by the paper that H.M.'s Observatories are to be continued for three years, and if any good is to come out of our work, ours must be so too; though the Governor-General told me a few days ago that I must not reckon upon more than one year more at Simla. Since then the news of our victories and the re-establishment of British supremacy in Afghanistan has come in, and a few days since the accounts of peace with China, so that the *mollia tempora fundi* have arrived, and if you desire our co-operation for a further period, this is the time to ask for it. The peace saves our Government at least one and a half millions a year. The extra expense of four (three?) observatories is about £3,000 sterling per annum only. Lord Auckland absurdly estimated it at £10,000 a year, which was enough to frighten the Court of Directors out of their senses.”

The same correspondence shows that Major Boileau not only kept

the regular term-days, but certain others also privately arranged by Sir James Ross. Disturbances proved to be of pretty frequent occurrence. He sent home traces of eight in 1841, of three in the month of February, 1842, and others in August and September, 1842. These and the whole of the six years' magnetical observations remain unpublished—a circumstance which might have lent greater force to the objections of Lord Ellenborough had he been able to foresee it. There are some circumstances not easy to explain in connexion with this fact. That the magnetic observations were not *published* and *do not exist* in print is indubitable. But whether they were not *printed* is subject to a curious doubt. The Government did sanction for this purpose a printing establishment on a liberal scale, which was set up by Major Boileau first at Simla, then at Ambála (in or about 1847), and subsequently at Meerut, when he had been transferred to that station. And in a memorandum of his employments and services, in his own handwriting (dated 21st March, 1867) he enters:—“*Superintended the printing of the whole of the observations taken at the Simla station. . . . This press was exclusively employed by the Government N.W. Provinces in printing Government work, and acquired a high reputation for the accuracy and neatness with which especially its tablework (forms of figures) was executed. After completing the object for which it was established in connexion with the Simla Magnetic Observatory, it was transferred to the College for Civil Engineering at Roorkee, to which it is still attached. . . .*”

Also in a letter to Sir Henry Lefroy, dated 18th July, 1883, General Boileau writes:—“The whole of the records and instruments of the Simla Observatory were destroyed by fire in the year 1858, owing to the cases in which they had been packed for transmission to England, on my retirement from the Service in the beginning of 1857, having been transferred during the Mutiny from the safe depository in which they had been placed by me, into a store-room in which large quantities of *dooly* bedding had been stored away, and which had taken fire, or been set on fire, to the utter annihilation of the instruments, records, and *printed observations of the Simla Station.*”

The letter last quoted proceeds:—“Copies of the monthly abstracts, however, of the magnetic and meteorological observations of the Simla Station had been regularly forwarded by me to the Royal Society, and from them, with the sanction of the Government of India, and by the kind aid of the Royal Society, the meteorological observations of the Simla Observatory were printed and published under my superintendence in the year 1872.

“None of the magnetical observations of the Indian Observatories have been printed; although even at this distant time the results, if published in a condensed form, would be of great interest.”

It would appear that the meteorological observations, till printed in London in 1872, stood on the same platform with the magnetical. And in the absence of any exact information, perhaps the impossibility of now recovering it, what I should deduce from Boileau's statements is this:—that all the Simla observations *were* printed by him at his Observatory press, but that for some reason, very possibly his desire to accompany the publication with prolegomena and some indication of results, for which he never found time in India, he was induced to defer their issue: that he had intended to carry the work to completion in England after his retirement and establishment in a home there; but that, in consequence of the breaking out of the Mutiny shortly after his departure from India, the despatch was delayed, and in the following year the fire occurred which consumed the whole.

We may here insert a list of books of tables of divers useful kinds which were prepared and issued by Boileau during his residence at the Observatory, or in the immediately succeeding years.

1. Tables (from Apjohn's formula) for determining the Elastic Force of Aqueous Vapour.

2. Ivory's Tables of Mean Astronomical Refractions; Revised and Augmented.

3. Mathematical Tables; comprehending Logarithms of all Numbers from 1 to 10,000, also Logarithms, Sines, Tangents, and Secants, to Six Places of Decimals.

4. Oltmann's Barometrical Tables.

5. A Collection of Tables—Astronomical, Meteorological, and Magnetical; also for Determining the Altitudes of Mountains; Comparison of French and English Weights and Measures, &c.

6. Tables of Wages and Rent; of the Value of Goods; for converting Seers and Chittacks into Decimals of a Maund, also Annas and Pice into Decimals of a Rupee.

7. Tables for facilitating the Computation of the Time from single Altitudes. Roorkee, 1858.

To these we may add:—

8. Meteorological Observations made at the Magnetic and Meteorological Observatory at Simla during the years 1841–45, under the direction of Lieut.-Colonel J. T. Boileau, F.R.S., Superintendent of the Observatory. Published by Order of the Right Hon. the Secretary of State for India in Council.

Boileau's work while at Simla was by no means confined to that of the Observatory. During the years he spent there a great variety of occasional and useful tasks were either committed to him by Government, or voluntarily undertaken.

After the Observatory work came to an end, Boileau filled the office of Superintending Engineer successively at Ambála and Meerut, till

in 1854 he was transferred to Agra, on the reorganisation of the P.W. Department, as Chief Engineer to the Government of the N.W. Provinces. In addition to the duties of the former office, while at Ambála he undertook to codify and co-ordinate the chaotic mass of Standing Orders of the Department, extending over a period of nearly seventy years. The result of this voluntary labour, Boileau's Code as it was called, to which he added a full Index and Series of Forms, was printed at the expense of Government, and became some years later a most valuable aid when a Committee was appointed by Government to draw up a systematic code of rules and procedure for the Department.

Colonel Boileau retired from the Service February 24th, 1857, with the usual honorary step which made him Major-General.

Boileau's life in India had been characterised by acuteness and vivacity of intellect, by an unresting and devouring activity of mind, and by extraordinary versatility and variety of work. He hardly attained the success that some of these qualities would have led one to expect, but at the same time the list perhaps suggests some reasons for this. And it is a fact that his joyous and buoyant temperament, indeed his exuberant spirits, often showing themselves in proceedings of an eccentric character, made him better known to the Anglo-Indian community than his intellectual gifts or practical accomplishments. Indeed, his sayings and doings were the subject of many widely current anecdotes, which, in some cases, were founded on the merest iota of fact, and in some others were purely mythical.

It was really in the thirty years of life following his retirement that Boileau's best qualities were drawn out to most valuable purpose, and won him wide and warm regard. He was, to be sure, as versatile and active as ever; thus he became the most energetic of vestrymen at Kensington, and as Chairman of the Building Committee which erected the handsome Town Hall there, he was indefatigable in his supervision of the work and of its financial details. He was for years a most zealous member of the Volunteer body, in which, however, he steadfastly declined the command of his corps (the 1st Middlesex Rifles) which was pressed on him, insisting on carrying his rifle as a private in the ranks. He was for some time on the Council of the Royal Society, and acted as auditor of its accounts; besides serving actively at one time or another on the Committees of various charitable, religious, or other useful Societies. But that which especially developed in General Boileau, and characterised him for the last twenty years of his life, was the active practical benevolence and devotion to the work he took upon himself as Committeeman, and eventual Chairman, of two noble institutions, viz., that of the Soldiers' Daughters' Home at Hampstead, and that of the Officers' Daughters' School at Bath (the latter having also for some years a succursal at Roehampton). To these institutions he grudged no

labour, and spared no fatigue. The children of the Soldiers' Daughters' Home were always termed by him his "red chickens," and when wearied with work his greatest refreshment was to visit the Home and to get surrounded by their smiling faces and happy voices. "At any hour of the day or night, and in any weather, he would go to the Home, if his presence was required; and, as long as his strength permitted, he would sometimes walk the whole distance from his residence at Notting Hill before breakfast. On occasions of joy or sorrow at the Home he was never absent, and he was ever at the beck and call of the excellent matron, with whom he worked in unbroken harmony for the twenty years he occupied the chair. . . . All his own servants were drawn from the Home, and he would always declare that they were unsurpassed." He cared for them as if they had been his own children, and he was repaid by their attachment to him. Every girl brought up in the Home who was in London at the time of his death sent a wreath to be laid upon his coffin. Beyond his constant weekday visits to Hampstead, he for many years before his last illness maintained a practice of going there on Sunday afternoon to be present at the Bible classes which the children attended.

