

tion was drawn to the explanation of the phenomenon of precession as given by Copernicus. Referring to the fact that Greece, to whose ancient philosophers we owe so much even though their doctrines were erroneous, Poland which produced Copernicus, and Holland which produced the inventors of the telescope and microscope and thereby gave the mechanical means by which science was to advance so rapidly, are today the three countries which have suffered the most from German tyranny, Mr. Cornell predicted that the spirit which produced these advances of science is not dead but will cause a greater Greece and Poland and Holland to rise from the present ruins and to give to the world new leaders in thought and new discoverers in the realm of science.

YOLANDA MAJOWSKA, *Chairman.*

The Copernican Quadricentennial in Carnegie Hall, New York

The climax of the several ceremonies held throughout the United States in commemoration of the Copernican Quadricentennial, as indicated on page 287 of the preceding issue, was reached in the exercises held in Carnegie Hall, New York City, in the evening of May 24, the exact date of the death of Copernicus four hundred years earlier.

The release issued from the Kosciuszko Foundation, under whose auspices and those of the Copernican Quadricentennial National Committee these exercises were held, gives the details of the program. Realizing that an account of the events of this occasion will be of interest to all astronomically minded persons the world over, we are giving here practically the complete release for the benefit of readers who might not otherwise have access to it.

It might seem that this account should occupy the first place in this special Copernican issue. However, conditions were such as to require the printing of the earlier pages before the date of the meeting in Carnegie Hall, hence it must appear here. It is hoped that it will not be overlooked.

The release follows.

Nine Americans and one Chinese, honored as "modern pioneer scientists," of worldwide eminence in widely varied fields of achievement in pure and applied science received Copernican Citations last night (Monday, May 24) at the close of the Copernican Quadricentennial program in Carnegie Hall, New York, which climaxed the nation-wide commemoration of the 400th anniversary of the great Polish astronomer, Nicholas Copernicus, who died in Poland, May 24, 1543, on the very day he saw

the first published copy of his epoch-making astronomical treatise, *De Revolutionibus Orbium Coelestium*, proclaiming the heliocentric laws of the solar system and revolutionizing man's outlook upon the universe.

This historic meeting in honor of the immortal Copernicus, known as "The Father of Modern Astronomy," was sponsored jointly by the Kosciuszko Foundation, and which Dr. Henry Noble MacCracken, President of Vassar College, is President, and Dr. Stephen P. Mizwa, Secretary, and by the Copernican Quadricentennial National Committee, of which Dr. Harlow Shapley, Professor of Astronomy and Director of the Harvard College Observatory, is Chairman. Dr. MacCracken welcomed the large and distinguished audience, including America's leading scientists, educators, and academicians, on behalf of the Kosciuszko Foundation, and introduced Dr. Shapley, the presiding chairman.

Dr. James R. Angell, President Emeritus of Yale University, was Chairman of the Committee on Citations. Serving with Dr. Angell on this Committee, for the selection of these "modern pioneers in science, who are recognized as having made a substantive contribution of revolutionary character in science which opened up new channels of thought in scientific research, or new ways of doing things which affect the future of mankind," are the following authorities in their respective fields of science and education: Dr. Edwin G. Conklin, Dr. Karl K. Darrow, Dr. Alan Gregg, Dr. Frank B. Jewett, Dr. Frederick P. Keppel, Dr. Henry Noble MacCracken, Dr. Henry Allen Moe, Dr. William Allen Neilson, and Dr. Harlow Shapley.

The ten men of science who received these Copernican Citations last night (Monday, May 24), either personally or by proxy, were: John Dewey of New York; Walt Disney of Burbank, Calif.; Albert Einstein of Princeton, N. J.; Henry Ford of Dearborn, Mich.; Ernest Orlando Lawrence of Berkeley, Calif.; Thomas Hunt Morgan of Pasadena, Calif.; Igor I. Sikorsky of Stratford, Conn.; Wendell Meredith Stanley of Princeton, N. J.; Orville Wright of Dayton, Ohio; and James Y. C. Yen of Chungking, China.

