

ASTRONOMY

He Spun the Earth

Modern study of the heavens is based on the work of Copernicus who died just four centuries ago. Polish astronomer will be honored May 24.

By **GLENN SONNEDECKER**

► THE SUN he bade to stop, and at his bidding

The earth began to spin—Poland has nurtured him.

Today this apt epigram is whispered from ear to ear by the suppressed people of Poland. For May 24 will mark the end of four centuries since the death of their countryman, Nicholas Copernicus, who first successfully challenged the erroneous ideas about our universe that man had cherished for thousands of years.

Ancient people looked about them and agreed that the great earth was the fixed center of the universe. And the sun revolved about the earth. That was just common sense—the fiery ball rose in the east and circled from overhead in the day to under the earth at night.

But early in life Copernicus—churchman, astronomer and physician—suspected something was amiss in this scheme of things. For years he observed and calculated.

Finally on his deathbed, eyes too dimmed to read, he was handed the first copy of his great work, "Concerning the Revolutions of the Heavenly Spheres." It truly brought a revolution in man's thinking about the world in which we live.

Our world, formerly considered stationary, was sent spinning through the heavens. The sun stopped its diurnal dash around the earth. Instead, the moon, the earth and the other planets revolved around the sun.

Basis of Modern Science

Copernicus revealed a new magnificent vista of the heavens. Others caught the vision and hitched their wagon to the stars, devoting their lives to learning of galaxy upon galaxy, reeling through infinite space.

On the basis of Copernican theory was built the structure of modern astronomy. As man learns of millions of other solar systems, so far away that it takes millions of years for their light to reach us, we are overwhelmed—perhaps with a pang of regret—by the truth of the

Copernican idea that man's world is, indeed, not the central or dominant point in the universe.

And the scientists who study the stars have had a peek into only a small cranny of space and know comparatively little about that. Soon, at Mt. Palomar, the biggest telescope yet will be completed. With it the stargazers expect to peer a half-billion light years into space.

New fuel will be added to the current controversy as to whether the universe is expanding, as many astronomers now believe. Certain phenomena make it seem that the stars are fleeing, much as if to avoid the contagion of our warring world. A world where the doors of the University of Krakow stand closed by an invader for the first time since Copernicus studied in its now silent halls.

It was in Krakow, just about the time Columbus set sail for America, that Copernicus became interested in astronomy. The Polish astronomer and mathematician, Albert Brudzewski, is usually credited with first inspiring the eager young student.

Studied at Bologna

Later Copernicus journeyed across the Alps for post-graduate study at Bologna University. Under the influence of his guardian uncle, a clergyman, Copernicus enrolled as a student of canon law. But through the years he kept up his study of astronomy and the sciences.

Something of a jack-of-all-trades, he even studied medicine for two years and at the same time got his doctor's degree in canon law at Ferrara.

About 1504 he assumed active duties as canon of the duchybishopric of Varmia and acted as physician and secretary to his uncle, Bishop Lucas.

Although devoting much time to healing the poor and taking part in political and religious activities, he continued his star studies, working without even the simplest telescope.

Climbing into one of the towers of the Frauenburg cathedral in Varmia, Copernicus would carefully make naked-eye observations, then labor over his calculations late into the night.

But there was no ivory-tower seclusion for Copernicus. Amid this maelstrom of activities war broke out with the Teutonic Knights in 1520, and Copernicus was promptly appointed commander-in-chief of his beleaguered city, which is now called Allenstein.

Then, as now, post-war problems required keen minds, and Copernicus took part in currency reforms of Varmia and neighboring provinces at the request of the king of Poland.

He recognized the problem of inflation and formulated the principle that when bad money is in circulation with the good, the bad regulates the value of all and drives out the good. Although this theory was not original with Copernicus, he evidently arrived at his conclusions independently and with a scientific precision not shown by his predecessors.

Remained Little Known

His discoveries in astronomy remained little known. He seemed a bit timid about pushing his own accomplishments, even as many of his scientific successors of today. Then, too, he was a faithful Christian and there was no telling what the Church might think of his revolutionary system.

About this time young George Rheticus, a college instructor, had heard of the Copernican theory and gave up his job to visit the astronomer and learn the new system at its source.

Greatly impressed by Copernicus' genius, Rheticus realized that failure, or even delay, in publishing the master's treatise would be a loss to science. So he gained permission to write up the new system in a palatable style and published the first account of the Copernican system in 1540.

It was so well received that Rheticus persuaded Copernicus to have his original manuscript published at Nuremberg. But Rheticus accepted a teaching post elsewhere and turned the job over to a clergyman, Andrew Osiander.

Osiander felt impelled to write an anonymous preface to take the curse off these revolutionary ideas and suppressed the dedicatory letter prepared by Copernicus.

When the great work rolled off the press, it began by declaring that no doubt some scholars would be offended by such heresies but that, after all, astronomical

hypotheses need not be true or even probable.

