

Opening Ceremony

Professor W. Gutkowski

Distinguished Guests, Esteemed Colleagues, Ladies and Gentlemen, it is my great honor and pleasure to welcome you to the 21-st International Congress of Theoretical and Applied Mechanics.

I welcome you on behalf of the Local Organizing Committee in Poland, here in Warsaw in this historical and beautiful edifice of the Warsaw University of Technology. The edifice, a witness of many scientific, cultural and political events. Just sixty years ago, in August heavy fighting was going on here during the Warsaw Uprising. Today you are in the country of growing economy, and for several months a member of European Community. Mister President, Distinguished Guests and Colleagues, Ladies and Gentlemen! It is my great honor and privilege to announce the opening of the 21st International Congress of Theoretical and Applied Mechanics! We are here, scientists from 55 countries, joined by a common passion, a passion for Mechanics.

Ladies and Gentlemen, let me now introduce our distinguished guests and organizers: Professor Keith Moffatt, President of the International Union of Theoretical and Applied Mechanics and President of the Congress Committee of IUTAM, Professor Werner Schiehlen, Vice-President of IUTAM, Professor Ben Freund, Treasurer of IUTAM, Professor Dick van Compen, Secretary General of IUTAM, Professor Tim Pedley, Secretary General of IUTAM, Professor Michał Kleiber, Minister of Science and Information Technology, Chairman of the State Committee for Scientific Research, Co-chairmen of the Local Organizing Committee, Professor Janusz Lipkowski, Vice-President of Polish Academy of Sciences, Professor Stanisław Mańkowski, President of the Warsaw University of Technology, Professor Włodzimierz Kurnik, Vice-President of the Warsaw University of Technology, Co-Chairman of the Local Organizing Committee, and Professor Tomasz Kowalewski, Secretary-General of the Congress.

Ladies and Gentlemen, to start the Congress I will kindly request Professor Keith Moffatt of the Cambridge University, President of the International Union of Theoretical and Applied Mechanics and President of the IUTAM Congress Committee, to address the Congress.

Professor K. Moffatt

Distinguished Guests, Dear Colleagues, Ladies and Gentlemen, I am honoured to stand before you in this magnificent setting of the

Warsaw University of Technology, and to say some words of welcome on behalf of IUTAM, the International Union of Theoretical and Applied Mechanics. This is the 21st Congress in our history, so here we celebrate our ‘coming-of-age’. We also celebrate the 80th anniversary of the first Congress of Applied Mechanics (as it was then called), which was held in Delft in 1924. We should pay tribute to the great scientists who had the vision to initiate this series of quadrennial Congresses, particularly J.M. Burgers, Theodore von Karman, Ludwig Prandtl and G.I. Taylor.

I note that this year is the centenary of Prandtl’s seminal paper on boundary-layer theory. An IUTAM Symposium on “One Hundred Years of Boundary Layer Research” has been held just last week in Göttingen, in recognition of the crucial role that this branch of mechanics has played in Aerodynamics and many other fields of application.

IUTAM itself grew from the early Congresses, and was formally established in 1948; Poland was one of the earliest members and has been an Adhering Organisation of IUTAM since 1952. The Congress Committee is appointed by the General Assembly of IUTAM, but otherwise retains the autonomy that it enjoyed from the outset. This means that when things go wrong, IUTAM can blame the Congress Committee; of course, when things go right, IUTAM shares in the credit!

There were 207 participants at that first Congress in Delft; these early pioneers would be gratified to know that there are over 1500 participants at this 21st Congress, as there were also at the 20th Congress in Chicago four years ago. It is a measure of the continuing vigour of our subject that the Congress attracts such strong and widespread participation. Of course we must be careful not to equate quantity with quality; we do however strive to maintain high quality in the papers selected for presentation whether as lectures or as seminar/poster presentations. Here I pay tribute to the hard work of our International Papers Committee, which, advised by National Committees and by Convenors of Mini-Symposia and Pre-nominated Sessions, had to select the papers from more than 2000 that were submitted; their task was extremely demanding, but the quality and range of the programme before us for this Congress will I hope convince you that they have done an excellent job, in spite of the great difficulties.