These diplomas of the Copernican Citation were designed and embellished by Arthur Szyk, famous Polish artist and illuminator, and were signed by Dr. Henry Noble MacCracken, as President of the Kosciuszko Foundation, and by Dr. Harlow Shapley, as Chairman of the Copernican Quadricentennial National Committee, and by Dr. James R. Angell, as Chairman of the Committee on Citations. The general text of the Copernican Citation read: "Bestowed in the name of the Kosciuszko Foundation on recommendation of a Committee on Citations selected from the Copernican Quadricentennial National Committee," and they were dated New York, May 24, 1943. Following

are the individual texts of citation for each of the ten honored scientists:

JOHN DEWEY: "A single-minded sage who has stimulated and enriched the thinking of his time in education, philosophy, and in all the arts of life, proclaiming everywhere the truly vital nature of thought as reality in the making."

WALT DISNEY: "Whose animated cartoons, with their highly original use of sound and color and their gay anthropomorphic humor, have delighted audiences the world over."

ALBERT EINSTEIN: "Whose revolutionary concept of space, time and energy has transformed both science and philosophy."

HENRY FORD: "Whose sturdy independence of mind, tenacity of honest purpose and relentless frugality of method, has enriched the people with a new freedom and opened a new horizon to manufacture."

ERNEST ORLANDO LAWRENCE: "Inventor and builder of the most powerful engine of transmutation of the elements, organizer and chief of the greatest contemporary school of nuclear physics."

THOMAS HUNT MORGAN: "Author of a revolution in our knowledge of the causes and mechanisms of inheritance."

IGOR I. SIKORSKY: "Pioneer aeronautical engineer, who has created a helicopter of revolutionary implications and given new freedom of movement in the air."

WENDELL MEREDITH STANLEY: "Discoverer of a crystalline protein having all the characteristics of a disease-producing virus, a concept revolutionary for the study and control of virus diseases."

ORVILLE WRIGHT: "A modern, this time successful Icarus, who fashioned wings for man and showed him how to navigate the ocean of the air."

JAMES Y. C. YEN: "Illustrious inventor of a simple, easily mastered system of written Chinese whereby the book of knowledge has been opened to millions of previously illiterate minds, a leader of his great people in applying scientific methods to the enrichment of their soil and the increase of the fruits of their toil."

The ceremony of citation, conducted by Dr. Shapley, was witnessed by a distinguished audience of scientists, educators, research specialists, directors of astronomical observatories and planetariums, and amateur astronomers, and included a large representation of leading Polish-Americans in the metropolitan area, and many members of the Polish Catholic clergy. Among the prominent box-holders were the members of the Copernican Quadricentennial Commission of the State of New York, recently created by act of the New York State Legislature, with the approval of Governor Dewey, and with the appointment of Hon. Charles O. Burney, Jr., and Hon. Philip P. Baczkowski of Buffalo as Chairman and Vice-Chairman of the Commission, for yesterday's (May 24) statewide observance of Poland-Copernicus Day.

Following is the program of scientific and musical tribute to Copernicus, as presented last night (May 24) in Carnegie Hall, New York:

COPERNICAN QUADRICENTENNIAL PROGRAM

"Dzwon Zygmunta" (Tolling of the King Sigismund Bell or Liberty Bell) from the Cathedral of the Wawel, Krakow;

"Hejnal" (The "Broken Note Signal" of the Trumpeter of Krakow, 1241);

National Anthems of the United States and Poland, sung by the Schola Cantorum of New York, under direction of Hugh Ross;

