

CENTENARIES

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Saunderson, Nicholas (1682-1739)

NICHOLAS SAUNDERSON, a blind British mathematician, was born at Thurston in Yorkshire, January 1682. He became blind from smallpox at the age of twelve months. In spite of it he attended the free school at Pennistone and learnt the rudiments of Greek and Latin. His father, who was an excise man, soon observed the predilection of his son for mathematics and taught him the elements of arithmetic. Two friends perceived the remarkable talent of this blind youth and taught him algebra and geometry. By the help of a retentive memory and the power of his genius, Saunderson discovered methods of investigating problems of considerable intricacy.

AS PROFESSOR

He went to Cambridge in 1707 and began to teach mathematics at Christ's College. Newton's *Principia* was one of the books he taught and he had many students. The peculiar circumstance of his career brought him into friendship with Sir Isaac Newton and other prominent mathematicians. When the Lucasian professorship of mathematics fell vacant in 1711, Queen Anne conferred on him the degree of M.A. on the recommendation of Newton and this qualified him to be appointed to that chair. He used to lecture seven or eight hours a day. When George II visited the University in 1728, Saunderson was, by royal authority, made Doctor of Laws.

HIS PUBLICATIONS

The lectures which he composed for class use were published posthumously. One was the *Elements of algebra*. It came out in two volumes in 1740. Another on fluxions including a commentary on Newton's *Principia* came out in 1756. The first book contains a description of a mechanical device invented by Saunderson to facilitate computation by the blind.

A PSYCHOLOGICAL CURIO

Lord Chesterfield who had attended his lectures described him as a professor who had not the use of his own eyes, but taught others to use theirs. His sense of touch was so keen that he could distinguish "in a set of roman medals the genuine from the false, though they had . . . deceived a connoisseur who had judged by the eye". His ideas of the forms which plane or solid figures would assume in different perspectives were said to be remarkably correct. The remarkable achievement of this blind man stimulated a good deal of speculation along psychological lines. Dr. Reid devoted a portion of his *Inquiry into the human mind* to a discussion of Saunderson's powers. Burke also devoted about a page to him in discussing "words which do not raise images" in his *On the sublime and the beautiful*.

Saunderson died April 19, 1739,

Wood, James (1760-1839)

JAMES WOOD, a British mathematician, was born at Turton in Lancashire December 14, 1760. His father, who was a weaver, himself taught arithmetic and algebra to his son. In 1778 he joined St. John's, Cambridge, as sizar. He steadily worked his way until he became a senior wrangler. He became master of his college in 1815 and Vice-Chancellor in 1816. He resided in the college for about sixty years and when he died he had bequeathed his library and about £50,000 to his college. A statue was erected in the anti-chapel.

HIS PUBLICATIONS

Wood's works were for many years standard treatises. His *Elements of algebra* which came out in 1795, went through several editions and held the field for nearly a century. As late as 1892 an Indian edition of the same was published by P. Ghosh "Remodelled simplified . . . with numerous exercises, examples, and Calcutta, Bombay and Madras University examination papers". The *Principles of mechanics* (1796) was a popular text-book till late in the nineteenth century. So also was the case with his *Elements of optics* (1798). Wood was a fellow of the Royal Society and wrote a paper on the *Roots of equations* (1798) to its *Philosophical transactions*.

Wood died in college April 23, 1839.

Burrill, Thomas Jonathan (1839-1916)

THOMAS JONATHAN BURRILL, an American botanist and microscopist, was born on a farm near Pittsfield, Mass., April 25, 1839. While still a child he was sent to work in a cotton mill. Later in 1862, he was sent to the Illinois State Normal School, where the museum of the State Natural Historical Society attracted his attention. The entomologist and the botanist of the museum took interest in him and guided him in his studies. He graduated in 1865 and three years later entered the staff of the University of Illinois.

PUBLICATIONS

He soon conducted a natural history survey of the State and in 1869 he began a series of contributions to the learned organs of his State which he continued with vigour and precision right upto 1915, the articles numbering as many as eighty-two. He was for nearly half-a-century the moving spirit in all the natural history activities of Illinois.

