

John Goodsir (1814-1867) A Scottish Anatomist and Pioneer of the Study of the Cell

By His Distant Third Cousin, Michael T. Tracy

“On Monday, the 11th inst., were deposited in the Dean Cemetery, of Edinburgh, the mortal remains of perhaps the most accomplished anatomist and the most successful teacher of his time. This language cannot be deemed too strong for John Goodsir. By the distinguished colleagues who were the pall-bearers at the mournful ceremony, by the numerous private friends, and by the 200 pupils of the present and past years; who followed their associate and master to his final resting place, it will be reckoned as but inadequately descriptive. The profession and the scientific world at large can appreciate the loss which his premature decease has inflicted on academic training and on anatomical research. But only his fellow workers of the University and of the class-room can feel the tender and solemn emotion with which the untimely extinction of a kindred life inspired...John Goodsir was the worthiest successor whom Scotland has yet produced to John Hunter. He had the combined solidity and force of intellect, the observing and the generalizing power of his illustrious countryman.”¹ Thus ran the *East Fife Record Newspaper* for 22 March 1867 giving a small glimpse of the accomplished life of Professor John Goodsir.



Fig.1. Portrait of Professor John Goodsir, ‘Conservator of the Museum of the Royal College of Surgeons of Edinburgh’

¹ *East Fife Record Newspaper*, 22 March 1867, p. 3

Early years

John Goodsir was born on Sunday, 20 March 1814 at Anstruther Easter Parish, Fife, Scotland. He was the first son of Dr. John Goodsir, medical practitioner, and his wife, Elizabeth Dunbar Taylor. The Goodsir family was well known in Anstruther as his father and grandfather were surgeons in the town. John Goodsir was baptized on Sunday, 17 April 1814 at Anstruther Easter Parish, Fife.²

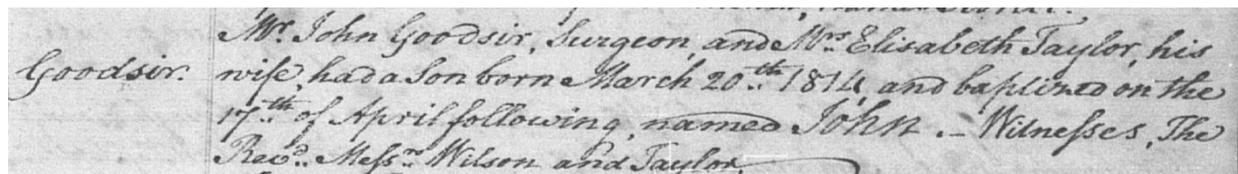


Fig.2. Baptismal Record of John Goodsir, 17 April 1814, Anstruther Easter Parish Records, National Records of Scotland, Crown Copyright

Goodsir's early education took place at the Anstruther School and was enhanced by his exploration of the Fife shores studying natural history and by the interest of his parents, who encouraged his studies at home.³ Young John Goodsir matriculated at St. Andrews University, Scotland's first university and third oldest in the United Kingdom, where he studied the arts curriculum at the age of 12 in December of 1826.⁴ By 1830 he had completed the course which included classics and mathematics. Goodsir continued his education at the University of Edinburgh where he matriculated on Wednesday, 17 November 1830.⁵ During the same year he was apprenticed to John Nasmyth, a well-known Edinburgh dental surgeon. During the course of his indenture, he acquired a medical education partly by attending University classes and partly from extra-mural teachers of whom the two most notable were the anatomist Robert Knox and the surgeon James Syme. Yet from his early youth Goodsir exhibited a peculiar aptitude for anatomical research. The position of his native town on the sea coast had early given him ample opportunities of collecting and examining the various animal forms with which the Firth of Forth is so richly supplied.⁶ He was a gifted dental student but wanted to continue his learning and education.

