INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

REPORT 1986

IUTAM
University of Stuttgart
Federal Republic of Germany
INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

REPORT 1986

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University of Stuttgart
Federal Republic of Germany
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Bureau

The following members of the Bureau of IUTAM have been elected for the period 1 November 1984 to 31 October 1988:

Officers:
- Sir J. Lighthill (UK) President
- Prof. D. C. Drucker (USA) Vice-President
- Prof. L. van Wijngaarden (Netherlands) Treasurer
- Prof. W. Schiehlen (FRG) Secretary

Members:
- Prof. P. Germain (France) (elected 1976)
- Prof. J. Hult (Sweden) (1984)
- Prof. T. Imai (Japan) (1984)

Secretariat

IUTAM Secretariat
Institute of Mechanics
University of Stuttgart
Pfaffenwaldring 9
D-7000 Stuttgart 80
Federal Republic of Germany
Telephone: (0711) 685-6389
Telex: 725542 unb v

Past Officers

<table>
<thead>
<tr>
<th>Year</th>
<th>Elected President</th>
<th>Vice-President</th>
<th>Treasurer</th>
<th>Secretary</th>
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<tr>
<td>1948</td>
<td>J. Péres (France)</td>
<td>R. V. Southwell (UK)</td>
<td>H. L. Dyden (USA)</td>
<td>J. M. Burgers (Netherlands)</td>
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<td>1952</td>
<td>H. L. Dyden (USA)</td>
<td>J. Péres (France)</td>
<td>G. Temple (UK)</td>
<td>F. A. v. d. Dun- gen (Belgium)</td>
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<td>1956</td>
<td>F. K. G. Oqvist (Sweden)</td>
<td>H. L. Dyden (USA)</td>
<td>G. Temple (UK)</td>
<td>M. Roy (Belgium)</td>
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<td>1960</td>
<td>G. Temple (UK)</td>
<td>F. K. G. Oqvist (Sweden)</td>
<td>W. T. Koiter (USA)</td>
<td>M. Roy (France)</td>
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<td>1964</td>
<td>M. Roy (France)</td>
<td>G. Temple (UK)</td>
<td>W. T. Koiter (Netherlands)</td>
<td>H. Görtsler (Germany)</td>
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<td>W. T. Koiter (Netherlands)</td>
<td>M. Roy (France)</td>
<td>H. Görtsler (Germany)</td>
<td>F. I. Nioirdson (Denmark)</td>
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<td>1972</td>
<td>H. Görtsler (Germany)</td>
<td>W. T. Koiter (Netherlands)</td>
<td>D. C. Drucker (USA)</td>
<td>F. I. Nioirdson (Denmark)</td>
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<tr>
<td>1976</td>
<td>F. I. Nioirdson (Denmark)</td>
<td>H. Görtsler (Germany)</td>
<td>D. C. Drucker (USA)</td>
<td>J. Hult (Sweden)</td>
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<td>1980</td>
<td>D. C. Drucker (USA)</td>
<td>F. I. Nioirdson (Denmark)</td>
<td>E. Becker (FRG)</td>
<td>J. Hult (Sweden)</td>
</tr>
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</table>

Adhering organizations

Argentina (1959)
Asociación Argentina de Mecánica Computacional,
Güemes 3450, 3000 Santa Fe
Chairman: Dr. S. R. Idelsohn
Representative: Dr. Mario Gradovczyk

Australia (1964)
The Australian National Committee for Theoretical and Applied Mechanics of the Australian Academy of Science, GPO Box 783, Canberra City, ACT 2601
Chairman: Prof. B. L. Karihaloo
Representative: Prof. G. Rozvany

Austria (1951)
The Austrian National Committee for Theoretical and Applied Mechanics, Österreichische Akademie der Wissenschaften, Dr. Ignaz-Seipel-Platz 2, A-1010 Wien
Chairman: Prof. F. Ziegler
Representative: Prof. E. Ziegler

Belgium (1949)
The National Committee for Theoretical and Applied Mechanics of the Class of Sciences of the Royal Belgian Academy, Hertogstraat 1, B-1000 Brussel
President: Prof. R. Mertens
Vice-President: Prof. M. Crochet
Secretaries: Prof. J. Peters, Prof. J. Kestens
Representatives: Prof. P. Janssens, Prof. J. Kestens, Prof. R. Mertens

Brazil (1982)
Associação Brasileira de Ciências Mecânicas, Instituto Tecnológico, Pontifícia Universidade Católica, Rua Marquês de São Vicente, 225, 22453 Rio de Janeiro.
President: Prof. L. Bevilacqua
Representative: Prof. L. Bevilacqua

Bulgaria (1969)
The Bulgarian National Committee for Theoretical and Applied Mechanics at the Bulgarian Academy of Sciences, "Acad. G. Bonchev" str. bl. 8, 1113 Sofia
President: Acad. G. Brankov
Vice-President: Prof. D. Kolarov
Secretary: Assist. Prof. S. Radev
Representatives: Acad. G. Brankov, Prof. D. Kolarov
Canada (1963)
The National Research Council of Canada, Ottawa, K1A OR6
President: Dr. L. Kerwin
Chairman of Canadian National Committee for IUTAM: Prof. B. Tabarrok
Representatives: Prof. F.P.J. Rimrott, Prof. B. Tabarrok, Prof. K.W. Neale, Dr. S.R. Swanson

China (1980)
The Chinese Society of Theoretical and Applied Mechanics, Zhong Guancun Beijing
Chairman: Prof. Zheng Zemin
Representative: Prof. Lin Tongji, Prof. Qian Lingxi, Prof. Wang Ren, Prof. Zheng Zemin
The Society of Theoretical and Applied Mechanics, 130 Kee-Lung Rd., Section 3, Taipei, Taiwan 107
President: Prof. T.Y. Wung
Representative: Prof. F.T. Sun

Czechoslovakia (1949)
The Czechoslovak Committee of Theoretical and Applied Mechanics of the Czechoslovak Academy of Sciences, Podbáská 13, 16612 Prague 6
President: Prof. V. Klupka
Secretary: Dr. A.G. Curev
Representatives: Prof. J. Nemec, Prof. V. Klupka

Denmark (1949)
The Royal Danish Academy of Sciences and Letters (Det Kongelige Danske Videnskabernes Selskab), H.C. Andersens Boulevard 35, DK-1553 Copenhagen V.
President: Prof. Jens Lindhard
Secretary: Prof. Dr. Thor A. Bak
Representatives: Prof. E.B. Hansen, Prof. P.T. Pedersen

Egypt (1976)
Academy of Scientific Research & Technology, 101, Kasr El-Eini St., Cairo
Chairman: Prof. R.H. Dawoud
Secretary: Dr. M.A.A. Nassar
Representative: Prof. R.H. Dawoud

Finland (1952)
The Finnish National Committee on Mechanics, Helsinki University of Technology, SF-02150 Espoo 15
Chairman: Prof. Matti A. Ranta
Secretary: Prof. M.J. Mikkola
Representatives: Prof. M.J. Mikkola, Prof. Matti A. Ranta

France (1949)
Comité National Français de Mécanique, Académie des Sciences, 23, quai Conti, F-75006 Paris, France
President: Prof. Paul Germain
Secretary: G. Duvaut
Representatives: Prof. P. Germain, Prof. G. Iooss, Prof. G. Lespinard, Prof. M. Roseau

Deutsches Komitee für Mechanik, Institut B für Mechanik, Universität Stuttgart, Pfaffenwaldring 9, D-7000 Stuttgart 80
Chairman: Prof. Th. Lehmann
Representatives: Prof. K. Gersten, Prof. H. Hornung, Prof. H. Lippmann, Prof. W. Schiehlen

German Dem. Rep., (GDR) (1973)
Academy of Sciences of the GDR, Otto-Nuschke-Strasse 22/23, DDR-1080 Berlin
President: Prof. Dr. med. W. Scheler
Secretary General: Prof. Dr. habil. C. Grote
Representatives: Prof. H. Günther, vacant

Greece (1979)
Hellenic Society for Theoretical and Applied Mechanics, National Technical University of Athens, GR-10682 Athens
President: Prof. A.N. Kounadis
Secretary: Prof. S. Pal’ipetis
Representative: Prof. A.N. Kounadis

Hungary (1948)
Hungarian National Committee for IUTAM, Department of Mechanics, Technical University Budapest, Müegyetem rkp. 3, H-1521 Budapest
President: Prof. János Szabó
Secretary: Prof. S. Kaiszky
Representative: Prof. S. Kaiszky

India (1950)
The Indian National Committee for Theoretical and Applied Mechanics of the Indian National Science Academy, Bahadur Shah Zafar Marg, New Delhi-110 002
Chairman: Prof. N.C. Nigam
Secretary: Dr. H.S. Mukunda
Representatives: Prof. H.S. Mukunda, Prof. R. Narasimha, Prof. N.C. Nigam
Ireland (1984)
Irish National Committee for Theoretical and Applied Mechanics, Royal Irish Academy, 19 Dawson Street, Dublin 2
Chairman: Prof. M. A. Hayes
Secretary: Dr. R. Bates
Representative: Prof. M. A. Hayes

Israel (1950)
The Israel Society for Theoretical and Applied Mechanics, Faculty of Engineering, Tel Aviv University, Tel Aviv, Israel
President: Prof. Z. Hashin
Representatives: Prof. Z. Hashin, Prof. Sol R. Bodner

Italy (1949)
President: Prof. Giulio Maier
Secretary: Prof. Carlo Cercignani
Representatives: Prof. G. Bianchi, Prof. D. Galletto, Prof. C. Cercignani, Prof. P. Villaggio

Japan (1951)
The National Committee for Theoretical and Applied Mechanics of the Science Council of Japan, 22-34 Roppongi 7-chome, Minato-ku, Tokyo 106
President: Prof. Isao Imai
Representatives: Prof. I. Imai, Prof. I. Tani, Prof. Y. Yamamoto, Prof. K. Kawata

Netherlands (1952)
Department for Mechanics of the Royal Institute of Engineers, Secr. Technische Hogeschool Eindhoven, WH 0.130, Postbus 513, NL-5600 MB Eindhoven
President: Prof. J. Blauwendraad
Secretary: Dr. C.M. Menken
Representatives: Prof. J.F. Besseling, Prof. J. Blauwendraad, Prof. L. van Wijngaarden

New Zealand (1979)
The Royal Society of New Zealand, Private Bag, Wellington
President: Dr. T. Hatheron
Executive Officer: Mr. B.J.G. Gillies
Representative: Prof. I.F. Collins

Norway (1949)
The National Committee on Theoretical and Applied Mechanics of the Norwegian Academy of Sciences and Letters, Dept. of Mathematics, University of Bergen, N-5000 Bergen
President: Prof. M.S. Espedal
Representative: Prof. M.S. Espedal

Poland (1952)
Committee for Mechanics of the Polish Academy of Sciences, Swietokrzyska 21, 00-049 Warsaw
President: Prof. W. Szczepinski
Representatives: Prof. W. Szczepinski, vacant

Portugal (1968)
The Portuguese National Committee for Theoretical and Applied Mechanics, Instituto Superior Técnico, Avenida Rovisco Pais, 1096 Lisboa Codex
Chairman: Prof. E.R. de Arantes e Oliveira
Vice-Presidents: Prof. A. Ribeiro Gomes, Prof. J. Novaes Barbosa
Secretary: Prof. A. Tovar de Lemos
Representative: Prof. E.R. de Arantes e Oliveira

Roumania (1956)
Adhering organization: vacant
Representative: vacant

Spain (1950)
Representative: Dr. M. Bautista Aranda

Sweden (1950)
Swedish National Committee for Mechanics, The Royal Institute of Technology, S-10044 Stockholm
President: Prof. J. Carlsson
Secretary: Dr. B. Sundström
Representatives: Prof. S. Berndt, Prof. J. Hult, Prof. J. Carlsson

Switzerland (1950)
Board of the Federal Institutes of Technology (Eidgenössische Technische Hochschulen Zürich und Lausanne) ETH-Zentrum, CH-8092 Zürich
Chairman: Prof. Maurice Cosandey
Secretary: Dr. Johannes Fulda
Representatives: Prof. I.L. Ryhming, Prof. M. Sayir
Turkey (1977)
Turkish National Committee of Theoretical and Applied Mechanics, Istanbul Teknik Üniversitesi, Fen-Edebiyat Fakültesi, I.T.U. Kampüsü, Maslak, Istanbul
President: Prof. Murat Dikmen
Secretary-General: Prof. Esin Ergintan Inan
Representative: Prof. Murat Dikmen

UK (1948)
The Royal Society, 6 Carlton House Terrace, London SW 1Y 5AG
Chairman of British National Committee for Theoretical and Applied Mechanics: Prof. J.T. Stuart
Executive Secretary of the Royal Society: Dr. P.T. Warren
Representatives: Prof. T.B. Benjamin, Sir James Lighthill, Prof. J.T. Stuart, Dr. A.A. Wells, Prof. J.R. Willis

USA (1949)
The U.S. National Committee on Theoretical and Applied Mechanics, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C., 20418
Chairman: Dr. H.N. Abramson
Vice-Chairman: Prof. A. Acrivos
Secretary: Prof. Philip G. Hodge, Jr.
Representatives: Prof. A. Acrivos, Prof. J.W. Dally, Prof. S.H. Davis, Prof. D.C. Drucker, Prof. P.G. Hodge Jr.

USSR (1956)
USSR National Committee on Theoretical and Applied Mechanics, Prospekt Vernadskogo 101, Moscow 117526
President: Prof. I.F. Obraztsov
Secretary: Prof. G.K. Mikhailov
Representatives: Prof. O.M. Belotserkovsky, Prof. G.G. Chernyi, Prof. A.Yu. Ishlinsky, Prof. G.K. Mikhailov, Prof. I.F. Obraztsov

Yugoslavia (1952)
Yugoslav Society of Mechanics, Kneza Miloša 9/1, 11000 Beograd
President: Prof. B. Vujanović
Secretary: Prof. D. Ružić
Representative: Prof. D. Ružić

INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

Affiliated organizations

CISM (1970)
International Centre for Mechanical Sciences, Palazzo del Toro, Piazza Garibaldi, Udine, Italy
President: Avv. Vinicio Turello
Secretary-General: Prof. G. Bianchi
Rectors: Prof. P. Brousse, Prof. S. Kaliszky, Prof. H. Lippmann
Representative: Prof. G. Bianchi
Representative of IUTAM in CISM: Prof. H. Lippmann

ICHMT (1972)
International Centre for Heat and Mass Transfer, Beograd, P.O. Box 522, Yugoslavia
President: Prof. W. Rohsenow
Secretary-General: Prof. N. Afgan
Representative: Prof. N. Afgan
Representative of IUTAM in ICHMT: Prof. I. I. Sedov

ICR (1974)
International Committee on Rheology, Prof. N.W. Tschoegl, Division of Chemistry and Chemical Engineering 205-41, California Institute of Technology, Pasadena, California 91125, USA
Chairman: Prof. B. Mena
Secretary: Prof. N. Tschoegl
Representative: Dr. J.R.A. Pearson
Representative of IUTAM in ICR: Prof. F.I. Niordson

Euromech (1978)
European Mechanics Committee, Prof. Dr.-Ing. H.H. Fernholz, Hermann-Föttinger-Institut für Thermo- und Fluidodynamik, Technische Universität, Strasse des 17. Juni 135, D-1000 Berlin 12
Chairman: Prof. G.K. Batchelor
Secretary: Prof. H.H. Fernholz
Representative: Prof. G.K. Batchelor
Representative of IUTAM in Euromech: Prof. L. van Wijngaarden

IAVSD (1978)
International Association for Vehicle System Dynamics, Prof. H.B. Pacejka, Delft University of Technology, Vehicle Research Laboratory, P.O. Box 5038, 2600 GA Delft, The Netherlands
President: Dr. A.H. Wickens
Secretary: Prof. H.B. Pacejka
Representative: Prof. H.B. Pacejka
Representative of IUTAM in IAVSD: Prof. W. Schiehlen
ISIMM (1978)
International Society for the Interaction of Mechanics and Mathematics, Prof. E. Kröner, Institute of Theoretical and Applied Physics, University of Stuttgart, Pfaffenwaldring 57, D-7000 Stuttgart 80, FRG
President: Prof. E. Kröner
Vice-President: Prof. G. Barenblatt
Secretary: Prof. W. Wendland
Representative: Prof. W. T. Koiter
Representative of IUTAM in ISIMM: Prof. P. Germain

ICF (1978)
International Congress on Fracture, Prof. T. Yokobori, Institute for Fracture and Safety, Doya Building 802, 17-18 I-Chome Kamisugi, Sendai 980, Japan
Founder President: Prof. T. Yokobori
President: Prof. D. Francois
Secretary-General: Prof. T. Yokobori
Representative: Prof. T. Yokobori
Representative of IUTAM in ICF: Prof. J. Hult

ICM (1982)
International Congress on Mechanical Behaviour of Materials, Professor Janne Carlsson, Dept. Strength of Materials and Solid Mechanics, Royal Institute of Technology, S-100 44 Stockholm, Sweden
President: Prof. J. Carlsson
Secretary: Dr. N. G. Ohlson
Representative: Prof. K. Miller
Representative of IUTAM in ICM: Prof. D. C. Drucker

AFMC (1982)
Asian Fluid Mechanics Committee, Professor T.C. Lin, Institute of Mechanics, Chinese Academy of Sciences, Beijing 100080, China
President: Prof. H. Sato
Representative: vacant
Representative of IUTAM in AFMC: Prof. I. Imai

IACM (1984)
International Association for Computational Mechanics, Prof. R.H. Gallagher, Worcester Polytechnic Institute, Worcester, MA 01609, USA
Secretary: Prof. R.H. Gallagher
Representative: vacant
Representative of IUTAM in IACM: Prof. E.R. de Arantes e Oliveira

Members of the General Assembly

Prof. A. Acirivos (USA)
§ Prof. N. Afgan (Yugoslavia)
Prof. E.R. de Arantes e Oliveira (Portugal)
*§ Prof. G. Batchelor (UK)
Dr. M. Bautista Aranda (Spain)
Prof. O.M. Belotserkovsky (USSR)
Prof. T.B. Benjamin (UK)
Prof. S. Berndt (Sweden)
Prof. J.F. Besseling (Netherlands)
Prof. L. Bevilacqua (Brazil)
*§ Prof. G. Bianchi (Italy)
Prof. J. Blauwendaal (Netherlands)
Prof. S.R. Bodner (Israel)
* Prof. B.A. Boley (USA)
Prof. G. Brankov (Bulgaria)
Prof. J. Carlsson (Sweden)
Prof. C. Cercignani (Italy)
Prof. G.G. Chernyi (USSR)
Prof. I.F. Collins (New Zealand)
Prof. J.W. Dally (USA)
Prof. H. Davis (USA)
Prof. R.H. Dawoud (Egypt)
Prof. M. Dikmen (Turkey)
Prof. D.C. Drucker (USA)
Prof. M.S. Espedal (Norway)
* Prof. W. Fiszdon (Poland)
Prof. D. Galletto (Italy)
Prof. P. Germain (France)
Prof. K. Gersten (FRG)
* Prof. S. Goldstein (USA)
Dr. M. Gradowczky (Argentina)
Prof. H. Günther (GDR)
Prof. E. Hansen (Denmark)
Prof. Z. Hashin (Israel)
Prof. M.A. Hayes (Ireland)
Prof. P.G. Hodge, Jr. (USA)
* Prof. N.J. Hoff (USA)
Prof. H. Hornung (FRG)
* Prof. J. Hult (Sweden)
Prof. I. Imai (Japan)
Prof. G. Iooss (France)
Prof. A. Yu. Ishlinsky (USSR)
Prof. P. Janssens (Belgium)
Prof. S. Kaliński (Poland)
Prof. K. Kawata (Japan)
Prof. J. Keatens (Belgium)
* Prof. W. T. Koiter (Netherlands)
Prof. D. Kolarov (Bulgaria)
Prof. A.N. Kounadis (Greece)
Prof. V. Krupa (CSSR)
* Prof. Y.H. Ku (USA)
Prof. G. Lepšin (Latvia)
Sir James Lighthill (UK)
Prof. T.C. Lin (China)
Prof. H. Lipmann (FRG)
Prof. R. Mertens (Belgium)
Prof. G.K. Mikhailov (USSR)
Prof. M.J. Mikkola (Finland)
*§ Prof. K. Miller (UK)
Prof. D.H. Mukunda (India)
Prof. R. Narasimha (India)
Prof. K.W. Neale (Canada)
Prof. J. Nemec (CSSR)
* Prof. N.C. Nigam (India)
* Prof. F.I. Nordstrand (Denmark)
Prof. I.M. Obraztsov (USSR)
Prof. L. Qian (China)
*§ Prof. H.B. Pacejka (Netherlands)
§ Dr. I.R.A. Pearson (UK)
Prof. P.T. Pedersen (Denmark)
Prof. M.A. Ranta (Finland)
Prof. F.P.J. Rimrott (Canada)
Prof. M. Roseau (France)
Prof. G. Rozvany (Australia)
Prof. D. Ružičić (Yugoslavia)
Prof. L.L. Ryhming (Switzerland)
Prof. M. Sayir (Switzerland)
* Prof. W. Schiehlen (FRG)
* Prof. L.I. Sedov (USSR)
Prof. J.T. Stuart (UK)
Prof. F.T. Sun (China)

§ Representing Affiliated Organization. §§ Representing also Affiliated Organization.
Members of the Symposia Panels

The Bureau of IUTAM in 1977 set up two panels charged which the duty of scanning proposals made for IUTAM Symposia on the fields of fluid and solid mechanics. The following members have been elected in 1984 for the period up to and including the 1988 meeting of the General Assembly:

- **Fluid Mechanics**
  - Prof. J. K. M. Moffatt (UK), Chairman
  - Prof. A. Acrivos (USA), Chair
  - Prof. J. P. Guiraud (France)
  - Prof. I. Imai (Japan)
  - Prof. O. Narasimha (India)
- **Solid Mechanics**
  - Prof. S. H. Crandall (USA), Chair
  - Prof. J. L. Salençon (France)
  - Prof. H. Lippmann (FRG)
  - Prof. G. Maior (Italy)
  - Prof. M. Ṣyczkowski (Poland)

Reports of Symposia held in 1986

1.


**Scientific Committee**

- G. I. Barenblatt (USSR)
- G. K. Batchelor (UK), Chairman
- P. Germain (France)
- M. J. Landahl (Sweden)
- P. G. Saffman (USA)

A. H. Shapiro (USA)
T. Tatsumi (Japan)
J. S. Turner (Australia)
M. D. Van Dyke (USA)

**Short summary of scientific progress achieved**

G. I. Taylor was born on 7 March 1886, and the Symposium was in part a commemoration of the 100th anniversary of the birth of one of the greatest physical scientists of this century. Taylor had a distinctive style of research, characterized by the deployment of physical insight, carefully designed experiments, extreme simplicity and economy of mathematical analysis, and a preference for thinking in concrete terms, and this enabled him to make contributions to the mechanics of fluids and solids of outstanding importance. The primary purpose of the Symposium was to survey current developments in fluid mechanics and to consider whether this style of research – the “spirit of G. I. Taylor” – is still of value in the conditions of today and is still in use. The scientific scope of the meeting was thus very wide, and a larger number of participants than is customary at IUTAM symposia was appropriate. In the event, so many qualified fluid dynamicists wished to attend that the number of participants could not be kept below 200.

The distribution of programme time over the different branches of fluid mechanics was not planned in advance but was allowed to emerge from the
acceptance of offers of lectures expected to be of high quality. Broad topics which were prominent in the accepted lectures and poster displays were as follows: instability of interfaces moving through a Hele-Shaw cell or porous medium and various types of “fingering”, deformation and break-up of droplets in a moving fluid, hydrodynamic stability and nonlinear effects in particular, the development of chaotic motion of unstable systems, the dynamics of vortices in two dimensions, three-dimensional vortex structures, convection in rotating systems, large-scale dynamics of the ocean and atmosphere, turbulent shear flow, turbulent dispersion and entrainment and mixing, fluid-mechanical problems in geology, shock waves, aerodynamic generation of sound, nonlinear surface waves, and wave loading on fixed structures. There were also many interesting lectures and posters on new and unconventional topics. Most speakers addressed themselves to non-specialists, and the week-long programme was consequently very informative.

The discussion in the closing session made it clear that the spirit of G. I. Taylor is regarded as having a definite role in the research of today. To be aware of this distinctive style of research is an advantage, even though one may not be able to match Taylor’s insight and creativity.

Future generations of fluid dynamicists are also likely to benefit from occasional conferences of this type in which developments over the whole field are reviewed.

Countries represented and number of participants

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Participants</th>
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<td>Australia</td>
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<td>Sweden</td>
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<td>USSR</td>
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</table>

Proceedings of the Symposium

A loose-leaf book containing the scientific and social programmes, abstracts of the 62 lectures and 75 poster displays and demonstrations, and names and addresses of all participants was given to each participant at the Symposium. The texts of most of the longer lectures will be published in a special Symposium volume of the Journal of Fluid Mechanics to appear near the end of 1986.

Financial Support

Generous support of the Symposium was provided by the following institutions:

IUTAM, National Science Foundation (USA), The Royal Society, Trinity College, Cambridge and University of Cambridge.

Free circulation of scientists

The recommendations of the ICSU Committee on Free Circulation of Scientists were adhered to. There were no problems in obtaining visas for entry to the UK, although delays in the UK Consulate in Dusseldorf might have prevented two Polish scientists from arriving on time but for intervention by the Royal Society. There was more difficulty over exit visas, which is also within the scope of the Committee, and three scientists from USSR (including a member of the Scientific Committee for the Symposium), one from Poland and one from DDR responded to invitations to participate but were not able to leave their countries.

Monday morning (Chairman: H. K. Moffatt)

Welcoming addresses by the Vice-Chancellor of the University of Cambridge and the President of the International Union of Theoretical and Applied Mechanics.


A. Aref: The numerical experiment in fluid mechanics.

W.H. Munk: Acoustic monitoring of ocean gyres.

H. Hasegawa: Reduction of fluid dynamical problems to those of other media.

P.N. Joubert: The development of winged keels for 12 m yachts.

H. W. Emmons: The transient ceiling jet.

Monday afternoon (Chairman: G. M. Homsy)

P.G. Saffman: Viscous fingering in Hele-Shaw cells.

T. Maxworthy: Nonlinear interfacial instability and multi-bubble formation in a Hele-Shaw cell.

S.H. Davis: On the stability behaviour in systems with moving contact lines.

S.D. Howison: Hele-Shaw flows with free surfaces.

D. Weih: Hydrodynamics of shaped charge jets.


Tuesday morning (Chairman: L. van Wijngaarden)

L.G. Leal: Experimental studies of droplet deformation and breakup in a “four-roller” apparatus.

B.J. Cantwell: Starting vortex formation in viscous jets.


A.E. Perry: Analytical solutions of three-dimensional separation bubbles.

S.J. Cowley: On unsteady three-dimensional boundary-layer separation.


C.-S. Yih: Thermally induced movement of a spherical liquid inclusion in a soluble solid.
E. Koschmieder: The onset of Benard convection.

Tuesday afternoon (Chairman: O.S. Ryzhov)
C. Basdevant: Experimental and numerical study of two-dimensional flows.
I. M. Yavorskaya: Taylor vortices in spherical Couette flow.
A. T. Patera: Stability and resonance in grooved-channel flows.
First session of posters and demonstrations.

Wednesday morning (Chairman: R. M. Nerem)
A. M. Obukhov: Simple models of convection and turbulence with laboratory experiments.
J. P. Gollub: Hydrodynamic flows with multiple spatial periodicities.
G. Iooss: Secondary bifurcations of the Taylor vortices into wavy flow or outflow boundaries.
T. Tagg: Instabilities and chaotic flow in the Taylor-Couette system.
W. V. R. Malkus: Stability bounds on turbulent Poiseuille flow.
S. A. Orszag: The role of models and modelling in fluid dynamics.
H. K. Moffatt: Random vortex sheets and coherent helical structures.

Wednesday afternoon (Chairman: C. W. Van Atta)
A. K. M. F. Hussain: Coherent structures and turbulence.
K. Sreenivasan: The fractal facets of turbulent flows.
C. M. Ho: Interactions between large structures and small eddies in a plane jet.
H. Tennekes: Toward the limits of predictability.
T. Tatsumi: The factorized cumulant expansion and the phenomenological theory of turbulence.
R. J. Donnelly: Quantum turbulence.

Thursday morning (Chairman: C. J. R. Garrett)
J. S. Turner: Turbulent entrainment, and applications in geophysics.
P. B. Rhines: Vorticity dynamics and geophysical circulations.
W. Schneider: Flows induced by jets.
M. T. Landahl: The Prandtl controversy - attempt at a resolution.
O. M. Phillips: Turbulent boundary mixing and induced internal circulations in a model estuary.
D. J. Tritton: Turbulent free shear layers in a rotating fluid.
E. J. Hopfinger: Interactions of geostrophic vortices, motivated by "hetons".

Thursday afternoon (Chairman: R. Hide)
P. H. Alfredsson: How to reduce mixing at a density interface.
V. Y. Liapidevskii: Waves and mixing at stable density interfaces.
D. L. Boyer: Rotating stratified flow past topography.
J. Toomre: Convection in a rotating spherical shell with a radial gravity field.

F. H. