

Warsaw, which is your host town, is a city with a magnificent and at the same time dramatic history. Four days ago we celebrated the thirty-fourth anniversary of the outbreak of World War II. First bombs in that war fell on our city. But it was only the beginning of a tragedy. Over five years later, the final balance-sheet of destruction was horrifying: out of every ten buildings of the pre-war Warsaw nine had been destroyed, burned or blown up. The city centre, objects of culture and science, relics of the past, industry had all been completely destroyed. Over 800 thousand Warsaw inhabitants died under Nazi terror.

I mention this to emphasize the determination to survive, so characteristic of Warsaw inhabitants. Today, Warsaw reconstructed with the effort of the whole nation, is again a properly functioning, developing city. I hope that despite the extensive programme of your Assembly you find time to see that for your own. At the same time, however, I would like to turn your attention to Warsaw's achievements in the domain well-familiar to you, in science.

The traditions of our city in this domain are by no means insignificant. I think, for example, the traditions of the Warsaw mathematical school are not unknown to you. In the post-war period efforts at reconstruction of residential quarters and industrial establishments, relics of the past and monuments, were accompanied by a consistent strive to revive and subsequently develop the scientific base: higher schools, laboratories, and research centres. Today, nearly 30% of the country's scientific potential is concentrated in Warsaw and the achievements of our scientists, at least in proportion to the ratio of this concentration, are notable in more than one domain.

Astronomical traditions of Warsaw, which date back to over a hundred and fifty years ago, to the date of establishment of the first observatory, are being continued in a modern way. Construction work will begin shortly on the Copernican Centre, the first element of a big concentration of intellectual and research potential, known as the Warsaw Scientific Complex. I am very pleased to say that the Copernican Centre which is to serve the exchange of astronomical thought regardless of frontiers and social systems, will be constructed under international cooperation, the same noble-minded and peaceful cooperation which has brought you here to Warsaw.

I wish you, Distinguished Guests, fruitful debates and a pleasant stay in our city.'

ADDRESS BY THE CHAIRMAN OF THE NATIONAL COMMITTEE FOR THE IAU,
PROFESSOR W. IWANOWSKA

'Mister Chairman of the Council of Ministers, Mister President of the International Astronomical Union, Dear Guests,

The reason why our National Committee for Astronomy was so anxious to have a Meeting of the International Astronomical Union in our country this year, was the 500th Anniversary of the birth of Nicolaus Copernicus. One could think that celebrating anniversaries of great men of science is a nice custom, but—in the present very busy life—it is something like a waste of time. One might also think that studying the contributions of great men to the development of science belongs to the domain of the history of science.

All this being true, we think—however—that it is useful for scientists, once per generation, to have a look back on the way already passed, in order to get a perspective for the future plans. The span of time between the Copernican "Revolutions" and the present day revolution in science and technology offers such an opportunity; I should say—an excellent opportunity, because both ends of this span are exceptional and unforeseen. The work of Copernicus was a starting point of a continuous, exponential development of modern science and modern technology, whereas the present day acceleration of their growth begins to raise problems to the mankind, how to manage and organize research work and its applications.

In both these moments astronomy played and plays a leading part. In fact, astronomy is a leading science among natural sciences, since it stores in the depths of the Universe the greatest resources of the Unknown. It was not really an accident that the development of modern science started in astronomy. To find the fundamental laws of mechanics, the law of universal gravitation, a laboratory at least as big as the planetary system was necessary and this laboratory should first be brought into

order by Copernicus, before Johannes Kepler and the great Isaac Newton could read any kinematical or dynamical laws from it. Since then, the cosmic laboratory works and grows pushing its limits beyond stars, galaxies, and quasars, bringing a flow of new information about expected and unexpected phenomena. At the present time radio-astronomy and space research discover new properties of matter and energy in pulsars, quasars, active nuclei of galaxies, X-ray sources, relic radiation, multiatomic molecules in the interstellar medium. Using the most modern techniques of optics, electronics, computing machinery, the modern astronomy stimulates their development by increasing its demands for uttermost precision and perfection and yields to physics and technology—in return—new data on cosmic phenomena.

After a detailed analysis of the progress in all branches of astronomy over the last three years, made in Sydney at the ordinary General Assembly of the International Astronomical Union, within its more than forty commissions, you—astronomers from all the world—came to this country to discuss specifically the present day achievements in these branches of astronomy which took their origin directly from the work of Copernicus: as modern celestial mechanics, exploration of the planetary system, mysteries of gravity in collapsing cosmic masses or expanding envelopes of aging stars, and modern cosmology. These are the topics of the five symposia of this Extraordinary General Assembly. To see the span of progress in astronomy from Copernicus to the present-day astronomy, one more symposium—the sixth—is devoted to the beginnings of this progress, to the background, the birth, and the non-easy reception of the Copernican ideas. This is the plan of our recollection which could be labelled: 'From Copernicus to the present-day astronomy'. Where could we better remember and visualize the Copernican beginnings of our science and its deeply dramatic story, if not visiting these medieval houses, castles, colleges, cathedrals, and towers along the Vistula river, still existing and witnessing the life of the strange man called Nicolaus Copernicus.

There were several reasons why the Polish Academy of Sciences decided to extend their invitation to all astronomers from all countries to come here and to spend a week on fruitful meditations on the topic: 'From Copernicus to Modern Science'

On behalf of the National Committee for Astronomy of the Polish Academy of Sciences I welcome you in this country and wish you both: scientific use and pleasure.'

ADDRESS BY THE PRESIDENT OF THE IAU, PROFESSOR L. GOLDBERG

'The International Astronomical Union is greatly honored to have been invited by the Polish Academy of Sciences to hold an Extraordinary General Assembly as a tribute to Nicolaus Copernicus during the celebration of the quincentenary of his birth. Here in the country where he lived and worked, we have come to pay our respects to the man who initiated research in the physical sciences while hoping at the same time to find new directions for further development of astronomy.

The five symposia to be held in Warsaw, Toruń and Cracow during the next ten days are among the most important organized by the IAU in recent years and may well have a decisive influence on the course of cosmological research over the next few years. On behalf of the Executive Committee, I would like to thank the Academy for their invitation, the symposia organizing committees for generating a brilliant scientific program and the local organizing committee for its masterful organization of the very intricate arrangements required to keep 1000 participants supplied with scientific cultural and material nourishments while moving about from one end to the other of this great and beautiful country.

One of the objects of the International Astronomical Union is to develop astronomy through international cooperation. In this we are following the example of Nicolaus Copernicus who, as Prof. Gingerich has pointed out, had no hesitation in acquiring from abroad the knowledge he needed to build his system and in sharing this knowledge with others of different nationality and religious and political beliefs. Although the years he spent in Italy were primarily for the purpose of studying canon law and medicine, he also rounded out his education in mathematics and astronomy and breathed deeply of the atmosphere of the Renaissance. There is considerable evidence that he be-