Goodsir took up studies at The Royal College of Surgeons of Edinburgh. During his tenure at The Royal College of Surgeons of Edinburgh he began a life-long friendship with the future natural historian Edward Forbes. He earned his surgical license, qualifying LRCSEd in 1835 and returned to his native Anstruther to assist his father in general medical practice. According to the *Fifeshire Journal Newspaper* dated Friday, 22 March 1867: "While in this position as assistant to his father, he was the first to direct attention to the gastric form of typhus fever which prevailed in the district of Fife."⁷ Commonly known as typhoid fever. He was also elected to the St. Andrews Literary and Philosophical Society on Friday, 30 November 1838.⁸

² Baptismal Record of John Goodsir, 17 April 1814, Anstruther Easter Parish Records, Old Parish Records 402/0030 0043

³ Dictionary of National Biography online

⁴ The Matriculation roll of the University of St. Andrews 1747-1897. Anderson JM, Edinburgh: W. Blackwood & Sons; 1905. p.74

⁵ The Matriculation roll of the University of Edinburgh, Centre for Research Collections, Edinburgh University Library (Signature Number 1178) Matriculation 1829-1846

⁶ *British Medical Journal*, 16 March 1867. p. 307-08

⁷ *Fifeshire Journal Newspaper*, 22 March 1867, p.1

⁸ St. Andrews Literary and Philosophical Society. Records of the St. Andrews Literary and Philosophical Society. St. Andrews University Special Collections (UY8525/1)

With the heavy demands of a country medical practitioner, Goodsir collected and prepared a personal pathological museum of specimens of great extent and value to the field of anatomy, which it could be said was his real passion. His passion for observing every detail of natural history was evidenced in *“Anstruther, or Illustrations of Scottish burgh life”*: “Goodsir obtained a golden eagle from the Orkneys. It was a sight to watch this noble bird kill its prey. As dead meat or carrion failed to preserve the beauty and grandeur of its plumage, the townsfolk were pleased to bring live animals for the purpose of seeing the eagle fed. Goodsir used to describe what took place when a cat was thrown into the eagle’s cage. The fiercest feline was at once cowed; the eagle, perched in regal dignity, first cast a glance at its prey, then suddenly pounced upon the cat, striking the back with the talons of one foot, and paralyzing the body below the stroke, and as the head of the feline was raised it was at once enclosed within the talons of the other foot, and crushed in a similar fashion, causing immediate death.”⁹ Being a collector of many types of specimens, this narrative of the golden eagle and the cat gives an example of how Goodsir observed nature.

A Celebrated Essay on Human Teeth

In January of 1839, Goodsir published his first essay “On the origin and development of the Pulps and Sacs of the Human Teeth” in the *Edinburgh Medical and Surgical Journal*.¹⁰ This work received great acclaim and also received international recognition thus establishing his reputation. The *British & Foreign Medical Review* stated: “This is an elaborate and valuable paper, containing the result of much original observation, and establishing several facts in the physiology of dentition, previously but very imperfectly known...In its present complete state we recommend it to the notice of physiologists.”¹¹ He was able to present a paper on this work at a meeting of the prestigious British Association for the Advancement of Science.

His father John Goodsir, Sr., was equally proud of his son. According to *Anstruther, or Illustrations of Scottish burgh life*: “Ay, it was a stirring forenoon in the bookseller’s shop in 1839, when his father stepped in to tell how his son John had read his celebrated essay on the teeth before the British Association, to the wonder and delight of the first savants of Europe.”¹²

Conservator of the Royal College of Surgeons of Edinburgh

In 1840 Goodsir returned to Edinburgh and resided with his brothers Joseph, Henry (known as Harry) and Robert. Harry and Robert Goodsir were now medical students and they resided also with Edward Forbes and George E. Day at 21 Lothian Street. Although Dr. John Goodsir is not listed in the 1841 Scotland Census for Edinburgh Canongate his brothers Joseph and Robert Goodsir are listed as residing at 21 Lothian Street. According to the census Joseph Goodsir is listed as being 25 years of age and is a clergyman and his brother Robert is listed as being 15 years of age and is a general merchant.¹³

⁹ *Anstruther, or Illustrations of Scottish burgh life*. Gourley G, Anstruther: A. Westwood & Son; 1888. p. 158

¹⁰ *Edinburgh Medical and Surgical Journal* Vol.II, p.1

¹¹ *The British & Foreign Medical Review or Quarterly Journal of Practical Medicine and Surgery*. Forbes J, Connolly J, London: John Churchill; 1839. p.571

¹² *Anstruther, or Illustrations of Scottish burgh life*. Gourley G, Anstruther: A. Westwood & Son; 1888. p. 158

¹³ 1841 Scotland Census for Edinburgh Cannongate, Midlothian, Scotland; Enumeration District Number 3, P. 27