MICROSCOPY AND BACTERIOLOGY

Burrill was among the pioneers of microscopy in America. In 1877 he announced his suspicion that the terrible epidemic of "fire-blight" of pears was caused by bacteria, which had previously been supposed to cause disease only

in animals. His views were received with scorn in Europe but by 1880 his intensive microscopical investigations and his inducement of the disease in healthy pears by inoculation confirmed his announcement as beyond all scorn and doubt. His prediction that many mysterious diseases such as mosaic blight would prove to

be bacterial had been later confirmed. His pathological investigations included such important crop diseases as ear rot of corn, potato scab, blackberry rust, peach yellows and bitter of apples. His last work was an attempt to cultivate the beneficial bacteria of the soil.

Burrill died April 14, 1916.

ASTRONOMICAL NOTES

A Lunar Eclipse.—On May 3, will occur a total eclipse of the moon, visible in India. The circumstances of the eclipse are as follows:

Moon enters umbra	6 ^h	58 ^m	p.m.
Beginning of total eclipse	8	10	"
Middle of eclipse	8	41	"
End of total eclipse	9	13	"
Moon leaves umbra	10	25	"

The times are given in Indian Standard Time. The magnitude of the eclipse is 1.182, taking the moon's diameter as unit.

Planets during May 1939.—Both Mercury and Venus will continue to be visible as morning stars; the former reaches greatest western elongation (26° 55') on May 1. Venus is slowly getting closer to the sun and becoming fainter. On May 17, the planet will be in conjunction with Saturn. Mars which will be on the meridian about an hour and a half before sunrise, is favourably situated for observation during the late hours of the night. It is getting brighter, the stellar magnitude increasing from -0.2 to -1.1 in the course of the month.

The major planets Jupiter and Saturn will also be visible as morning stars. The ring

eclipse of Saturn is gradually widening the angular dimensions of the major and minor axes being 36".7 and 9".0 respectively. Uranus will be in conjunction with the Sun on May 9.

Comets.—Information has been received (U.A.I. Circular 752) of the discovery of a periodic comet by Vaisala on March 14, in the constellation Leo. The object was diffuse without central condensation or nucleus, and very faint, of magnitude 15. The period is stated to be approximately ten years.

It is announced that Jeffers at the Lick Observatory, has re-discovered comet Pons-Winnecke on March 17, very near the computed position. At the time, it was a faint object, moving in a north-easterly direction in the constellation Bootes. The ephemeris indicates that the comet will increase considerably in brightness in April and May. At the last apparition it was bright enough to be visible with the naked eye for a number of days.

Comet Kozik-Peltier (1939 a) has been well observed. It has now moved far south and become very faint.

T. P. B.

SCIENCE NOTES AND NEWS

Prof. Max Born, Professor of Natural Philosophy, University of Edinburgh, has been elected this year a Fellow of the Royal Society.

Prof. Born is distinguished for his researches in many branches of Mathematical Physics and his recent researches on the New Field Theory have attracted considerable attention. He was associated with the Indian Institute of Science, Bangalore, during the period September 1935-March 1936 as Visiting Professor and during this period he helped to establish a flourishing school of Mathematical Physics at Bangalore.

Archaeological Finds of considerable importance have been unearthed at the ancient mound of Surkhanvali Ahli near Devanpura in Punjab, as a result of excavations carried out under the leadership of Dr. C. L. Fabri, Field-Director of the Punjab Exploration Fund. Earlier excavations had revealed the remains of an old city belonging to the times of the Moghul Emperors. Further digging resulted in unearthing the remains of a second stratum, some 100-200 years older than the upper level and herein were discovered the remains of a second city, belonging in all probability to the period of Shah Jehan and his predecessors. A large number of antiquities, including household pottery, glass bangles, iron tools, coins,

pieces of leather and cloth, etc., have been collected for study.

Further excavations have shown a third stratum, about 9 feet below the second, and here too were found the remains of walls, fireplaces and numerous objects of interest belonging to the earliest period of Muslim rule in the Punjab.

In a letter dated March 30th, received here, Field-Director C. L. Fabri announces that a lower and earlier strata has since been reached. "Yesterday's finds include a potsherd inscribed in early script, certainly much before the arrival of Islamic peoples and it came from the neighbourhood where a terra-cotta head, probably of Buddha, had been found a few days earlier. The site thus fulfils my hopes in being a magnificent collection of successive habitations, such as was badly needed for a proper establishment of Indian Archaeological Chronology".

Mayan Culture.—The unearthing of a colossal sculptured head of stone and several inscribed monuments, some of the Mayan culture, in a region of Mexico more than a hundred miles outside the previously known "Mayan area" has been announced from the Washington, D.C., headquarters of the National