His exertions on behalf of the Royal School for Officers' Daughters were not less devoted. He joined the Committee of this Institution in 1872, and in 1880 became Chairman in succession to Sir Henry Lefroy, when the latter went as Governor to Tasmania. When it was deemed expedient some years ago to close the succursal at Roehampton, and to extend the buildings at Bath to receive the additional pupils there, all the details of this change and the new construction at Bath were conducted under General Boileau's close supervision.

Till his last illness he never altogether lost his buoyant spirits or his oddities; but in the constant exercise of benevolent effort these latter had taken a riper and sweeter form than in the old Indian days. In May 1886 the illness began which, with sundry fluctuations, and borne with patience and devoutness for six weary months, terminated in his death, Sunday, November 7th.

I have given some examples of his ever-active mind and versatile capacities. I may add that till he left India he played both the flute and the violin. He could, I am told, quote Hafiz with faultless pronunciation and expression; he spoke Hindustani, I know, with a vernacular swing which was rarely equalled in the mouth of an Englishman; whilst his memory was stored with old Hindu saws and rhymes, ever ready to be produced on appropriate occasions to appreciative hearers. He was also a fair Latin scholar. And for a long time he was a diligent attendant at and participator in the proceedings of the Royal United Service Institution. During the earlier discussions on rifle construction he took a serious part in them, and himself invented a rifle.

H. Y.

SIR WALTER ELLIOT, K.C.S.I., LL.D., who died at his seat, Wolfelee, near Hawick, N.B., on the 1st March, 1887, at the mature age of 84 years, was born in Edinburgh, January 16th, 1803, the eldest son of James Elliot, Esq., of Wolfelee, by his marriage with Caroline, daughter and co-heiress of Walter Hunter, of Polmond, county Peebles. Sir Walter was educated at Haileybury College, where he obtained the certificate of "highly distinguished," and entered the service of the East India Company in 1820. In 1823 he received his first appointment as Assistant Political Agent for the South Mahratta District. After holding various other offices in the Revenue and Political Departments of the Madras Government, he was made, in 1837, Private Secretary to his cousin, Lord Elphinstone, then Governor of Madras. From 1837 to 1854 he was a Member of the Board of Revenue, and during that time was intrusted with the supervision of the Northern Circars, then in a very unsatisfactory condition. In 1854 he became Member of Council, and retained this position until he retired from the Indian Service in 1859.

Throughout his career in India and during the whole period of his subsequent life in this country until a very recent date, when his eyesight failed him, Sir Walter Elliot was constantly at work on various points connected with the Natural History, Ethnology, Antiquities, and Languages of India, in all of which subjects he was deeply versed and took the most profound interest. Though his publications were not very numerous, his notes and collections in all these departments were extensive, and were in many cases utilised in the way of contributions to the writings of his fellow-workers in these various branches of science. One of his most important earlier papers was a Catalogue of the Mammals found in the Southern Mahratta country, published in the 'Madras Journal of Science' for 1839 which was one of the first attempts made to give a connected account of the mammal-fauna of the Indian Peninsula. In the same journal and in the 'Journal of the Asiatic Society of Bengal,' will be found other zoological contributions from his pen. Sir Walter was also well acquainted with Indian plants, and after his return to this country contributed several articles to the 'Edinburgh New Philosophical Journal' on the farinaceous grains and the various kinds of pulse used in Southern India. But it is, perhaps, as an Indian antiquarian that his name will be ultimately best known to posterity. The sculptured slabs from the famous Buddhist Tope of Amravati which adorn the walls of the great staircase in the British Museum, were procured by him, and presented to the Court of Directors, who transferred them to the national collection. Besides these, a splendid collection was accumulated at Wolfelee of coins, copper plates, arms, and other Indian ethnological objects. Sir Walter Elliot was for



many years a constant attendant at the meetings of the British Association for the Advancement of Science.

Sir Walter was an ardent collector of Indian coins, and a leading authority on the subject. His principal numismatic work was a memoir on the "Coins of Southern India," which forms the second part of the third volume of the International 'Numismata Orientalia.' Sir Walter is in fact the only man who has worked systematically on Southern Indian coins, a neglected subject to which Marsden and Prinsep made some small contributions. In the work above mentioned, he has laid a solid platform, on which future Indian numismatists may proceed to build. With his habitual liberality he transferred more than 300 of his most valued coins to the collection in the British Museum. Besides this most important work, Sir Walter published two papers on the same subject in the 'Madras Journal of Literature and Science' (new series, vol. 3 and 4), under the title of "Numismatic Gleanings."

In private life, it may be said in conclusion, Sir Walter Elliot was one of the kindest and most amiable of men. His sweet and genial disposition, and great liberality in every way, endeared him not only to his immediate friends and relations, but to all those with whom in various ways he came in contact. In 1839 he married Maria Dorothea, eldest daughter of Sir David Hunter Blair, Bart., of Blairquhan, who survives him, and by whom he leaves a family of three sons and two daughters.

Sir Walter was elected F.R.S. in 1878, and LL.D. of the University of Edinburgh in 1879. He was made a Knight Commander of the Star of India in 1866.

P. L. S.

SIR JOSEPH WHITWORTH was born at Stockport on December 21st, 1803. His school education terminated at the age of fourteen. He was then sent to an uncle, a cotton-spinner in Derbyshire, with the intention of his being brought up to that business. His mechanical tastes were, however, too strong, and in 1821 the idea of cotton-spinning was given up, and he obtained employment and experience for four years in the works of different machine-makers in Manchester. In 1825 he went to London, and was engaged successively with several of the most important engineering firms, amongst them Maudslay and Holtzapffel. He also worked with Clement, who was engaged in the construction of Babbage's calculating machine. In 1825 he married his first wife, Fanny, youngest daughter of Mr. Richard Ankers. In 1833 Whitworth returned to Manchester, and set up as a tool-maker on his own account. His business and reputation rapidly increased. In 1840 he read a paper before the British Association on his method of preparing accurate metallic plane sur-

faces, a method which he had devised when with Maudslay in London, and in 1841 he read a paper before the Institution of Civil Engineers on "An Uniform System of Screw Threads." During the next ten years he introduced his system of standard gauges and perfected his measuring machine, an instrument which is capable of detecting a difference in size of one millionth of an inch. In 1853 he was appointed as one of the Royal Commissioners to the New York Exhibition, and in the following year his attention was directed, at the request and with the aid of the Government, to the improvement of fire-arms. Since that time the subject of fire-arms, large or small, interested him more than any other to the day of his death. He was President of the Institution of Mechanical Engineers in 1856, and in 1857 he was elected a Fellow of this Society. In 1868 Whitworth founded the Engineering Scholarships which bear his name. He provided an annual income of £3000, to be distributed as scholarships for the encouragement of the study of the theory and practice of mechanics. In July, 1869, he was created a baronet. In 1870 his first wife died, and in 1871 he married Mary Louisa, widow of Mr. Alfred Orrell. The present works of Sir Joseph Whitworth and Company, Limited, were opened in 1881. Since then they have received a rapid extension and development, and now undoubtedly contain the finest collection of powerful machine tools in the world. Of late years the state of Sir Joseph Whitworth's health usually necessitated his spending the winter in the South of France. He died on the 22nd of January, 1887, at Monte Carlo, and was buried in Darley Dale churchyard, near his country residence at Stancliffe.