Parish of <i>Canongate</i> (part of) 27			
1	2	3	4
PLACE	NAME and SURNAME, SEX and AGE, of each Person who abode in each House on the Night of 6th June.	OCCUPATION	WHERE BORN
Have Insert Name of Village, Street, Square, Close, Court, &c.	AGE	Of what Profession, Trade, Employment, or whether of Independent Means.	If they are of any of the following Professions, Trades, or Occupations, insert the Name of the Profession, Trade, or Occupation.
HOUSE	NAME and SURNAME	Male	Female
Edinburgh	<i>J. Gorman</i> 20	<i>Druggist</i>	Yes
do	<i>Robert Gordon</i> 75	<i>Chapman</i>	No
do	<i>J. Peck</i> 15	<i>Head Clerk</i>	No
do	<i>William Wilson</i> 32	<i>Dr. J.</i>	No
do	<i>J. Stewart</i> 15	<i>Dr. J.</i>	No
do	<i>W. Stewart</i> 25	<i>Teacher</i>	No
do	<i>Margaret</i> 25		No
do	<i>William</i> 3		No
do	<i>J. Gorman</i> 1		No
do	<i>James Brown</i> 30	<i>Teacher</i>	No
do	<i>Elizabeth</i> 30		No
do	<i>James</i> 5		No
do	<i>Christian</i> 2		No
do	<i>Elizabeth</i> 3		No
do	<i>Mary Ann</i> 40	<i>Charter</i>	No
do	<i>Wm. Thompson</i> 2	<i>Teacher</i>	No
do	<i>J. Andrew</i> 25	<i>Teacher</i>	No
23	<i>J. Peck</i> 15	<i>Head Clerk</i>	No
do	<i>Robert</i> 20		No
do	<i>Maria</i> 20		No
do	<i>James</i> 20		No
do	<i>J. Stewart</i> 15	<i>Dr. J.</i>	No
27	<i>J. Stewart</i> 25	<i>Teacher</i>	No
do	<i>James</i> 20		No
do	<i>Horatio</i> 20	<i>Druggist</i>	No
TOTAL in 2	14	10	15

Parish of <i>Canongate</i> (part of) 28			
1	2	3	4
PLACE	NAME and SURNAME, SEX and AGE, of each Person who abode in each House on the Night of 6th June.	OCCUPATION	WHERE BORN
Have Insert Name of Village, Street, Square, Close, Court, &c.	AGE	Of what Profession, Trade, Employment, or whether of Independent Means.	If they are of any of the following Professions, Trades, or Occupations, insert the Name of the Profession, Trade, or Occupation.
HOUSE	NAME and SURNAME	Male	Female
Edinburgh	<i>Ben. Cameron</i> 13	<i>Student</i>	Yes
do	<i>Christian</i> 8		Yes
do	<i>J. Peck</i> 1		Yes
do	<i>J. Stewart</i> 15	<i>Teacher</i>	No
do	<i>James</i> 25		Yes
do	<i>Margaret</i> 14		Yes
do	<i>J. Stewart</i> 2		Yes
do	<i>J. Stewart</i> 15	<i>Dr. J.</i>	No
do	<i>James</i> 15	<i>Teacher</i>	Yes
do	<i>James</i> 30		Yes
do	<i>James</i> 20		Yes
do	<i>James</i> 2		Yes
do	<i>J. Stewart</i> 15	<i>Teacher</i>	No
do	<i>Christian</i> 25		No
do	<i>James</i> 55	<i>Dr.</i>	No
do	<i>James</i> 15		No
do	<i>J. Stewart</i> 15	<i>Dr. J.</i>	No
do	<i>James</i> 15	<i>Black</i>	No
do	<i>James</i> 10		No
do	<i>Elizabeth</i> 15		Yes
do	<i>James</i> 12		Yes
do	<i>James</i> 8		Yes
do	<i>William</i> 3		Yes
do	<i>James</i> 1		Yes
TOTAL in 2	14	11	16

Fig.3. 1841 Scotland Census for Edinburgh Canongate, Midlothian, Scotland listing the Goodsir family (Lines 2 and 3) National Records of Scotland, Crown Copyright

The flat at the top of the house became known as a meeting place for residents and their friends in Forbes's circle, which became known as the Universal Brotherhood of the Friends of Truth, whose members included artists, physicians, naturalists, poets, priests and mathematicians.¹⁴ Goodsir in the meantime continued his freelance work on Peloniaia and further researches on the British Ciliograda. He also became a resident fellow of the Edinburgh Botanical Society on Thursday, 25 March 1841 where he eventually became its chosen vice president.¹⁵ Goodsir was also elected senior president of the Royal Medical Society in May 1842, became a member of the Royal Physical Society and was appointed conservator of the Royal College of Surgeons of Edinburgh in August of 1841. He donated a number of his own personal specimens to the museum thus enlarging the College's collection.