Perhaps this disarming note was a blessing in disguise. For the Church overlooked the revolutionary importance of Copernican theory until 1616, when the treatise was placed on the Index.

But Copernicus had started the earth and the planets spinning through space. He revolutionized man's outlook on the universe and helped usher in the era of modern science.

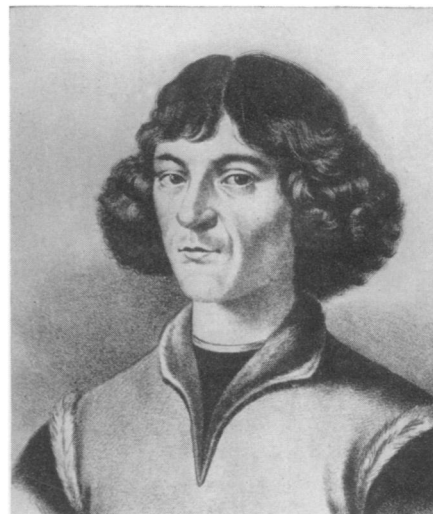
The new truth was to struggle for two centuries for recognition and acceptance. But as early as 1721 in our own country, Cotton Mather conceded that the "Copernican hypothesis is now

generally preferred," and that "there is no objection against the motion of the earth."

Now, 400 years after the death of Copernicus, scholars and scientists everywhere pause to pay tribute to his memory. A Copernican Quadricentennial program has been planned for May 24 under the sponsorship of the Kosciuszko Foundation to foster cultural relations between the people of the United States and Poland.

Both are fighting to make the world free for scientific thought and development for which the great Polish astronomer stands.

Science News Letter, May 22, 1943



COPERNICUS — *Founder of astronomy.*

PSYCHOLOGY

Good Diet Raises IQ

Children tested when under-nourished and again when getting good diet showed increase of as much as 18 points IQ. Only very young helped.

➤ **INTELLIGENCE** of undernourished little children can be increased as much as 18 points IQ by proper diet, Dr. I. Newton Kugelmass, New York physician, told the meeting of the American Association on Mental Deficiency in New York.

Dr. Kugelmass reported the results of IQ tests of 182 children who were malnourished at the time of their first mental tests and well nourished when the second test was given. The rise in IQ points averaged 10 points IQ for mentally retarded children up to as much as 18 points for the mentally normal. Children who were well nourished when both tests were given showed no such mental improvement.

Unfortunately, the increase in intelligence is insignificant, however, if the poorly fed child is over four years old. The younger the malnourished child, the better the chance that good food will help the mind.

Science News Letter, May 22, 1943

Asphyxia Dulls Minds

➤ **SUFFOCATION** of babies during the process of birth or before may make them feeble-minded, the meeting learned from the report of Dr. Stanley S. Lamm, of the Long Island College of Medicine.

"The cells of the brain are particularly susceptible to lack of oxygen," Dr. Lamm said. "And asphyxia which primarily

leads to deficient oxygenation of the blood is a potent cause of mental deficiency."

"Premature babies," Dr. Lamm added, "are especially susceptible." Efforts should be made, he said, to delay their birth until they are large enough to withstand the hardships of birth.

Complications of labor, including the excessive use of anesthetics and sedative drugs, may lead to the partial suffocation of the infant.

Recognition that asphyxia has a part in producing mental deficiency may lead to a reduction in the number of such cases, Dr. Lamm predicts.

Science News Letter, May 22, 1943

Defectives in Army

➤ **MENTAL** defectives are making good as paratroopers and in other branches of the armed services, Dr. Robert H. Haskell and Dr. Alfred A. Strauss, of the Wayne County Training School, Northville, Mich., told the meeting.

The first hundred high grade mental defectives known to have enlisted or to have been drafted after rehabilitation in the Training School were checked up on by the physicians after the boys had been six months in service. The majority had made good and 30% had been promoted.

A third of the boys were paratroop-

ers, cavalymen or in other special services. Some others were in the Navy and Marine Corps.

"The ultimate decision as to the fitness for military service of high grade and borderline mental defectives has to be carefully weighed," Dr. Haskell commented, "between community protection against later costly casualties and fairness to individuals willing and capable of serving their country."

Science News Letter, May 22, 1943

ENGINEERING

Transparent Test Chamber Made From Bomber Nose

See Front Cover

➤ **INGENUITY** made it possible for radio engineers making altitude tests of radio equipment to speed up their work, and at the same time improve it.

The unfinished plastic nose of a famous American bombing plane was put to use as a transparent chamber for the stratosphere tests. The clear vision it affords on all sides makes it possible for several engineers to test and inspect any piece of radio apparatus at one time, and eliminates the difficulties encountered in the older type of test chambers made of metal and with only small ports to peer through.

The new test chamber, pictured on the front cover of this week's *SCIENCE NEWS LETTER*, is a development of the RCA Victor Camden Plant.

Science News Letter, May 22, 1943