It is highly appropriate that we hold this Congress in Warsaw, a city of grace and beauty, which has emerged from the dreadful traumas of the last century to face the new century with greatly renewed vigour and optimism. One cannot visit this land without being deeply conscious of the long years of oppression suffered by the Polish people. It is hard now for us to comprehend the tragedy of the Warsaw uprising, which erupted exactly sixty years ago, and which has been commemorated

here this month. The long bleak years of the Cold War gave little solace to the Polish people. Yet throughout these years, there remained for our community a flicker of light in the gloom: I refer to the biennial meetings in fluid mechanics that were organised in Poland throughout the 60s and 70s and well into the 80s by our dear colleague Władek Fiszdon, meetings which enabled scientific contacts between East and West to be established and nurtured across and despite the Iron Curtain, and which helped to keep alive the universal and apolitical spirit of our subject. Władek Fiszdon became a member of the General Assembly of IUTAM in 1971; he is now a life-member in recognition of his devoted services. His health unfortunately does not allow him to be with us today, but I am sure you would wish me to convey to him the very good wishes of the whole IUTAM community.

IUTAM is an organisation founded on principles of friendly collaboration between scientists irrespective of race, creed or gender. It is a privilege to come to its Congresses, and to renew acquaintance with so many old friends and colleagues. It is also a particular privilege for me to welcome to this Congress younger scientists who may be attending an IUTAM Congress for the first time. I remember vividly my own such experience: With the encouragement of my late mentor George Batchelor, I attended the 10th Congress in Stresa, Italy, in 1960. It was an exhilarating experience, which opened my eyes to the great scope and challenges of our vast field of endeavour. If this is your first IUTAM Congress, I hope that you will find it a similarly exhilarating experience, and that you will look forward to succeeding Congresses with ever-keener anticipation. G.I. Taylor once told me that he liked to save his best paper in each four-year period for presentation at ICTAM; we should do well to follow his good example!

The time for thanks will come at the end of the Congress on Friday, but I'd like now to say at least a preliminary thank you to the local team who have worked so hard on all the preparations: the Congress President Witold Gutkowski, the Secretary-General of the Congress Tomasz Kowalewski, and the whole Local Organising Committee. They have done a superb job, and I sense that this is going to be a correspondingly superb Congress.

Thank you, Witold and Tomasz!

Now without further ado, I have much pleasure in confirming the Opening of ICTAM04.

Welcome to Warsaw, and we wish you a fruitful Congress; or, as it is said here:

Witamy w Warszawie i życzymy udanego Kongresu!

Professor W. Gutkowski

Thank you very much, Keith, for your kind words about Polish contribution to international mechanics. Let me also express our great appreciation for you, IUTAM Bureau and Executive Committee of the Congress Committee for the support and valuable advice during four years of preparation for the Congress. Let me ask now Professor Michal Kleiber, Minister of Science and Information Technology, Chairman of the State Committee for Scientific Research and Co-chairman of the Committee to address the Congress.

Professor M. Kleiber

Mr. President of IUTAM, Very Distinguished Guests of the Congress, Colleagues and Friends,

On behalf of the government of the Republic of Poland I have an honour and great pleasure to welcome you to the 21st International Congress of Theoretical and Applied Mechanics here in Warsaw.

I hope you will forgive me if I start on a rather personal note but I want to emphasize how special for me is this opportunity of addressing you, dear colleagues, in my current double capacity as a co-chairman of the Congress and as a representative of the Polish public administration. Frankly, I have to admit that because of my other duties I have not done much in terms of the Congress organization, and it is my colleagues at the Institute of Fundamental Technological Research of Polish Academy of Science and the Warsaw University of Technology who at the end of the week will deserve to be congratulated for their exceptional engagement and, I am sure, organizational perfection.

The Congress is something very special in every respect – it attempts to summarize what we have accomplished in the last 4 years, it facilitates everyone's research planning for the future, it stimulates interactions with other fields of science and technology, it strengthens our professional and personal links, it gives us a marvellous feeling of being a group of people coming from so many, sometimes very distant, places all over the world, but a group of people who share similar interests, similar vision of rationality in all human endeavors, similar perception of ways to better understand and improve the world around us.

I am one of those who consider the fields of mechanics as a true research success story of last decades – contrary perhaps to some people from outside of our profession, I have no doubts that the progress we have achieved together definitely places mechanics on one of the very top locations in the hierarchy of modern research disciplines – with tremen-

dous impact on both our perception of the physical world and the means to implement new technologies so much improving the quality of our life.