According to the History of Museums of the Royal College of Surgeons of Edinburgh: "In his first Report to the Curators in February 1842, he drew attention to the fact that many of the preparations were in poor condition and a large number required remounting. He also referred to the difficulty of identification of specimens due to the loss of labels and he introduced a system whereby the catalogue

¹⁴ K. Grudzien Baston, 'Goodsir, John (1814-1867)', Oxford Dictionary of National Biography, Oxford University Press, 2004 (<http://www.oxforddnb.com/view/article/10983>, accessed 15 October 2014)

¹⁵ Edinburgh Botanical Society. List of Members 1836-1948. Library and Archives. Edinburgh

number was painted on the jars, those recorded in the General Catalogue in black and those in the First Printed Catalogue in white.”¹⁶

Additionally Goodsir made popular the museum and its collections by giving lectures featuring its specimens unique to the museum and lectures on Anatomy and Physiology based on preparations in the museum. Goodsir was quite popular as Conservator and added further to the collection by making plaster casts of some of his dissections and painting others. While in this post Goodsir developed a series of remarkable lectures which he entitled: “Anatomical and Physiological observations,” which he gave in the theater of the college in 1842-43.

According to the *Transactions of the Botanical Society, Volume IX*: “He also made some excellent casts and models, which displayed great artistic powers as well as anatomical knowledge. In the outer hall of the Royal College of Surgeons of Edinburgh there is a remarkable model made by Goodsir.”¹⁷ This remarkable cast of which he named “From Nature.” The cast has been in the Jules Thorn Museum at Surgeons Hall Museum since the late 1980s. A gold plaque on the cast states: “Cast From Nature, 1845. By John Goodsir, F.R.C.S. Edinburgh. Conservator of the Museum of the Royal College of Surgeons of Edinburgh 1841. Professor of Anatomy in the University of Edinburgh 1848-1867.”



Fig.4. “From Nature” by Professor John Goodsir, © The Royal College of Surgeons of Edinburgh, Surgeons’ Hall Museums

¹⁶ History of the Museums of the Royal College of Surgeons of Edinburgh. Archives. p.21

¹⁷ History of the Museums of the Royal College of Surgeons of Edinburgh. Archives. p.21

John Goodsir accepted the post of Curator of the collection of the University of Edinburgh and resigned as Conservator on Friday, 3 February 1843 but he continued his duties until Wednesday, 2 August 1843 when his younger brother Harry D.S. Goodsir was appointed.¹⁸ The “Anatomical and Physiological observations” lectures contained many original observations on the structure and function of a variety of cells. He demonstrated his breadth of knowledge about the cell, much of it based on his own observations under the microscope. He advanced new concepts about the cell exploring. Rudolf Virchow recognized his indebtedness to these discoveries by dedicating his Cellular Pathologic to Goodsir, as “one of the earliest and most acute observers of cell life.”¹⁹ These lectures were eventually published in 1845.²⁰

In addition to these remarkable lectures, Goodsir also in 1842 published the first description of the stomach parasite *sarcina ventriculi* in the *Edinburgh Medical and Surgical Journal*, which confirmed him as an innovative scientific observer.²¹

Professor of Anatomy of the University of Edinburgh

In 1844 John Goodsir took the position of demonstrator of anatomy at the University of Edinburgh as assistant to the ailing Alexander Monro *tertius* and two years later when Monro retired (1846) Goodsir was appointed professor of anatomy. According to the *Fifeshire Journal Newspaper* dated Friday, 22 March 1867: “There was never a happier appointment. No professor was ever more eagerly listened to by his pupils than he was when in the zenith of his powers, for, though not eloquent, his prelections were full of information and thought, and were such as to fascinate the minds of his students. His devotion to his duties were extraordinary.”²² Professor Goodsir was a great favorite of the students who were in awe of his many talents and great knowledge of the time. As a result of Goodsir’s boundless energy and zeal, Edinburgh’s reputation as a center of anatomical teaching and research was once again restored under the Professor’s tenure.