One characteristic ran through the whole of Whitworth's work as an engineer—insistence upon the very highest standard of excellence both of workmanship and material; and it is to this rather than to any specific inventions or discoveries that his great success and reputation are due. The principle of his method of preparing true planes was the simple one that if any two of three surfaces accurately fit each other, each of the three must be plane; in addition to adopting this fundamental principle, he used a scraper for forming the surfaces, instead of the practice previously in vogue of grinding the surfaces together.

In the matter of screw threads and standard gauges, Whitworth insisted on the desirability of all engineers adopting the same standards, and working with them to the utmost attainable accuracy. He adopted the inch as his unit, but divided it decimally; and this introduction of the decimal system to the British workman must in itself have had a very material educational effect. In fire-arms, both small arms and artillery, the principal points on which Whitworth insisted were, the use of a long projectile with a great angular velocity of rotation about its axis, and the use of polygonal rifling of the barrel instead of grooves, the projectile being formed to fit the barrel and so

secure a large bearing surface. Probably the improvements in the manufacture of steel which are associated with the name of Whitworth have done more for the development of the most modern artillery than has either of the features of his system of rifling. His improvements may be broadly said to consist in three points: first, insistence upon obtaining the best material for the purpose in the highest purity; second, in compressing the molten steel in the ingot; third, in forging under a hydraulic press instead of a steam hammer. Whitworth's published writings are comparatively few in number, but these have a permanent interest and will always be instructive. His fame is rather written in iron and steel, and in the daily practice of the mechanics who have been directly or indirectly trained by him, than in the journals of the learned or technical societies.

J. H.

Dr. ALLEN THOMSON, one of the most distinguished anatomists and embryologists of his time, was born in Edinburgh, Midlothian, Scotland, on the 2nd of April, 1809, and died in London at 66, Palace Gardens Terrace, on the 21st of March, 1884, in the seventy-fifth year of his age.

His father, Dr. John Thomson, was a remarkable man, who at eleven years of age began life as a silk weaver's apprentice. To this trade he was bound for seven years; and he continued to follow it in the town of Paisley for nearly two years after his apprenticeship had expired. His father, however, seeing that his son "took little interest in his trade," bound him in 1785 (at the age of twenty years) to Dr. White, of Paisley; and in this medical apprenticeship he continued for three years. Subsequently, he became a pupil, in London, of William Hunter (brother of John Hunter), in his School of Anatomy at Leicester Square; and again returning to Edinburgh in 1793, he became a Fellow of the Royal College of Surgeons there at the age of twenty-eight. Having the year before "entered into engagements to form an alliance in business with Mr. Arrott (a Fellow of the College), he continued to live under Mr. Arrott's hospitable roof till the autumn of 1798—a period of five years." In 1815 he became a Licentiate of the Royal College of Physicians of Edinburgh; and in 1808 he obtained from the University of King's College, Aberdeen, the degree of Doctor in Medicine. Having first practised in Edinburgh as a surgeon, he eventually rose to extensive practice as a physician. He was the first occupant of the Chairs of Military Surgery in the University of that city, and subsequently of General Pathology, both of which were founded on his recommendation.\* In 1835, at the age of fifty-eight, he retired from active outdoor

\* Sir Alexander Grant's 'Story of the University of Edinburgh,' vol. ii, p. 441.

practice; and his life ended at the age of eighty-two. He retired with the reputation of being in his time "the most learned physician in Scotland. To almost the last week of his life he was a hard student; and not even fourscore years could quench his ardour in discoursing science, morals, or politics. . . . He was one of the marked men of that resolute and public-spirited class—the true Whig party of his day—which is now (1836) rapidly disappearing. His peculiar usefulness arose neither from his talents, his learning, his warmth of heart, nor his steadiness of principle, but from his enthusiasm. He never knew apathy; and medicine being his field, he was for *forty* years the most *exciting* of all our practitioners and of all our teachers. . . . Men, especially young men of promise, were inspired by his zeal and his confidence in the triumph of truth."\* "His example had, perhaps, more influence than that of any other individual in exciting the emulation of others."†

John Thomson was therefore a man acknowledged to be of great erudition, as his works show; and he made many important contributions to the medical science and literature of his time from 1765 to 1846. He contributed valuable papers to the earlier numbers of the 'Edinburgh Review'; and continued (till his death in 1846) in habits of intimate friendship with its editor, Lord Jeffrey; continuing throughout his long life to be a man of great mark and influence in politics and science.

Such was the father of Allen Thomson—the subject of this notice.

To be the son of such a father was already to be born distinguished, and it was a still greater distinction that throughout the life of Dr. Allen Thomson, the best characteristics of the father came to be repeated in the son.

His mother, Margaret Millar, was the third daughter of Mr. John Millar, Professor of Jurisprudence in the University of Glasgow, to whom Dr. John Thomson (then in the forty-first year of his age) was married in 1806.

It may be said, therefore, that Allen Thomson inherited by his birth a family connexion with two out of the four Scotch Universities—an inheritance which at once gave him a position of influence, of much advantage to him in future years.

Thus it came to pass that Allen Thomson was born, nurtured, and trained up in an atmosphere of learning and science; so that from his very earliest years the teaching of the son by the father was such as to lay the groundwork of a solid and purely scientific career, especially as an investigator and teacher of Anatomy and Physiology.

\* 'Journal of Henry Cockburn,' a continuation of the 'Memorials of his Time,' 1831 to 1834, vol. ii, p. 164.

† Dr. Richard Fowler, of Salisbury, in 'Biographical Notice of Dr. Thomson' in 1st vol. of his 'Life of Cullen,' reissued by Blackwood and Sons, 1859.