We are very glad to host you, distinguished delegates, in Poland, in the city of Warsaw. You will find here, I am sure, traditional hospitality and openness of the people, great public interest in the Congress debates and interesting encounters with the country and its capital so much rooted in the complex history of Europe – country which has only recently managed to definitely overcome its politically so much unfortunate and undeserved past, country which, as a new member of the European Union, looks forward with unmatched optimism and aspirations to contributing to the progress in science and its positive implications for all of us.

I wish all the participants vivid, instructive presentations and discussions and, at the same time, enjoyable stay in Warsaw.

Professor W. Gutkowski

Thank you, Professor Kleiber. I would like to express my gratitude for your initiative to organize the Congress in cooperation with the Institute of Fundamental Technological Research and the Warsaw University of Technology, in this beautiful edifice. This has been a great idea. Special thanks also for strong financial support of the Congress by the Ministry of Science and Information Technology.

May I ask Professor Janusz Lipkowski, Vice President of the Polish Academy of Sciences, representing the President of the Polish Academy of Sciences, to the podium.

Professor J. Lipkowski

Mr. President, Excellences, Distinguished Guests and Participants of the Congress,

The Polish Academy of Sciences consists of three parts. First, it is a corporation of elected members, the most distinguished scientists of our country who represent the Polish science. The Academy also organizes the scientific life in the country through its scientific committees. There are more than 100 committees in all scientific disciplines and scientists from all institutions in Poland, universities, institutes, societies etc. serve as members of the committees. One of these, Polish National Committee of the International Union of Theoretical and Applied Mechanics, is coorganizing the present Congress. Last but not least, the Academy has scientific institutes performing high level research studies. About 9% of all scientific ‘population’ in Poland are employed in the institutes while their output measured by the number of scientific publi-

cations amounts to more than one quarter of all scientific output in the country. We are proud of our institutes; please feel invited to visit any of them during your stay in Poland, you will be more than welcome. I am pleased to mention that one of the institutes, the Institute of Fundamental Technological Research, is also a coorganizer of the Congress. By the way, it is the mother institution of our Minister of Scientific Research and Information Technology who served as its director before joining the government of Poland.

Ladies and Gentlemen,

I made this brief introduction to our Academy of Sciences in the belief that you would become interested in developing scientific cooperation with our Academicians and institutions. We do count on international joint research which is an obvious choice in the XXIst century.

I wish you a very fruitful conference, and a pleasant and enjoyable stay in Poland!

Professor W. Gutkowski

Thank you very much, Professor Lipkowski. The Polish Academy of Sciences gave us very strong support when we were proposing the organization of the Congress here in Warsaw. Almost all members of the Local Organizing Committee are members of the Committee of Mechanics of the Academy. Let me now request Professor Stanisław Mańkowski, President of the Warsaw University of Technology, to address the Congress.

Professor St. Mańkowski

Professor, Minister, Ladies and Gentleman, Distinguished Guests, The Warsaw University of Technology, with its tradition of teaching in the field of technical and exact sciences reaching the year 1826, the symbol of which is the Main Building, erected over a 100 years ago and where the Large Hall is an expression of beauty, but also of application of the theoretical and applied mechanics, would like to extend a warm welcome to the participants of this, already the 21st, congress. The Warsaw University of Technology which teaches approximately 32 000 students is the largest technical university in this part of Europe. Teaching and research are inseparable. Therefore I believe that the 21st International Congress of Theoretical and Applied Mechanics is organised in the right place.

I wish the authors of the presented scientific contributions many practical applications, accurate theoretical descriptions and many quotations. I would like to express my gratitude to the International Commit-

tee for this decision, and the Polish National Committee, the Institute of the Fundamental Technological Research of the Polish Academy of Sciences and the Team of the Warsaw University of Technology led by Vice-President Prof. Włodzimierz Kurnik – for the passion and effort put into the organisation of the congress.

Professor W. Gutkowski

Thank you very much. It is my great pleasure to say that Professor Mańkowski, together with Professor Włodzimierz Kurnik, Vice-President of the University, have undertaken an enormous organizing task to host us in this historical building.

