

= William Lax =

William Lax FRS ( 1761 ? 29 October 1836 ) was an English astronomer and mathematician who served as Lowndean Professor of Astronomy and Geometry at the University of Cambridge for 41 years .

Lax was born in Ravensworth in the North Riding of Yorkshire . He attended Trinity College , Cambridge and graduated Bachelor of Arts as the Senior Wrangler and first Smith 's Prizeman of his year . He was elected a fellow of Trinity College , ordained as a minister , and received his Master of Arts . Lax was granted the livings of vicar of Marsworth , Buckinghamshire and of St Ippolyts near Hitchin , Hertfordshire , where he erected an observatory .

Lax was best known for his Remarks on a Supposed Error in the Elements of Euclid ( 1807 ) and his work regarding the Nautical Almanac , which was an important reference for navigation in the period . An obituary claimed that " To whatever Professor Lax applied , he made himself completely master of it " . His daughter married Andrew Amos and through that line Lax is the grandfather of Sheldon Amos and the great grandfather of Maurice Amos , a notable legal dynasty .

= = Early life = =

Lax was born in the village of Ravensworth , near Richmond in the North Riding of Yorkshire , England , the son of William ( 1731 ? 19 August 1812 ) also born in Ravensworth , and Hannah Lax ( 1738 ? 10 June 1811 ) . He was educated at the Kirby Ravensworth Free Grammar School , where he learned Latin ( in which he became fluent ) and Greek as well as English language , arithmetic and mathematics . Although the school was subsidised by a charitable trust , " Free " in the context of the school 's name meant free from all authority save for the Crown .

Lax was admitted as a sizar to Trinity College , Cambridge University on 22 November 1780 at the age of 19 . Trinity was at the time the richest college at Cambridge . Sizars were students who were not of the gentlemanly class , who were charged lower fees and obtained free food and / or lodging and other assistance during their period of study in exchange for performing work at their colleges . By the eighteenth century , sizars were fully integrated members of the community , who were as likely to be employed by Fellow commoners as companions rather than servants . They were expected to wait at table ( as were pensioners and scholars ) , but by the eighteenth century they had their own gyps ( servants ) and bedmakers .

Lax matriculated in the Michaelmas term of 1781 and became a private tutor to John Pond , later Astronomer Royal . Lax was elected a scholar ( i.e. one on a scholarship ) of Trinity in 1784 ; John Cranke and Henry Therond were his tutors , a role which would have seen them not only teaching Lax , but also acting in the role of in loco parentis . Lax was conferred a Bachelor of Arts ( B.A. ) in 1785 and graduated as the Senior Wrangler and was awarded the first Smith 's Prize of his year . Until 1790 , all examinations at Trinity were written in Latin .

= = Career = =

= = = Early career = = =

In 1785 Lax was appointed curate of Tideswell in the Peak District of Derbyshire with an annual stipend of £ 35 . In 1786 , as was essentially the due of Senior Wranglers , he was elected a fellow of Trinity College . According to Peter Linehan , fellows at this time , " were becoming richer , living and behaving more like gentlemen " . He was ordained as a minister in 1787 at Peterborough and received his Master of Arts ( M.A. ) in 1788 . He was a moderator from 1789 to 1791 which entailed him presiding over oral examinations which were then necessary for the B.A. to be awarded . As a moderator Lax was responsible for the introduction of " very high flown compliments , and at the same time extending the disputations to double the usual length , which was around one hour and ten minutes " which " sent a ripple through tradition " according to Greg Denning . Denning argues that

this was , " Lax 's way of getting into the act and making Acts flourish " . In 1791 he was appointed as a taxor by the University . Lax was an assistant tutor from 1797 until 1801 , but resigned when he married Margaret Cradock , as College fellows were not permitted to marry .

= = = Lowndean Chair = = =

In 1795 Lax was appointed Lowndean Professor of Astronomy and Geometry in succession to John Smith . The position was a sinecure with an annual salary initially of around £ 300 , later rising to around £ 500 per annum by 1821 . Cambridge had two astronomical chairs , and the Lowndean was seen as the more theoretical and less experimental of the two . During Lax 's tenure a mathematical chair was seen as " a prize or a means of securing leisure , and at best , merely as offering a position where a man could pursue his own researches undisturbed by other duties " . In 1816 Lax was described as holding the professorship with " great reputation " . The sole duty of Lax 's professorship was that he was required to examine students annually for the Smith 's Prize , including John Herschel , Adam Sedgwick , George Biddell Airy and William Cavendish , 7th Duke of Devonshire .

