

NICOLAUS COPERNICUS - ASTRONOMER AND PHYSICIAN

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Recently astronomers have celebrated the 500th anniversary of the birth of Nicolaus Copernicus, the Polish cleric who laid the foundations of our views today concerning the structure of the solar system. During his lifetime Copernicus was famous as a physician and administrator throughout northern Poland, and his accomplishments as an astronomer were unrecognised. Unfortunately it was not until after his death and the publication of his book 'De Revolutionibus' that he achieved an international reputation in this field and the wisdom of his words were appreciated.

Copernicus was born on the 19th February 1473 in the town of Torun, a prosperous town in northern Poland. His father died when he was only ten and from then onwards his education became the responsibility of his uncle, Lukasz Watzenrode, who shortly afterwards became the Bishop of Warmia, a diocese in what is today termed the Oltzyn district of Poland. This district was to the east of the city of Gdansk or Danzig. At the age of eighteen Copernicus was sent to the Jagiellonian University of Cracow to read for a degree in the Faculty of Arts and it was here that he started to become interested in astronomy.

FROM CLERIC TO PHYSIC

Bishop Watzenrode was anxious to see that his nephew was given an opportunity to follow a career that would allow him to develop intellectually and in 1496 he decided that Copernicus would be suited to enter the church. By January 1497 the Bishop had dispatched Copernicus to Italy and he was about to register for a degree in canon law at the University of Bologna. It was during his studies at Bologna that the Bishop 'arranged' for Copernicus to be elected a Canon of the Cathedral of Fromborg. However, upon his return to Poland in 1501 Copernicus had no desire to settle down to the mundane duties of cathedral life, and so asked his uncle for permission to return to Italy to continue his studies. This time he decided to return to the University of Padua in order to acquire a knowledge of medicine.

Unfortunately the sixteenth century medical courses placed more

emphasis on the views of learned doctors of the past and their treatment of diseases, but practical examination and dissection of the body were regarded as being rather beneath the dignity of physicians. Copernicus would have studied the writings of Hippocrates and Galen as well as the work of Arab chemists and the traditional herbal remedies. It may seem strange to us today, but at that time the gulf between astronomy and medicine was not so great since the two subjects were linked by the 'science' of Astrology. For example, there were elaborate rules governing the times of night or of the month when medicinal herbs could be gathered.

During his time at Padua Copernicus spent some time improving his knowledge of Greek and reading the standard texts on astronomy that would have been available in the University library. It is very probable that at this time he read Lorenzo Valla's encyclopedia of astronomy. This book contained details of views of the structure of the solar system and would have included the concepts of the Greek astronomer Philolaus that the Earth, Sun and the Moon moved around a fire which was situated at the centre of the universe. Philolaus' view of the solar system was not the one that was accepted in the sixteenth century, since at that time it was thought that Ptolemy had found the correct solution when he stated that the Earth was at the centre of the universe and that the sun and the planets journeyed around our planet once in each year. Although Philolaus' interpretation was not an accurate one, it may nevertheless have set Copernicus thinking along the correct lines.

There is no evidence that Copernicus took a medical degree at Padua. He only stayed in the University for two of the three years required to complete the course and it is likely that he was more concerned about the fact that he had not taken the final examination for a doctorate in canon law, a prerequisite for a successful career in the church. It may have been pressure from Uncle Lukasz to complete his studies in Italy and return home, or it may have been that his presence was required in Warmia, but in May 1503 Copernicus submitted himself for examination in canon law not at the Universities of Bologna or Padua, but at the University of Ferrara where the examination fee was the lowest in Italy.

Whilst at Padua Copernicus obviously took a profound interest in medicine and some of his text books and notes have been preserved and can today be found in the Library of the Astronomical Observatory in Uppsala and the State Archives in Stockholm. Many notes are in his own hand and some of the remedies are still relevant today. However, he was dubious about the effectiveness of some of the prescriptions and occasionally comments "God willing it will help"! In his medical studies, as in his astronomical work, Copernicus had a very practical turn of mind and he made notes of prescriptions which would be of use to him when the time came for him to give medical advice and dispense prescriptions.

On his return to Poland Copernicus was appointed secretary and personal physician to Bishop Watzenrode and from 1503 until the Bishop's death in 1512 he travelled throughout northern Poland with his uncle and assisted in governing the diocese. It was during this time that he started work on his theories concerning the motions of the planets and he made a few planetary observations from his observatory in the Cathedral whilst in residence in Frombork. During 1507 Copernicus wrote a small booklet outlining his views regarding the structure of the solar system and he circulated handwritten copies to his astronomical friends. The booklet had only about 20 pages and was entitled "A commentary on the hypothesis of the movement of the Celestial Orbs". This work formed the basis of his book "On the Revolutions of the Heavenly Spheres" which was only published shortly before he died in 1543.

ITINERANT HEALER

After his uncle's death Copernicus became the administrator of the Cathedral's estates and Chancellor of the Frombork Chapter and it was during this period of his life that he travelled extensively in Warmia. During his travels his services as a doctor would presumably have been much in demand although he did not formally establish a practice and there is evidence that in May 1519 he helped combat an epidemic that was raging in the diocese. By the close of the 1520's his reputation as a physician had reached almost an international level. He was often consulted by the V.I.P.'s of the time about their maladies or to give advice when a second opinion was required by other doctors. It is interesting that because of the difficulties of travelling long distances these consultations were often given by letter without the practitioner actually visiting the patient. Letters from Copernicus have survived in which he has given a diagnosis based only on the symptoms as they were described in a letter by the doctor in attendance. As a measure of Copernicus' medical standing there is evidence that Copernicus was consulted in this way by the Polish King's physician.

During the 1520's and 1530's Copernicus perfected his astronomical theory that the sun was at the centre of the universe and that the planets revolved around the sun in circular paths. From the manuscript of his book, 'De Revolutionibus', it is clear that once he had prepared the draft of the book he spent much of his time rewriting and perfecting the manuscript. Copernicus' astronomical studies at this time were interrupted in the spring of 1541 when he was hastily summoned to examine the Duke of Prussia who was seriously ill. Copernicus must have been a very charitable person since during the 1520's the Duke had been in charge of the Order of Teutonic Knights, an Order whose aim had been to suppress Warmia. Copernicus was therefore faced with the task of curing a man whose Knights had wrought havoc and devastation to the lands of his diocese.

ISOLATION BUT LASTING FAME

The last years of his life were probably very lonely since many of his academic friends and contemporaries had died. Copernicus who almost certainly worried that the rise of the Protestant philosophy was causing the Church to be wary of any new ideas that were unconventional and he must have thought that his astronomical theories would be sufficiently out of line with Church dogma to have him expelled as a heretic. In order to preclude this possibility he decided to dedicate the book to Pope Gregory III and included at the front of the book a letter from Cardinal von Schonberg begging him to publish details of his new system. The book, after many delays, was published shortly before he died but by that time he was almost beyond any persecution that the Church could inflict.

Copernicus' ideas took time to gain acceptance and it was not until the early part of the seventeenth century that his theory was accepted by European scientists. His work was used by Kepler as the starting point for establishing the laws of planetary motion and it is these laws which today form the basis of our calculations concerning the movement of the planets.

Whilst he was alive Copernicus was acknowledged as a man who cared deeply for the health and welfare of the people within his diocese. By publishing 'De Revolutionibus' he ensured that his wisdom would live for ever and future generations would understand the structure of the universe in which they lived.

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