Ladies and Gentlemen, I believe you will like the city of Warsaw, and other places in Poland. There are so many interesting historical and cultural places to visit. Palaces, beautiful gardens, museums, concert halls and theaters. Unfortunately, within a couple of days you will be able to see just a few of them. So, we are bringing to you here a small fragment of our cultural heritage – the music of Chopin. For a quarter of an hour, Mr. Marcin Rudziński will present us some of the nicest pieces of this famous composer.

Mr. Rudziński graduated from the Karol Szymanowski High School in Warsaw. Recently he is a student of the Fryderyk Chopin Academy of Music. He has already performed Chopin's music at several prestigious concert places – by the Chopin Monument and the Palace on Water of Łazienki Park, and also in Zakopane at the "Atma" museum devoted to Karol Szymanowski.

He will perform now:

- Polonaise in C sharp minor, Op. 26 no. 1,
- Nocturn in B minor, Op. 9 no. 1,
- Ballad in G minor, Op. 23.

Mr. Rudziński, you are kindly requested to take the seat at the piano.

Concert

Thank you very much, Marcin, for your beautiful performance. Thank you again!

Apart from the concert you have just heard, you will also be able to enjoy the Polish dances and songs presented by the Song and Dance Ensemble of the Warsaw University of Technology. The Concert will take place in the Palace of Culture and Science, on Wednesday at 8:00p.m. The entrance is free and you are all kindly invited to come.

Ladies and Gentlemen, Dear Colleagues,
Mechanics is flourishing! No doubt! Increasing numbers of submissions from ICTAM to ICTAM are showing theoretical and applied importance of mechanics and its multidisciplinary relations with other sciences. In Kyoto there were 1642 submitted papers, in Chicago 1953, and in Warsaw 2186! Thank you for coming, and for contributing with your papers to the development of Mechanics in the 21st century.

We can say that all submitted papers present the latest, up-to-date results of our research. Really latest! Suffice it to say that on January 5, four days before the submission deadline, only 600 papers reached our server. I needn't say that no smile could be seen on our faces. Then during the last four days, the number of incoming papers started to grow exponentially with time. Finally, at midnight on the 9th of January the number of submitted paper reached 21 hundred! The authors were then really anxious to send their latest results. Let me mention an e-mail message we received in the late afternoon on Friday. The author of the message was kindly asking if the deadline at midnight should be considered at Greenwich time or at local time!

The authors constitute the core and the essence of the Congress. However, its realization strongly depends on sponsoring. Let me then acknowledge numerous supporting institutions and sponsors who helped us to start the organization of ICTAM04.

First of all, I would like to express our thanks to the Polish Universities and Institutes supporting the Congress, and contributing, at the same time, to the exhibition "Mechanics in Poland". Here, upstairs, on the balcony of the first floor you will be able to learn about our achievements in Mechanics, and at the same time have the opportunity to find interesting sources for scientific cooperation. I don't mention the universities and institutes by name. You will find them all at the exhibition. Speaking about Polish Mechanics, I would like to turn your attention to a booklet by Professor Zbigniew Olesiak, which you will find in your congress bag. The book shows the 19th century roots of our mechanics embedded in our difficult history of that time.

Let me next express gratitude to numerous scientific journals for publishing our announcements. This certainly increased the number of people interested in the congress.

Let me express appreciation for our friends, organizers of the Chicago ICTAM, for their support, very much needed at the beginning of the Congress preparations. It would be impossible to mention all our sponsors by name. To all of them presented on these two banners, I am sending, on behalf of the Local Organizing Committee our deepest thanks.

Ladies and Gentlemen. Before we start our work I will ask Professor Tomasz Kowalewski, Secretary-General of the Congress to give you some latest information.

Professor T. Kowalewski

I am very touched to see here, in Warsaw, so many *old friends* and all those numerous new ones, with whom I had pleasure to exchange thousands of emails during the last four years. Thank you very much for coming ...

– began his talk Secretary-General of the Congress. After passing on the latest technical information concerning organizational matters, Prof. Kowalewski expressed his gratitude to numerous young volunteers who were of great help in the last stages of the congress preparation.

Professor W. Gutkowski

Thank you, Tomasz.

In a few minutes Professor Leen van Wijngaarden will present an Opening Lecture. Presiding the session are Professor Hassan Aref from the USA and Michał Kleiber from Poland. I cordially wish you successful presentations and discussions of your papers.

Enjoy your stay in Warsaw!

Thank you for your attention.