Having already becoming a Fellow of the Royal Society of Edinburgh in 1842, Professor Goodsir published many of his papers in the Transactions of the Society including: ‘*On the Electrical Organs of the Ray,*’ (6 January 1845); ‘*Verbal notice respecting the Thyroid, Thymus, and Supra-renal Bodies,*’ (16 February 1846); ‘*On the Structure and Economy of Tethea, and on an undescribed species from the Spitzbergen Seas,*’ (7 March 1853); ‘*On recent Discoveries on the Adjustment of the Eye to Distinct Vision,*’ (7 January 1856); ‘*On the Reproductive Economy of Moths and Bees, being an Account of the Results of Von Siebold’s Recent Researches in Parthenogenesis,*’ (2 February 1857); ‘*On the mode in which Light acts on the Ultimate Nervous Structures of the Eye, and on the Relations between Simple and Compound Eyes,*’ (6 April 1857); ‘*On the Mechanism of the Knee Joint,*’ (18 January 1858).

According to the *Transactions of the Botanical Society*: “To his pupils, however, his chief attention was directed, and by his ardent, unwearied devotion to them during a period of twenty years, he maintained the high reputation of the men well versed in anatomical science, who are now scattered over various quarters of the globe, and who look back with no ordinary feelings of pride and affection to their late much respected teacher. Goodsir worked for his students. To them he communicated all his

¹⁸ History of the Museums of the Royal College of Surgeons of Edinburgh. Archives. p.21

¹⁹ Transactions of the Botanical Society. Volume IX. Balfour JH, Edinburgh: Printed for the Botanical Society; 1867. p.119

²⁰ Goodsir, John. Goodsir HDS Anatomical and Physiological observations. Edinburgh: Myles McPhail; 1845

²¹ 9th Edition of Encyclopedia Britannica. Volume 10 (G-GOT) online edition

²² *Fifeshire Journal Newspaper*, 22 March 1867 p.1

important discoveries in anatomy and his physiological views; and many of them have in after life, given forth, in their printed writings, the lessons of their master..."²³

Besides his regular lectures, Goodsir gave courses of comparative Anatomy in summers for many years. This resulted in increased attendance in his class of Anatomy during the regular academic year. Thus all his efforts and energies were devoted to anatomy and his system of teaching was regarded as the best ever regulated the anatomical department of any British university or medical school.²⁴



Fig.5. Professor John Goodsir, Painting by George Aikman c.1854

Goodsir was also a dissector of exceptional skill and produced many teaching specimens for his courses and departmental museum. Dissection it would seem was his favorite activity. He was consulted frequently on zoological questions and took part in the examination of veterinary students. Such was his reputation that in 1849 Goodsir was called upon to examine a mysterious carcass which had been found off the island of Stronsay some years before and which became known as the 'Stronsay Beast'. The Natural History Society of Edinburgh was unable to identify what it was. Goodsir on the other hand concluded that the carcass cannot be called a Basking Shark carcass as a Basking Shark is the largest capable of round 40 feet and the mysterious carcass of Stronsay measured 55 feet. The precise identity of the creature still remains a mystery.

With his reputation as a successful teacher of anatomy so well established, many students were attracted to the University of Edinburgh and enrollment increased with his class numbering 354 in 1860-61.

Dr. Goodsir by the year 1851 was residing at 55 George Square near the University of Edinburgh. According to the 1851 Scotland Census for Edinburgh St. Cuthberts, Midlothian, Scotland he was listed as being 37 years of age and a Professor of Anatomy at the University. He was living with his brother, the Reverend Joseph Goodsir.²⁵

²³ *Transactions of the Botanical Society. Volume IX.* Balfour JH, Printed for the Botanical Society; 1867. p.123

²⁴ 9th Edition of Encyclopedia Britannica. Volume 10 (G-GOT) online edition

²⁵ 1851 Scotland Census for Edinburgh St. Cuthberts, Midlothian, Scotland; Enumeration District Number 49, p. 27

Goodsir continued to pursue researches which extended into physiology and pathology. He commenced a periodical entitled, "*The Annals of Anatomy and Physiology*" of which only three parts were published in 1851. During this same period he became a candidate for the office of surgeon in the Royal Infirmary but this was rejected and he soon after relinquished surgical practice entirely thus ending a part of his distinguished career.

His friend of his early days, now Professor Edward Forbes, had become a famous naturalist, who held the presidency of the *Geological Society of London* and in 1854 was appointed to the professorship of natural history at the University of Edinburgh. He was taken ill after he had commenced his winter lectures and died soon afterwards at Wardie, near Edinburgh on Saturday, 18 November 1854 at the age of 39. His death had a profound effect on his good friend, Professor John Goodsir. He would eventually purchase the home of Edward Forbes at Wardie.

Health Deterioration

After the death of Professor Edward Forbes in 1854, Goodsir became increasingly reclusive, and his own health began to deteriorate. According to the *Transactions of the Botanical Society*: "His naturally robust frame suffered much from his continued and pressing anatomical labours, carried on often to the neglect of the requirements of the body. His health was so impaired in 1853 that he was compelled to give up lecturing for a session."²⁶

With the failing health of Professor Jameson, the Professor of Natural History at the University, Goodsir took on additional responsibilities which included delivering the course of lectures on natural history during the summer of 1853. These lectures were zoological and included the psychological conditions of man as compared with 'the brute'. The infinite amount of thought and exertion which he had to devote to these took a further toll on his health. Professor Goodsir's first symptoms of his failing health proved to be a wasting condition of the spine (progressive ataxia) which was ultimately to prove fatal. With the need for complete rest now apparent, Goodsir traveled to the continent of Europe specifically to Vienna, Berlin, and Paris to increase his anatomical collections, acquire scientific instruments, visit museums, and meet international colleagues. He returned to Edinburgh much invigorated, and able to resume his duties.²⁷

²⁶ *Transactions of the Botanical Society. Volume IX.* Balfour JH, Printed for the Botanical Society; 1867. p.124

²⁷ *Transactions of the Botanical Society. Volume IX.* Balfour JH, Printed for the Botanical Society; 1867. p.124



Fig. 6. Photograph of Professor John Goodsir, date and photographer unknown

Upon his return from Europe, though still in an enfeebled state of health, Professor Goodsir resumed his Professorial duties and his passion for original research remained; and in 1856 he published a series of memoirs on the constitution of the skeleton, which form an important contribution to anatomical science. This work was entitled: "*On the Morphological Constitution of the Skeleton of the Vertebrate Head.*"

The disease under which he suffered now manifested itself in a paralytic condition of the lower extremities. According to the *Fifeshire Journal Newspaper* dated Friday, 22 March 1867: "For years Professor Goodsir had to reside in Mr. Eckford's establishment at Trinity for the sake of the baths there, he dragged himself to his daily task in the lecture room when scarcely able to work, and generally occupied the remainder of the day in the College museum making preparations, a work in which he took great delight, and for which his scientific knowledge and skillful manipulation gave him great facility."²⁸

Professor John Goodsir is listed in the 1861 Scotland Census for Edinburgh St. George, Midlothian, Scotland. His age is given as 47 and he is listed as a Professor at the University of Edinburgh.²⁹

Triangle Theory of Formation

Goodsir at this time was working on the structure of organized forms. His speculations gave birth to his theory of a triangle as the mathematical figure upon which nature had built up both the organic and inorganic worlds, and he hoped to complete this triangle theory of formation and law as the greatest of his works. The fundamental principle of form he conceived to exist within the province of

²⁸ *Fifeshire Journal Newspaper*, 22 March 1867 p.1

²⁹ 1861 Scotland Census for Edinburgh St. George, Midlothian, Scotland; Enumeration District Number 5, p. 2, Line Number 17

crystallography, and to be discernible by a close study of the laws of that science. He argued that there was a center in everything and regarded man as simply a conglomerate of cells, rising up, maturing, and decaying.³⁰ He saw in the growth and form and finished structure of man a tetrahedron, a man, a physical being and a form divine.³¹

The Death of Professor John Goodsir

In spite of his weakness, Goodsir still carried on his researches, lectured to his class and conducted various examinations for degrees. According to the *Transactions of the Botanical Society*: “He commenced his lectures in November of 1866 with a remarkable lecture on the different kingdoms of nature. The exertion of lecturing, however, was too great. On one occasion he fainted towards the conclusion of his lecture, and remained in a state of insensibility for some time. On that occasion some of us tried to dissuade him from carrying on the course, but he determined to persevere, until at length he yielded to the earnest solicitations of some of his colleagues, and gave up lecturing, and allowed the course to be carried on by his able and talented assistant, Mr. Turner. His feebleness increased, and he was finally confined entirely to bed.”³² Goodsir delegated his lecturing to his assistants and continued to devote much of his time to the preparation of museum specimens.