With such a father and such surroundings, he was sure to have the best up-bringing and best direction. For the education of his boyhood he was sent to the Edinburgh High School, and had amongst his school-fellows John Murray—the eminent publisher—with whom he maintained a life-long friendship, also the present Lord Moncrief, and Thomas Constable. His professional education (mainly directed by his father) was begun at the Extra-mural School, and completed at the University of Edinburgh, and at the medical schools of Paris. In August, 1830 (at the age of twenty-one) he graduated as M.D. of the University of Edinburgh, when his graduation thesis “on the development of the heart and blood-vessels in vertebrate animals,” was significant of the bent of his mind towards embryology, and foreshadowed the honourable distinction which he subsequently achieved in that branch of biology which deals with developmental anatomy and physiology. It was published in the ‘Edinburgh New Philosophical Journal’ (‘Jameson’s Journal’), commencing in 1830, p. 295, and continuing through three consecutive parts of that journal—a long contribution, fully and beautifully illustrated by drawings mostly the work of his own facile pencil, and many of them coloured. At the time of his graduation he was President of the Royal Medical Society of Edinburgh—a students’ society, which has contributed, and continues to contribute, not a little to the fame of the Medical School of that city, inasmuch as on the roll of its Presidents will be found the names of many, who in after-life became distinguished members and leaders in the profession.\* The year after graduation (1830) Allen Thomson became a Fellow of the Royal College of Surgeons of Edinburgh, as a necessary preliminary to his being qualified as a teacher there. It was his own wish and his father’s great desire that he should become a teacher of anatomy, and devote himself to anatomical and physiological pursuits, for which he had displayed a decided predilection, and to which (as his thesis showed) he had already given a considerable share of attention.

With this object in view, and following the example of his friend Dr. Sharpey, he travelled by himself on the Continent in 1831. His copious notes show that he then particularly interested himself in the preparations in Vrolik’s Museum at Amsterdam, which he describes as a valuable collection in a state of excellent preservation. In it he notes a very fine collection of skulls of different nations and

\* “On its roll are inscribed the honoured names of Thomas Addison, Richard Bright, Marshall Hall, Henry Holland, and others of Metropolitan fame, with those of equal distinction associated with the Scottish and Irish Universities and Colleges, the men, in short, who have been most prominent in the history of British medicine and discovery during the last hundred years.” ‘Anatomical Memoirs of John Goodsir,’ vol. i, p. 76.

ages; and among those of executed criminals, of which several were those of murderers, "there is the skull of Renier, a celebrated murderer of the worst class, which Gall, when asked regarding the collection, singled out and set aside as one clearly *not* belonging to a murderer!" He also notes "a protuberance inside the inner canthus of the orbit in a Jew's skull, which Vrolik considered as peculiar to that race." Next came notes of the Strasburg and the Berlin Museums. In this latter he made a great number of notes, especially bearing on the embryos of animals and the details of embryology generally; dissections of varieties in the arrangement of the aorta and adjoining vessels; transpositions of viscera and teratology—making drawings as well as notes of what he saw. He was particularly interested in a human foetus (481) at three weeks, in which the branchial arches are seen; as well as the split between them into the pharynx. "He was allowed to take this preparation from its bottle, to place it in a watch glass to make a drawing of it"; and to note its measurements. The marks of the eye and ear were both easily seen, and the superior maxillary fold connected with the inferior round the angles of the month. He notes also the heart partially divided into two ventricles.

On his return to Edinburgh after this short sojourn on the Continent, he commenced his career as a teacher by starting as an extra-academical lecturer on anatomy and physiology. "In this undertaking he was associated with the late Dr. William Sharpey—(his senior by only seven years)—who ultimately became Professor of Physiology in University College, London, and with whom Allen Thomson maintained a life-long friendship of the closest possible character."\* Six years ago (March, 1881), when writing to his pupil, John Struthers, the distinguished Professor of Anatomy in Aberdeen, he says: "Sharpey and I lectured together at No. 9, Surgeon's Square, from 1831 till 1836, when I left on account of my health being rather impaired. He taught the Anatomy and I the Physiology but in the later years, as my father urged me very much to prepare myself for Anatomy, I took a share in the Anatomy teaching by attending in the dissecting room and giving some demonstrations." At this time a keen competition existed among the four teachers, who, in addition to the Professors within the University, divided among them the students who applied for instruction. It was no light undertaking at that time to become a teacher of Anatomy in Edinburgh. In 1828 a series of murders were brought to light which had been effected by two notorious criminals—Burke and Hare—for the money they would obtain for the bodies of their victims as material for the dissecting rooms; and for many years

\* M'Kendrick, "Memoir of Dr. Allen Thomson," 'Glasgow Phil. Soc. Proc.,' vol. 15, 1884.

afterwards the public mind continued to be excited by the recollection of tragedies unprecedented in the history of mankind, and which scarcely subsided even with the passing of Warburton's "Anatomy Act" in 1832, which made it possible to obtain and dissect the human body in a legal way. In the University of Edinburgh, the third Monro filled the Chair of Anatomy, himself a good anatomist of the old school, who looked upon the new teachers with an easy disregard. But while Sharpey and Allen Thomson's class between 1831 to 1836 had increased from twenty-two to eighty-eight, the majority of the students flocked to the brilliant but egotistical lectures of the famous Robert Knox, who in one year about this time had an extra-mural class of over 500 students. With unscrupulous virulence he brought his powers of ridicule and sarcasm to bear on all opponents, so that Allen Thomson and Sharpey came in for their full share.\* About this time also a number of men who afterwards became famous were either students or extra-mural teachers, so that there was the keen contest of able intellects, and the rivalry of a noble ambition—the names of John Reid, Martin Barry, the two Goodsirs (John and Henry), Edward Forbes, W. B. Carpenter, John Hughes Bennett, are names which became distinguished in biological science; and in such an atmosphere of thought it is no wonder that Allen Thomson was encouraged to prosecute a purely scientific career.†

All are gone; none now remain, and the melancholy death of Dr. Carpenter in 1885 severed the last link which connected them with what was undoubtedly "a brilliant epoch in the history of the Edinburgh Medical School."

In 1833, Dr. Allen Thomson travelled with his father on the Continent for nearly three months, visiting the principal medical schools in Holland, Germany, Italy, and France. It is interesting to find in Dr. Allen Thomson's brief journal of his travels, now before the writer, such entries regarding museum specimens as he saw might be useful for teaching purposes. In these notes he frequently makes a special memorandum of the preparations which should be made for the use of his class when he had the chance of doing so on his return to Edinburgh. He gives an amusing account of his journey to London by sea in those days. Embarking on board the "Soho," from Newhaven, on the afternoon of Saturday, 6th July, 1833, after two days' sailing he reached Blackwall, whence he drove to London, and "put up at the Burlington Hotel, held by Atkinson Morley, in Cork Street, No. 35."

\* 'Life of Robert Knox, Anatomist,' by Henry Lonsdale, 1870, p. 262; also *Memoirs of John Goodsir*, 1868, vol. i, page 129.

† M'Kendrick, *loc. cit.*

His first visits in London were to Dr. and Mrs. James Somerville, John Allen, and John Murray; and at 30, Old Burlington Street, while waiting for John Allen, he first made the acquaintance of Sydney Smith. Medical education was then (1833) as now (1887), the serious subject of discussion; and Mr. Allen was of opinion that "superior degrees should be granted by Universities, with full preliminary education ensured by a degree of M.A., and diplomas for general practitioners should be granted by chartered bodies, afterwards to be decided upon." He disapproved of legal prosecution of the unlicensed, unless they do harm, or take titles they have no right to.

Mr. Allen introduced his namesake, Allen Thomson, at this time to Lord and Lady Holland; and he was afterwards introduced to Lord Melbourne by Lady Holland, at Holland House, with the words, "Melbourne, allow me to introduce to you the future Professor of Anatomy in the University of Glasgow." Allen Thomson had to wait, however, for fifteen years before that promotion took place. During this visit to London he also spent some of his time with his half-brother, Dr. William Thomson, James Simpson, and Dr. Carswell, who was then lecturing at University College, London.