- Opening Remarks, by Dr. Henry Noble MacCracken, President of Vassar College and of the Kosciuszko Foundation;
- Introductory Message by the Presiding Chairman, Dr. Harlow Shapley, Director of Harvard College Observatory, President of the American Academy of Arts and Sciences and of the National Society of the Sigma Xi;
- Message of the President of the United States, read by Dr. Shapley;
- Message of the President of the Republic of Poland, delivered by His Excellency Jan Ciechanowski, Polish Ambassador to the United States;
- Greetings from Sir Henry Hallett Dale, President of the British Royal Society of London;
- Address, "On Behalf of American Astronomers," by Dr. Joel Stebbins, Professor of Astronomy and Director of Washburn Observatory at the University of Wisconsin, and President of American Astronomical Society;
- Address, "On Behalf of American Catholic Scholarship," by the Reverend Professor Michael J. Ahern, S.J., Senior Professor of Science at Weston College, Mass.;
- Group of Ancient Polish Dances on the Harpsichord, by Madame Wanda Landowska—"Chorea Polonica" by Diomedes Cato (1570-1607), "Volta Polonica" and "Wyrwas" (Anonymous, 1615), "Polonaises in C Minor and F Major" by Prince Michael Cleophas Oginski;
- Greetings, "On Behalf of the Scholars of Poland who have been temporarily silenced," and an Address on "The Polish Golden Age in the Era of Copernicus," by Dr. Oscar Halecki, Professor of History at the University of Warsaw, Poland, and Director of the Polish Institute of Arts and Sciences in New York;
- Violin Solos by Bronislaw Huberman, with Boris Roubakine as piano accompanist—"Air for Four Voice-Parts" by Henricus Finck (1445-1527), contemporary of Copernicus; "Valse, Opus 64 No. 2" by Frederic Chopin; and "La Fontaine d'Arethuse, from Myths, Opus 30," by Karol Szymanowski;
- Address on "Nicholas Copernicus, The Founder of Modern Astronomy," by Dr. Edward Rosen, Instructor in History at the College of the City of New York, and Copernican Scholar;
- "Gaude Mater Polonia,"—Thirteenth Century Polish Hymn and Alma Mater Song of the University of Krakow, since the student days of Copernicus, sung by the Schola Cantorum of New York, with Hugh Ross conducting, and arranged especially for the Copernican Quadricentennial by Karol Rathaus, Professor of Music at Queens College;
- Copernican Citations, with names announced, individual citations read, and diplomas presented by Dr. Shapley.

Following are brief excerpts from the introductory remarks by Dr. Henry Noble MacCracken and Dr. Harlow Shapley and Dr. Joel Stebbins, and the complete text of the letter of congratulation on the Copernican Quadricentennial, which was written by President Roosevelt, and sent to Dr. Harlow Shapley, to be read at last night's commemorative occasion in Carnegie Hall (Monday, May 24):

Dr. MacCracken said in part as follows: "Ought we to celebrate Copernicus? Has science anything to do with popular applause? Shall we make 'propaganda' out of this Polish cleric, who died in obscurity four hundred years ago? The answer is yes, to all these questions. We Americans ought to celebrate the first modern astronomer, his book, and the birth of modern science, because we of the New World are the children of the new geography and astronomy, of navigation and discovery. Not to celebrate Nicholas Copernicus would be indeed ungrate-

ful. Science has something to do with popular applause, for science belongs not to the scientist alone, but to the people. Never again shall science be shut in a tower, for hermits to speculate upon, or tyrants to monopolize. Science exists for the good of mankind. We will use our memories of this Polish scholar, Nicholas Copernicus, his life and his book, that we may never forget that a scholar may also be a patriot, that the revolutionary mind, breaking new ground for discovery, is not to be forgotten in world history, and that we may remind ourselves that knowledge is international, the possession of no one people, and that the sufferings of the martyr universities of Poland, where once Copernicus studied, shall be the fruitful seed of new truth in time to come."