On Friday, 22 February 1867 Professor Goodsir made out his Last Will and Testament.³³ He made his brother, the Reverend Joseph Goodsir his executor of his estate. His will did not specifically state what should be done with his many specimens and volumes of lecture notes, research papers and books.

The Professor’s mind, however, continued active and he conversed with intelligence on scientific matters and of his past days. John Goodsir died on Wednesday, 6 March 1867 at South Cottage, Wardie at the age of 52. The cause of his death was listed as “Atrophy of the Spinal Cord, 14 years and Chronic affections of the bladder.”³⁴ He died in the same cottage in which Edward Forbes his early friend, died in November of 1854.

³⁰ 9th Edition of Encyclopedia Britannica. Volume 10 (G-GOT) online edition

³¹ 9th Edition of Encyclopedia Britannica. Volume 10 (G-GOT) online edition

³² *Transactions of the Botanical Society. Volume IX.* Balfour JH, Printed for the Botanical Society; 1867. p.125

³³ Last Will & Testament of John Goodsir, 22 February 1867, Edinburgh Sheriff Court Wills (SC70/4/109) National Records of Scotland

³⁴ Death Record of John Goodsir, 6 March 1867, Leith North Parish Records, Statutory Deaths 692/01 0080, National Records of Scotland

An autopsy and microscopic examination of the spinal cord of Professor Goodsir were made by his assistants Dr. Chiene and Mr. Stirling. According to *The Anatomical Memoirs of John Goodsir, Volume 1*: "The brain weighed 57 ½ ounces avoirdupois, and was rich in convolutions; it was anaemic, but otherwise apparently healthy. The cord was removed below the third cervical vertebra, and weighed, together with the membranes and nerve roots, 3 ounces...The posterior roots and their ganglia were congested. The cord was greatly atrophied, and the cervical and lumbar enlargements were no longer recognizable...Both in the lumbar and cervical regions the columns were greatly atrophied, and with an almost complete disappearance of the axial cylinders of the nerve-fibres; sections through the columns exhibited an irregularly reticulated appearance, with intermixed granular matter: corpora amylacea were scattered in considerable numbers throughout the substances of the cord."³⁷ Based on these autopsy findings, Professor Goodsir died of atrophy of the spinal cord. Some however have suggested tabes dorsalis (the result of earlier infection with syphilis) which would fit with his clinical features. Another possibility is subacute combined degeneration of the cord which results from nutritional, particularly vitamin B12 deficiency.

On Monday, 11 March 1867 Professor Goodsir's funeral was attended by many professors and teachers, the fellows of the Royal Colleges, members of the many scientific associations that he belonged to and many friends. Two hundred of his pupils joined the procession, and manifested their deeply felt sorrow at the graveside of one of whom they loved so much.³⁸ Goodsir was buried next to his early and much valued friend the naturalist, Edward Forbes in Dean Cemetery in Edinburgh. A large granite obelisk marks the grave of Professor Goodsir with the following inscription: "John Goodsir, Anatomist. Born 20 March 1814. Died 6 March 1867." His brother, the Reverend Joseph T. Goodsir has had the spiral curved line engraved on one side of the obelisk, to exemplify the feeling pervading the professor's mind on the subject of organic growth, the spiral being symbolic of the law of the vital force, set forth in page 180 of his memoir, and more developed in Goodsir's lectures.³⁹

³⁷ The Anatomical Memoirs of John Goodsir, Volume 1. Turner W, Edinburgh: Adam and Charles Black; 1868. p.195-96

³⁸ The Anatomical Memoirs of John Goodsir, Volume 1. Turner W, Edinburgh: Adam and Charles Black; 1868. p.194

³⁹ The Anatomical Memoirs of John Goodsir, Volume 1. Turner W, Edinburgh: Adam and Charles Black; 1868. p.195-95



Fig. 8. Grave of Professor John Goodsir, Dean Cemetery, Edinburgh, Photograph Courtesy of Dr. Iain Macintyre, 19 November 2013

Goodsir published a huge number of papers in his lifetime. A year after his death in 1868 "*The Anatomical Memoirs of John Goodsir, Volume 1*" was published in memory of the late Professor, a fitting tribute to his scientific genius for generations to come.