Dr. Allen Thomson was then much interested in the work of Clift and of Owen, at the Hunterian Museum, especially in the admirable series of preparations of comparative anatomy, and the beautiful manner in which vegetable structure is illustrated. He also records the significant memorandum, "Make some preparations of this kind for myself." Breakfasting at Sir Astley Cooper's, he had "a very interesting demonstration from him of his preparations of the thymus gland and testicle," and mentions that "Sir Astley lectured with a great deal of spirit, and took the trouble to carry about 100 preparations from one room to another." Allen Thomson admired particularly the dry preparations of the thymus gland at different ages, in which the sacculi of the body itself are injected with wax, the arteries, veins, and particularly the lymphatics being injected and painted of various colours. Again he makes the memorandum, "Make some of these preparations in the foetal calf." Sir Astley then demonstrated his preparation of the structure of the testicles; and again, the memorandum, "Dr. Sharpey and I must have some similar injections of the tubes with wax, &c." He visited Guy's Hospital Museum with Hodgkin, and there he bears his testimony to the beauty and accuracy of the wax models of diseases of the skin and of healthy anatomy, made by Joseph Townes. His father joined him on 15th of June, in London. On the 17th they started for Rotterdam. Thence by Dusseldorf and Delft to Bonn. He gives a very detailed account of the contents of the Museum at Bonn. He also describes the surgical "klinik," "conducted by questioning the students respecting patients



committed to their care. There were then two "kliniks" for medicine, by Nasse, an advanced one, and an elementary one, intended to teach students how to conduct the advanced one. Meyer he also met, who had been Professor of Anatomy and Physiology at Bonn, and pupil of Kiemeyer, "of whose views and lectures he spoke in terms of high admiration." He met also Treviranus (the younger), Professor of Botany, Bischoff, Neumann, and Weber, the then Prosector. He notes a case in the dissecting room of the whole body of a man in whom there was complete *situs inversus* of all the viscera; and the writer well remembers what interest Allen Thomson took in the dissection of a similar complete case of inversion of the viscera, which occurred in the dissecting room of the Glasgow University.\*

At Heidelberg he met Tiedemann, and carefully noted the contents of his museum. At Strasburg he met Ehrmann, and made copious notes of his museum. At Tübingen he met Autenrieth and his prosector, Professor Bauer. There he visited "the little dirty classroom in which Haller and Cuvier studied." Thence to Stuttgart and on to Freyburg, in Baden, and to Zurich. Here he met with Oken, then Rector of the University; also Schoenlein, Professor of Medicine, and other distinguished teachers; thence to Berne, Lausanne, and Geneva. He next visited Aix-en-Savoie, or Aix-les-Bains, and Milan.

At Milan he was shown great attention by Professor Panizza, the successor of Scarpa; and at Parma, by Professor Tommassi, and by Pasquali, the Professor of Anatomy. Here he found the University partly broken up, and about half the building occupied as a barrack for soldiers, in order to repress the revolutionary spirit of the students. He notices in Professor Pasquali's Museum of Anatomy, that "the dried muscular and arterial preparations were entirely painted," and puts the question, "Why is this so seldom done; it seems to preserve the preparation well, and to make it more clear?" He afterwards, in Glasgow, adopted this method to a great extent in all dried preparations. At Bologna he notes that at present (August, 1833), the University is "in disgrace, and no lectures except the experimental ones are allowed to be given. The Professors are obliged to give their lectures at their own homes, and soldiers are placed at the doors." He notes that "Comparative Anatomy is taught by Professor Alessandrini, under the name of 'Veterinary Anatomy,' the former title being considered by the Pope as of a revolutionary nature." He saw some beautifully injected fetal membranes, more particularly of the true allantois of the mare, and of the endochorion and the decidua in the bitch.

At Rome he notes that, "as in the rest of the Papal States, science

\* Described and figured in the 'Glasgow Medical Journal' for July, 1853.

is at present (September, 1833) much repressed by the fear of insubordination among the students; and that there is great difficulty in publishing or procuring scientific works."

At Naples, with Dr. Vulpes, he met Dr. Asalini, of Messina, and visited the Museo Borbonico, the collection of antiquities from Pompeii and Herculaneum. He then visited both those places, and ascended Mount Vesuvius, the craters of which are minutely described in his carefully written journal. At the *Grotto del Cune* he saw the usual experiment of asphyxiating the dog. "The animal fell into a faint without convulsions, and the pupil dilated at the same moment that the voluntary motions ceased, which took place in from two and a half to three minutes after the animal was placed in the cave." Genoa and Montpellier were next visited. There, he notes, a "capital series of sterno-hyoid bones, bones of the skull, &c., for anatomical demonstration, of which we ought to have some."

At Lyons he met Dr. Bennett, who was travelling with Lord Beverley and the Percy family, and renewed his acquaintance with M. Bouchet and M. Gensoul, who had both been in Edinburgh.

A very detailed but concise account is given of the anatomical, pathological, and comparative anatomy preparations in Meckel's Museum, illustrated with some very beautiful pen and ink drawings, especially one of the heart in a case of partial inversion of the viscera, in which there was no *vena cava inferior*, but the *cava superior* was joined by the *vena azygos* before entering the auricle, the *venæ hepaticæ* going directly into the auricle through the diaphragm. There is also a specimen with the aorta on the right side. Similar detailed records are given of Vrolik's Museum at Amsterdam in 1831, and of the Berlin Museum.

Lastly, out of the experiences of these travels he formulates an extensive list of preparations "to be made" for teaching purposes.

At Paris, he met Rayer, Lerminier, Bouillaud, Roux, and Dalmas; and visited a separate ward for cholera patients in La Charité, where he "saw three women who were recovering under the influence of opium, ice, and bleeding!"

It was by such Continental travel, with the one object before him of preparing himself for his duties as a teacher of anatomy and physiology, that he devoted himself with the greatest diligence and care to literary and scientific study, and to the study of languages. As travelling physician with the Duke of Bedford, he again spent a considerable time on the Continent, thereby perfecting his knowledge of German, French, and Italian.

Of the men who mainly influenced the scientific life of Allen Thomson (besides his father's influence) there are three especially to be noted, namely, John Allen, Dr. John Gordon, and Dr. Sharpey.

While still a house surgeon in the Royal Infirmary of Edinburgh,

the father of Allen Thomson became the friend of John Allen, who was associated with him in the duties of the house, and with whom, up to the time of Mr. Allen's death in 1843, he maintained an uninterrupted friendship, and to the powerful influence of which over the fortunes of his life he has himself borne testimony in the dedication to Mr. Allen of the first volume of his 'Life of Cullen.'\*

Dr. John Thomson named his son Allen after his distinguished friend.

Dr. John Gordon died in 1818, thirteen years before Allen Thomson began to lecture and teach Anatomy. After Dr. John Allen had ceased to lecture, Dr. John Gordon (having taught Anatomy and Physiology together for two years, 1808-1810) gave a course of Physiology separate from his course of Anatomy either in the winter ensuing or in the summer session; and for his character and work Allen Thomson had a great veneration. In writing, three years before he died, to Professor John Struthers, and referring to Gordon, he says: "I am especially pleased with your recognition of John Gordon's character and work, which is not only perfectly true as regards himself, but gives some indication of the influence which my father exercised upon his pupils and the School of Edinburgh. I have still all Gordon's papers, as well as John Allen's."