Dr. Shapley said in part: "We are here tonight to renew our communal pledge of faith in human civilization. We are here to commemorate one particularly bold example of the freedom of thought and of exploratory imagination; and, in memorializing that one bold thought, we praise all similar adventures of the human intellect. We are here, as men and women have gathered this month in similar ceremonies in scores of cities and towns, to record that our day and our age is receptive to all revolutionary contributions to knowledge. We recognize that the small, steady, practical additions to our intellectual wealth are most significant. . . Even when we must consider an abrupt challenge to settled ideas, contradictions to the conveniently pleasant, the overthrow of the long-sanctioned dogma—we register by our congregation here that we shall be friendly to such revolution, friendly to the freedom for concepts that become essential to our reorientation.

"Once Copernicus had established the reasonableness of the heliocentric hypothesis, he began to shake men's minds free from the static of a fixed Earth. Slowly the cramping, self-assumed importance of man in the universe was diminished. It became gradually less difficult to follow with joyous heart the exploration of space, time, matter, and mind. . . It is in the name of this spirit that we are here assembled. We are all active participants in a great pledge. For I submit that it is as much by our presence here, as by our words and deeds, that we consecrate this occasion. *De Revolutionibus Orbium Coelestium* dealt with more than planets and celestial mechanics. That volume dealt, by implication, with the evolution of certain terrestrial bodies,—namely ourselves—with the evolution of our minds and of our grasp of physical reality. To this spirit of freedom on your behalf I dedicate these ceremonies."

Dr. Joel Stebbins said in part: "The astronomers of America are glad to join in an appreciation of Copernicus. The system which he expounded is so fundamental and has been taken for granted for so long, that it requires an occasion like the present one to remind us that there was ever a question of the Earth revolving about the Sun. We in our time have also been passing through a change just as revolutionary and per-

haps as little noticed as when the Polish churchman quietly jolted us out of our fixed and privileged position at the center of the universe.

"Less than twenty-five years ago, astronomers were debating: how large is the galaxy, and are there other galaxies outside of our own. There is now general agreement on these points. The galaxy is estimated to be 100,000 light years in diameter. (Remember that one light year is equal to six *million million* miles.) The Sun is more than half way from the center to the outside. There are many other independent galaxies, each composed of millions of stars. We have the astronomical multiplication table: a thousand million stars make one galaxy, a thousand million galaxies make one universe. Copernicus gave us about 20 miles per second for the Earth's motion about the Sun, but the Sun moves at 200 miles per second about the center of the galaxy, and even at this speed it requires 200 million years to complete the circuit. Where the galaxy as a whole is going, we do not know.

"Although, beginning with Copernicus, first the Earth, then the Sun, and finally the whole galaxy has been shifted from the center of the universe, astronomers cling to the idea that the system of planets revolving about the Sun is a rare one, if indeed it is not unique, and the Earth stands out among these planets. Even if there are dark bodies revolving about other stars, the number supporting life as we know it must be relatively small at any one time. The last two thousand years of civilization are only the one-millionth part of the history of the Earth, hence, of all the bodies anywhere which might be like the Earth sometime, only one in a million would be like us now. The Sun is an ordinary star, in an ordinary place, in an ordinary galaxy, but we still believe that Copernicus lived on an extraordinary planet, at an extraordinary time, and, needless to say, he was an extraordinary man."

President Franklin D. Roosevelt sent the following message congratulating the Copernican Quadricentennial, from the White House, which was read at the Carnegie Hall meeting by Dr. Harlow Shapley, Chairman of the Copernican Quadricentennial National Committee. President Roosevelt wrote as follows to Dr. Shapley:

"Commemoration of the quadricentennial of the death of Copernicus naturally turns our thoughts to his native Poland, now in chains and prostrate under the evil power of Axis conquest. Poland's plight today is indeed tragic. Her oppressors are likewise the implacable foes of truth, progress, and the spirit of free inquiry to which Copernicus devoted all of the years of his active and singularly useful life.

"Although free institutions are suppressed temporarily in the land of Copernicus's birth and in other once happy lands, the dawn of a happier day is assured. It is therefore highly appropriate that in the midst of all-out war and the sacrifices which it demands, we pause a moment to draw refreshment of mind and spirit by recalling the great contribution which