John Goodsir, Scottish Anatomist of His Era

On a fall day in October 2003, I visited the birthplace of the famous Scottish Anatomist and pioneer in the study of the cell, my distant third cousin, John Goodsir. The coastline of Anstruther is not far from the old Goodsir residence on High Street where John Goodsir was born. While along this coastline, I imagined seeing the young boy examining marine life along its shores of so long ago.



Fig.9. Coastline of Anstruther, Fife, Scotland, Photograph Courtesy of Michael T. Tracy © 2010 Michael T. Tracy

In one of his final letters to his brother Henry (Harry) D.S. Goodsir before he left on the ill-fated Franklin voyage, John wrote the following: "Edinburgh, Wednesday, 15 February 1843. My dear Harry...Now in the midst of all this pushing forward in science I trust you will not take it amiss when I ask you whether you are doing everything in your power to keep up the practice. I know the difficulty of combining science and practice. One man only, as far as I know, ever did it perfectly, John Hunter, and any man may do it if he has sufficient self-command. Time you must be economical of, get time by rising early; at present I get, and you may too, a whole hour of good daylight for observations before breakfast, and as the season advances you get more of it. No truly great man, certainly no eminent scientific medical man, ever lay in bed in the morning; get off to your patients before nine; call on them all. I used to be very careless in this respect. I called only when I thought it necessary. Now, if the patient wishes, you are to call as often as possible. You are, or ought to be, paid for it. I have been careless in this respect since I came to Edinburgh, but I am now a most diligent, regular, and punctual caller, and I am already feeling the benefit. Want of punctuality and consideration for the wishes of patients is unprofessional...If you and I be fortunate enough to get the respective museums in Edinburgh then we shall do all we can to get practice, for whether we ultimately teach anatomy or not, practice I am determined we shall attend to, for pathology and physiology or anatomy can never be advanced in a proper way by a man who is not in the habit of daily considering and treating cases of diseases and injury. You, Archie, and I will, if we play our cards well, make a very formidable trio in Edinburgh. It is time our family as doctors should be transplanted. We have been too long (eighty years at least) in the East of Fife. Think of this, and I am sure you will make every effort by cooperating with your father and

paying every attention to the public to secure its confidence and affection. Send your paper on Friday, but don't neglect the practice, and believe me, Yours affectionately, John Goodsir."⁴⁰

No pen of mine can adequately capture the distinguished life of the famous Scottish Anatomist, nor his scientific genius. Professor Goodsir was acknowledged by many to be one of the most original and distinguished anatomists of the nineteenth century. The remarkable point in history of the life of Professor John Goodsir is that a country doctor, should have left the long rides of rural practice to become one of the greatest, if not the very greatest, professors of anatomy in one of the greatest medical schools in the world. This was due to his earnestness of purpose and pure devotion to his profession. As a scientific observer and inquirer he had few equals. In one of his final addresses as Promoter to the graduates of the University of Edinburgh in 1859, Professor Goodsir stressed the importance of the medical profession and its duties to the public it serves. He stated: "This character, this demeanor will best be secured by looking on your profession not as a mere science with its formal application, but as an extended series of duties, the nature and scope of which are indicated in the very nature of the profession itself."⁴¹

Truly a scientific genius and a pioneer of his time, Fife can be very proud of one of its own, Professor John Goodsir of Anstruther Easter, a man with a passion for anatomy who made a significant contribution to the advancement of medical science acclaimed the world over. We the surviving members of the Goodsir family can look back on our very distinguished ancestor with great esteem and pride, as he is commemorated here in recognition by his distant cousin, Michael T. Tracy.

Viva enim mortuorum in memoria vivorum est posita (The life of the dead is retained in the memory of the living)

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⁴⁰ Promoters Address Delivered on Graduation Day (1 August 1896) at Edinburgh University. Chiene J, Reprinted from The Lancet, 8 August 1896. p. 13-14

⁴¹ Promoters Address Delivered on Graduation Day (1 August 1896) at Edinburgh University. Chiene J, Reprinted from The Lancet, 8 August 1896. p. 11

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