Dr. Sharpey's influence was that which made itself felt through a life-long friendship of the closest kind, bound together, as he and Allen Thomson were, in allied anatomical and physiological pursuits. Sharpey was one of the young men in Edinburgh who owed the direction of their studies and inspiration to John Thomson, and this debt he repaid to his son Allen by an affectionate friendship. He was about twenty-nine years of age, and Dr. Allen Thomson twenty-two, when they commenced to teach Anatomy and Physiology together in Edinburgh in 1831. This association subsisted during the four following years till 1836, when Dr. Sharpey became Professor of Physiology in University College, London.

Dr. Allen Thomson spent the autumns of 1836 and 1837 at Rothiemurchus, in the Western Highlands of Scotland, near Aviemore, with the Bedford family, and afterwards began his tour on the Continent with them.

On his return in 1839 he was appointed (at the age of thirty) Professor of Anatomy in the Marischal College and University of Aberdeen, which he resigned in 1841. Returning to Edinburgh in the autumn, he became once more a teacher of Anatomy in the

\* 'Biographical Notice of Dr. John Thomson,' prefixed to his 'Life of Cullen,' p. 11, 1859. It is erroneously stated in a recent work, 'Life and Times of Sydney Smith,' by Mr. Stuart J. Reid, 1884, p. 122, that John Allen and John Thomson were fellow apprentices to Mr. Arnot, an Edinburgh surgeon. There was no such apprenticeship, and the facts are those stated in the text, at page xi.

Extra-mural School, No. 1, Surgeon's Square, at the age of thirty-two, where he continued to give systematic lectures on Anatomy. At 11 A.M. a lecture-room demonstration was given, and he taught in the dissecting room at one o'clock, assisted by demonstrators, the chief of whom was Dr. Gunning, who had accompanied him from Aberdeen, and who has since given to the University of Edinburgh a fund for prizes in memory of the teachers of his day.

Professor John Struthers, of Aberdeen, bears the following testimony to the valued teachings of Allen Thomson:—

“Allen Thomson's lectures on Anatomy were of a high order scientifically, and also in style contrasted favourably with the teaching in the other schools. His favourite subject was embryology. That could not come in much in the ordinary course, but in the summer of 1842 he delivered a special course of lectures on Development, in which he gave the results of his own researches, as well as those of the German observers. These lectures were illustrated by a very large number of beautiful diagrams, and were attended by many members of the medical profession of Edinburgh. His graduation thesis had been on the development of the heart and great blood-vessels in the vertebrata, showing an early direction of his mind to the subject of embryology. In that summer session he gave also a course of weekly lectures on the new Microscopic Anatomy, which followed the publication of the great work of Schwann. In these lectures we heard much of Schwann, Henle, and Kölliker, the latter of whom became his intimate and life-long friend. To this time the microscope had not been much used in the school. The cell doctrine of Schwann had cleared up the confusion of the old general anatomy, although the revolution it was to effect in biology, in relation to the evolution as well as to the structure of organic forms, was hardly foreseen. Knox, whose forte was Comparative Anatomy and its bearings on human anatomy, was satirizing the microscope, as he did most things. Sharpey had been using it in the investigation of ciliary motion. John Goodsir, Conservator of the large and valuable Anatomical and Pathological Museum of the College of Surgeons, gave a few original lectures to the Fellows of the Colleges on Cells, and on Germinal Centres; and Allen Thomson used it in his researches on Development. But then, and for years afterwards, the student had nothing of the microscope beyond the privilege of a peep through Allen Thomson's and John Goodsir's on a Saturday. The work which Allen Thomson did during this year in Edinburgh secured the success of his subsequent career. His abilities as a teacher and observer were fully recognised by the medical profession of Edinburgh.”

The principal reason of his apparently sudden return to Edinburgh may be explained by the fact that the Chair of Physiology in Edinburgh University was expected to become vacant by the transference

of Dr. Alison to the Chair of the Practice of Medicine; and to succeed to the Chair of Physiology was the object of Allen Thomson's laudable ambition.\* Forthwith in the autumn of 1841 Professor Alison resigned the Chair of Institutes of Medicine or Physiology in the University of Edinburgh, and in 1842 Allen Thomson was appointed his successor at the age of thirty-three. The contest was severe with such formidable competitors as Robert Knox, John Reid, Hughes Bennett, and W. B. Carpenter. He held this Professorship in Edinburgh for six years, and during that time he made several important contributions to the science of embryology. He at the same time made the course on physiology systematic and complete, devoting himself entirely to the teaching of physiology proper. His lectures were prepared with great care, and a very elaborate synopsis of the day's subject was written in chalk on blackboards for the students to copy, supplemented by drawings in coloured chalk, often very elaborate, and numerous wall diagrams. (A goodly MS. volume of such abstracts is in the writer's possession.)

Allen Thomson's familiarity with what was being done in Germany and France gave breadth and thoroughness to his teaching. He took great pains in making his drawings and in writing the heads of the lectures before the time of meeting; and like his friend Dr. Sharpey, he lectured mainly from short notes. He was systematic and methodical in everything, and took great pains to perfect his teaching in every way; and every course of lectures he delivered, whether to a popular or professional audience, cost him much labour from day to day. On debatable points, and where definite conclusions had not been arrived at, he was careful to give us the views of observers on opposite sides, but it was tantalising in the extreme when at the end we could not learn what his own views were. This was all the more distracting because he was so full of knowledge, so clear in his statement, and so sound in his judgment. But the weak part (or perhaps strong part) in Allen Thomson's mental development appeared to be so great an excess of caution in coming to a definite conclusion that he seemed always to hold his mind open to receive and digest new matter. He was thus prevented from making any broad generalisation with which his name can be associated.

In all his researches his mind inclined more to the anatomical than to the physiological side of biology, having more to do with the development of form than the development of function; and when the Chair of Anatomy in Glasgow University became vacant by the death of Dr. James Jeffray in 1848, Allen Thomson became his successor at the age of thirty-nine. His introduction by Lady Holland to Lord Melbourne (in 1833) fifteen years before, and already referred to, shows that Allen Thomson was destined for that chair as a political

\* 'Memoir,' by Professor John Struthers, p. 5.

inheritance; for then, as now, political connexion influences the chances of scientific appointments; and according as a Whig or Tory Government was in the ascendant, it was known that Allen Thomson or a political opponent would obtain the chair. But when Dr. Jeffray vacated his chair it was given to Allen Thomson with universal approval. He thus returned to the teaching of anatomy as to his first love, remaining constant to its teaching in the Glasgow University with great distinction in the professorship. He resigned it in 1877, when he was succeeded by its present distinguished occupant, Professor Cleland, who had been one of his demonstrators in previous years.

During these previous twenty-five years of teaching anatomy and physiology, Allen Thomson had the unique experience of having been a professor in three out of the four of the Scottish Universities, and in all of them there is evidence that he worked with an indefatigable industry, not only in connexion with the immediate duties of the chair he held, but as a frequent contributor to scientific literature. Thus it came to pass that his reputation, as a teacher and as a man of science, steadily increased; and at the end of his days he had become generally known throughout the scientific world as one of the most careful, judicious, accurate, and learned investigators and teachers of his favourite subjects. His very earliest work brought him reputation as an embryologist, and herein lay his speciality, so that throughout his long and busy life he was constantly making important contributions to that department of science.