During Lax 's time at Cambridge : " the mathematicians were in the saddle , and it would be difficult to dispute the judgement that they controlled Cambridge studies almost as completely as the logicians had done in the Middle Ages . " In early nineteenth century Cambridge " the discipline of mathematics was at the very heart " . Newtonian mathematics teaching as exemplified by " Cambridge traditionalists " such as Lax and his generation began to wane as the Georgian era drew to a close . In 1817 George Peacock successfully introduced the new French mathematics ( such as Pierre @-@ Simon Laplace and Joseph Louis Lagrange ) into the Senate House Examinations . Peacock reported to Herschel , " The introduction of d 's into the papers excited much remark . Wood , Vince , Lax & Milner were very angry & threatened to protest against [ the infiltration of ] French mathematics . " For the traditionalists the struggle was more than one of intellectual difference as for them , " Newton 's rational mechanics , fluxions , and experimental philosophy were an excellent antidote against materialism and atheism . " However , from 1816 to 1824 Lax continued to sit on the Peacock @-@ led board that established Cambridge Observatory .

Lax did encounter some criticism during his tenure . Whilst at the university he " never , as far as is known , delivered a single lecture " , despite his chair 's bequest that the holder deliver forty lectures each year , although his predecessor had not given any lectures either . The excuse was made that there was already an astronomical chair at Cambridge established before the Lowndean that already gave lectures . By the 1820s it was no longer acceptable to consider chairs as sinecures , and Lax received criticism from a living descendent of the original benefactor , Thomas Lowndes , for being remiss in his duties . His successor to the Lowndean chair George Peacock promised " to do his duty in a less lax manner than his predecessor " , and although he struggled to get anyone to attend his lectures on pure mathematics , his lectures on practical astronomy were well attended . However , Peacock 's translation as Dean of Ely three years later meant that he was largely absent from his chair , which he was severely criticised for retaining .

= = = Fellow of the Royal Society = = =

Lax was admitted a Fellow of the Royal Society on 5 April 1796 . He was nominated by the Astronomer Royal Nevil Maskelyne , Anthony Shepherd , Richard Farmer and William Wales . However , due to an enmity of the President Joseph Banks , friends of Charles Hutton and Maskelyne , such as Lax , Samuel Vince and Thomas Mudge , frequently saw their submissions for publications overlooked . If any of them submitted papers to the Society :

they had the honour of having them carefully lodged in the archives of the Society , where the world in general , or even the members of the Society , would derive no more benefit from them than if they were deposited at the centre of the earth .

Lax delivered two papers to the Royal Society which were published in Philosophical Transactions . In 1799 he delivered A Method of finding the Latitude of a place , by Means of two Altitudes of the

Sun and the Time elapsed betwixt the Observations , described as containing " several valuable remarks " , but criticised as " a subject of no great importance " by the Philosophical Magazine . In his 1809 work On A Method of Examining the Divisions of Astronomical Instruments Lax wrote that no instrument was to be trusted without " previous examination " . This argument had an influence on scientists such as Henry Cavendish and was described as an " ingenious ... examination " in the Edinburgh Encyclopedia . However the method described by Lax " though very ingenious , requires great labour and time , and is inferior in accuracy and efficiency to that which was adopted by Mr. Troughton for tabulating the errors of the primary divisions of circular instruments . " It was also criticised for " greatly resembl [ ing ] " a method first explicated by the Duke of Chaulnes . In 1807 Lax delivered Remarks on a Supposed Error in the Elements of Euclid to the Royal Society , however it was not published in Philosophical Transactions , but was eventually published independently . In it Lax defended the Greek mathematician against a charge levied at him by Georges @-@ Louis Le Sage in 1756 . Lax 's defence was applauded by the British Critic as ' perfectly sound ' . Lax also espoused the worth of Euclid 's Elements in the work , which he considered to reflect " the highest honour upon the human intellect " .

= = = Board of Longitude = = =

Lax was elected to the Board of Longitude after he was nominated to the Lowndean chair in 1795 , and remained on the board until it was dissolved in 1828 . The Board was a governmental body charged with administering a scheme of prizes intended to encourage innovators to solve the problem of finding longitude at sea , which was vital for accurate navigation . Lax published a set of tables for use with the Nautical Almanac for finding latitude and longitude ; these were published by the Board of Longitude in 1821 , and whilst they were not considered to be of much practical use for seamen , they were described by The Nautical Magazine as a " very meritorious attempt to solve the problems of nautical astronomy by one uniform system . " In 1821 , the Board awarded Lax £ 1050 for his tables , which were intended to replace Nevil Maskelyne 's Requisite Tables . However , the extraordinarily accurate chronometers of John Harrison were generally available from the 1820s onwards , rendering the lunar distance method , which Lax had used to create the tables , immaterial . Meanwhile , Edward Sabine criticised errors in Lax 's work .

As a scientific member of the Board , Lax was one of eighteen men who were , according to Edmund Dews , " ultimately responsible for the form and contents of the Nautical Almanac . It would have been difficult in these years to select another group equally eminent in their field . " Lax was notable for his strong attendance record at the quarterly meetings , not missing a single meeting between 1822 ? 25 , a record equalled by only three other members , although non @-@ attendance of meetings would have resulted in his not being paid his annual salary of £ 100 . In 1828 Lax appended An easy method of correcting the lunar distance , on account of the spheroidal figure of the earth to the Nautical Almanac . After the Board was dissolved in 1828 Lax unsuccessfully attempted to convince George Biddell Airy to aid in a campaign for its restoration . In 1834 a new edition of his nautical tables was published posthumously . Eva Germaine Rimington Taylor later concluded that all of Lax 's works were " of value to the art of navigation " .

= = Personal life = =

On 28 February 1801 Lax was granted the livings as vicar of Marsworth , Buckinghamshire and squarson of Great Wymondley with St Ippolyts near Hitchin , Hertfordshire " after some years of teaching work " . He lived at St Ippolyts where he erected a private observatory which he had transported from Cambridge and had originally belonged to Isaac Newton . The Monthly Magazine included it in its list of the 21 most notable private observatories in England in 1813 . Lax spent the last thirty years of his life occupied with " studies and pursuits connected with the advancement of astronomy . "

When he arrived at St Ippolyts Lax had trees planted in the vicarage grounds in the form of his initials " W L " . That same year he created a park opposite to the vicarage similar to The Backs of

Cambridge , built a replica of Trinity College Bridge , dammed the stream and opened springs to form a lake which was used for ice skating in the winter . In September 1801 he married Margaret Cradock ( 11 June 1776 ? 20 January 1854 ) at the church in Gilling West in the North Riding of Yorkshire . Margaret was the eldest daughter of Sheldon Cradock of Hartforth who was the lord of the manor of Lax 's home village of Ravensworth . Lax was a proposer of Robert Woodhouse , Henry Coddington , Herbert Marsh and John Bell for Royal Society fellowship , the latter being one of Lax 's closest friends , and he was a keen supporter of George Biddell Airy throughout Airy 's career . Lax was a chief supporter of the Whig John Romilly , 1st Baron Romilly 's parliamentary bid . In 1824 Lax purchased a coat of arms for himself .

His brother Thomas Lax ( 1770 ? 1 Apr 1851 ) lived in Ravensworth . He was a gentleman farmer who became a record holding breeder of shorthorn cattle and at one point was credited with the best shorthorn herd in the country . He was " unquestionably a great breeder " . He also acted as Chief Constable of the wapentake of Gilling West . The Kirkby Ravensworth parish church has a memorial dedicated to Thomas Lax , as well as a memorial dedicated to the mother of the two brothers .

= = Death = =

On 1 December 1834 , Lax reported that he had been " of late in a very weak state of health " . He died " suddenly " on 28 October 1836 at his home in St Ippolyts . His obituary in The Gentleman 's Magazine reported that " his constitution was broken in early life [ which ] made his last years a period of weakness and suffering , so that his physical strength was unequal to the workings of his active mind . To whatever Professor Lax applied , he made himself completely master of it ... [ a ] most excellent and amiable man . " He left behind a widow and two daughters , the eldest Margaret and the younger Marian or Marianne ( died 21 June 1873 ) . In 1826 Margaret was married to Andrew Amos at St Ippolyts Church , and via that line Lax is the grandfather of Sheldon Amos and the great grandfather of Maurice Amos .