He retired from his Chair of Anatomy in the University of Glasgow at the age of sixty-eight, having filled it for the long period of twenty-nine years; and the work he accomplished there "may be said to have been of two kinds: one, the introduction of the modern anatomy and methods of teaching it, by which he laid the foundation of the eminence and success which the Glasgow School of Medicine has since attained, an object which he had warmly at heart; the other, also contributory to that end, namely, the planning and erection of the New University buildings, in which great undertaking he was from the beginning the moving spirit."

Succeeding a teacher who had held the Chair of Anatomy in Glasgow for the long term of fifty-eight years, "it may be readily believed that Allen Thomson's anatomy and methods were a new revelation in the old monastic building of that university." As in Edinburgh, when the third Monro at last (in 1846) made way for John Goodsir, the tide turned from the extra-mural school to the university; so the Glasgow School of Medicine, when Allen Thomson became Professor of Anatomy, began to take the high rank to which the new colleagues who gradually gathered round him have contributed their part.\*

\* 'Memoir,' by Professor John Struthers, p. 8.

Shortly after coming to Glasgow, his son and only child was born in 1849. After that he took Greenhall in 1852, about eight miles from Glasgow, and afterwards Millheugh, where, as he always had a great love of country life, he betook himself in the autumnal holidays, hospitably entertaining his many guests. Dr. Sharpey paid him regular summer visits. In 1855 came the meeting of the British Association in Glasgow, and among the guests then with him were his friends, Professor Kölliker of Würzburg and Professors Retzius and Broberg from Sweden. In 1857 he rented Hatton House near Ratho, some miles from Edinburgh, and took great interest in this old place. There he became acquainted with the Lauderdale family to whom the property originally belonged, and there he received his old Edinburgh friends, Syme, Bennett, Christison, Douglas Maclagan, Andrew Wood, Sharpey, and Kölliker. He took much interest in the garden and in garden work, and his acquaintance with Mr. Archer the artist, brought him into the pursuit of photography, which gave him a new pleasure.

In 1862 he left Hatton, having purchased some acres of ground at Skelmorlie on the Clyde, where he built a house in accordance with his own plans. The later editions of Quain's 'Anatomy' were written here with Dr. Sharpey during the summer months; and here he also enjoyed his leisure moments with his friend Professor Kölliker, in the examination of marine animals.

About this time the work commenced with the New University of Glasgow buildings, and from 1863, when the old college buildings were at last disposed of to a railway company, until 1870, when the classes met for the first time in the new buildings on Gilmorehill, Allen Thomson, as Chairman of Buildings Committee, was largely occupied with the anxieties and plans of the undertaking. He did all the duty of a "Master of Works," and his frequent exposure during the erection of the building brought on a tendency to rheumatism with a severe attack of sciatica. He further took a similarly active part in the planning and erection of the new—the Western Infirmary of Glasgow, the funds for which were mainly contributed by public subscription. This hospital is generally considered to be a model hospital. It has recently been greatly enlarged on the original plan; and when Dr. Thomson retired from the Chair of Anatomy in 1877, he had already realised the pleasure of seeing the great success of the Glasgow Medical School which he had done so much to develop.

In 1870 he ceased to live at Skelmorlie, which he let and afterwards sold; and in 1871 his only son, John Millar Thomson, settled in London as one of the assistant demonstrators on chemistry at King's College. The summer of this year was spent with his son and Mrs. Thomson in the Highlands of Scotland. "It was," he writes in

September, 1871, "a great success for me and Mrs. Allen to come here (Lynvilg-Avieore) for a holiday. I knew the country well from my residence at Rothiemurchus (close by) with the Bedford family in the autumn of 1836 and 1837; and I had most agreeable recollections of rambles among the Grampians and various parts of the neighbourhood. Mrs. Allen and I have not exactly rambled over the top of Cairngorm and Ben Muichdhu as we used to do when somewhat younger, but we have really done an immense deal of walking for such old people, and have profited in health, and enjoyed ourselves to the full. The scenery is just what we like—grand and open and yet beautifully combined with river, lake, natural wood, rock, and mountain. The birches especially are charming, and the remains of some of the old Caledonian forests of Scotch firs, some of the best existing. I am sorry to think the time of our remaining here approaches its termination, as I must be in Glasgow for meetings on the 20th, and intend to leave this on the 19th."

In 1872 he again went abroad with his family and with Dr. Sharpey to visit Professor Kölliker and other friends in Germany, and in the summer of that year he extended his tour to the north of Italy. The summer of 1873 found him once more travelling in the north of Scotland, and visiting his many friends.

On his son's marriage to Miss Aikin in 1875, he began to think seriously of retiring from his professorship; and after some delay, finally ceased his active connexion with the University of Glasgow in 1877—a connexion which had extended through different members of the family without interruption for 116 years. He then came to London, where he took a house next to that of his son. Here he took an interest in all that was going on in the world of science—occupying himself especially in the affairs and work of the Royal Society. He was now able to enjoy, and he much appreciated the quiet home-life he was able to lead in peaceful retirement, "listening to the innocent prattle of his grandchildren." It was a new pleasure and an amusement to have them with him in his study.

It is not easy to convey to others a sufficient appreciation of Dr. Allen Thomson's numerous contributions to biological science. His earlier papers were on embryology, which throughout life continued to be the favourite subject of his study and researches, working hard to keep pace with the rapid progress of the science. It was in this field that he won his laurels; and although his name may not be associated in the history of that science with any one great discovery (although he contributed many new facts), yet he will always be regarded as having done much, perhaps more than anyone else in this country, to make this difficult department of biological science familiar to British biologists. He directed his attention to it when few in this country did so, and did much by



clear and accurate description to make intelligible the writings of the German embryologists. No one rejoiced more at the attention given to it by a rising school of British embryologists, nor mourned more deeply the sad death on the Alps of its leader, the late Francis M. Balfour of Cambridge. He was one of the first also to bring under the notice of British physiologists the researches of Weber on the tactile sensibility of the skin, and he wrote largely for the 'Cyclopædia of Anatomy and Physiology,' edited by Todd and Bowman. The articles on "Circulation," "Generation," and "Ovum," are from his pen, and to the past and current editions of the 'Encyclopædia Britannica' he contributed articles on kindred subjects. The article "Ovum" in the latter was prepared by him, and over it he worked to the end with ardent love and care; but since his death another hand has been employed to write it. He also wrote on physiological optics, more especially on the mechanism by which the eye accommodates or focuses itself for objects at different distances; and his name has long been associated with current editions of Quain's 'System of Human Anatomy,' as editor especially of the descriptive parts of the seventh and eighth editions. In the seventh edition he was associated with Professors Sharpey and Cleland, in the eighth with Professors Sharpey and Schäfer, and in the ninth and last edition with Professor Schäfer and Professor Thane, both of University College, London. Alike with pen and pencil Dr. Thomson made important additions to their great work, especially 'An Outline of the Development of the Fœtus.' He also edited a second edition of his father's 'Life of Cullen.' To the Royal Societies of Edinburgh and London, and British and Foreign medical journals, he contributed numerous special papers and articles. The Royal Society's Catalogue contains the titles of about twenty papers by him.

During his distinguished career Dr. Allen Thomson received many scientific honours. He was elected a Fellow of the Royal Society of Edinburgh in 1838, and of the Royal Society of London in 1848. After his removal to London from Glasgow in 1877, he became first a Councillor of the Royal Society, and ultimately one of the Vice-Presidents. He was President of the Philosophical Society, of the Medico-Chirurgical Society, and of the Science Lectures Association in Glasgow, in which city he was also the first President of the Local Branch of the British Medical Association. For eighteen years he was a member of the General Medical Council for the Universities of Glasgow and St. Andrews jointly, from 1859 to 1877, where his ripe experience and calm judgment enabled him to do good service to the cause of medical education. In 1871 he was President of the Biological Section of the British Association at the meeting in Edinburgh, and in his address he reviewed the progress of biological science within the period of his own recollection. In 1876 the Association

conferred on him its highest honour by electing him to the Presidential Chair. At the meeting at Plymouth in 1877, his calm, far-seeing, and philosophical address on his favourite topic, "The Development of the Forms of Animal Life," was a masterly history of the gradual acceptance of the doctrines connected with the name of Darwin, whose important generalisations his open and receptive mind had long before accepted. In 1871 Dr. Allen Thomson received from his university the degree of LL.D., a degree which was also conferred upon him by the Glasgow University in 1877.

In 1882 he received the degree of D.C.L. from the University of Oxford; and latterly he was elected to at least one Syndicate of the University of Cambridge to assist in the election of professors to the Biological Chairs. Whilst thus pursuing a purely and steadfast scientific career, Dr. Allen Thomson was well known as one of the most active and influential men in the city of Glasgow.

The friendly hand that wrote the obituary notice in the 'Glasgow Herald,' from which much of this memoir has been compiled, has given the following characteristic word picture of Dr. Allen Thomson:—"He took a deep interest in almost all departments of science. He was a ready listener, and always delighted to hear an account of a new investigation. Eager in the pursuit of truth himself, he, above all things, demanded accuracy. He was critical on all questions, and it required a great deal of fact and argument to lead him to a change of scientific opinion. Yet his mind was open and receptive, and he did not shrink from a change of view although it went against his preconceived notions. His own writings are models of clearness of statement and skilful marshalling of facts. Dr. Allen Thomson's mode of teaching was of the same character. Method, order, precision of statement, and close reasoning shone in every lecture; while there was also the persuasive eloquence of a great enthusiasm which captivated the listener."

As a teacher he was equalled by few and surpassed by none of the many colleagues amongst whom he taught. His education and surroundings made him a teacher, and to that work he bent all his energies. Those only who have been associated with him as demonstrators of anatomy in his dissecting rooms in Edinburgh, Aberdeen, and Glasgow, can appreciate the daily labours he went through in preparing and arranging the material for his lectures and demonstrations. Personally he was much beloved by his students, who are generally remarkable for devotion to a teacher who takes pains to teach as he did. "In the social circle there was much gentleness and simplicity of manner, along with a keen sense of humour, while his domestic life throughout was characterised by a quiet kindness, and that chivalrous attention to little details of personal courtesy which mark the true gentleman."

"One can never forget the kindly courtesy, the simplicity of address, the indescribable charm of his manner, the warmth of his friendship." Loyalty to his friends was a typical characteristic of his affectionate nature.

Inheriting the best characteristics of his father, with himself as with his father "he was a discerning and attached patron of youthful and friendless merit; so that there are many who owe their rise in life to him, and who bless his memory all over the world."\* In evidence of this we have the testimony of the Treasurer of the Royal Society, in his eloquent address on December 1st, 1884, when he said, in his notice of Dr. Allen Thomson's death, that "for acts of kindness there must be many besides myself who owe him a deep debt of gratitude."† The writer of this paper fully endorses this statement, and with gratitude acknowledges the many acts of kindness he received from Allen Thomson throughout a brotherly, or rather father-like friendship of more than thirty-six years. So also Dr. George Johnson, in his address as President of the Medico-Chirurgical Society, on March 2nd, 1885, thus spoke of him:—"Dr. Allen Thomson will long be held in affectionate remembrance, not only for the extent and variety of his scientific attainments, but for his wisdom in council, the genuine kindly courtesy which gave an indescribable charm to his manner, and the enduring warmth of his friendship.‡

On his retirement from the University of Glasgow, in 1877, his portrait, painted by the President of the Royal Scottish Academy of Arts, the late Sir Daniel Macnee, was presented by his friends and admirers to the University, and it now hangs in the Hunterian Museum, to hand down to future generations the cherished features of so beloved a man. A replica of this portrait was presented to Mrs. Thomson.

Dr. Thomson has left a widow and an only son, Mr. John Millar Thomson, Demonstrator on Chemistry in King's College, London, and Secretary to the Chemical Society of London. Up to within four months of his death Dr. Thomson appeared to be in excellent health, and looked forward to the pleasure of being in Edinburgh at the approaching tercentenary. In 1883 he went with his wife to Cannes, on January 3rd, and spent the cold months and spring there, and the summer was once more passed with his son, daughter-in-law, and grandchildren in the West Highlands of Scotland, with much pleasure in revisiting scenes with which he had been so familiar in earlier days. Suddenly, on December 14th, from his house in London, he wrote to say that his left eye had not been quite so well of late, and that Mr. John Couper and Sir William Bowman

\* 'Memoir of H. Cockburn,' p. 163, vol. ii, 1846.

† 'Proceedings,' p. 430, vol. 37.

‡ 'Med. Chirurg. Soc. Trans.,' vol. 68, p. 7.

both concurred in the opinion that an iridectomy should be performed without delay. Accordingly, on the following day, Mr. Couper did an iridectomy on the left eye, on account of glaucoma. Nothing could have been more satisfactory than his recovery from the operation. The wound healed without pain, vision was maintained, and normal tension restored. About ten to fourteen days after the operation he began to experience lancinating pain referred to the ears and base of the skull, which he attributed to the east wind and rheumatism, as there was no change in either eye to account for the pain, and no external swelling. He woke in the morning to find that he had been struck blind of the right eye (which up till that moment had been perfect). Mr. Couper saw him forthwith, and found the tension normal, but there was a considerable area of the field of vision blind, the limit coming close to the centre. He could only distinguish large letters. Next day the main branch of the *arteria centralis* was seen to be plugged with blood-clot, the portion of vessel beyond the plug empty, and so for many weeks vision was entirely lost. From this it was feared that other arteries might be similarly plugged in adjoining parts. Dr. George Johnson also saw him with Mr. Couper and Mr. C. A. Aikin, and found that the cardiac valves were sound. It was thus probable that the vessels became plugged owing to degeneration of their coats at the plugged part. Gradually the plugging process extended, and about the fourth month after the illness began some local paralyses became developed, first in the left hand, thumb and forefinger, which passed away, and afterwards in the muscles of the right side of the face; the vagus also became implicated, so that hiccough was more or less constant, relieved only by chloroform. His strength was reduced by protracted suffering, and eventually breathing became obstructed. He died at 66, Palace-gardens Terrace, W., on March 21st, 1884, in the seventy-fifth year of his age; and as he wrote of his friend Sharpey, so it may be written of himself: "He had not a single enemy, and he numbered among his friends all those who ever had the advantage of being in his society."\* His memory will long be cherished in the hearts of thousands of his pupils at home and abroad, alike in civil and in military life.

W. A.

\* 'Proceedings,' vol. 31, p. xix.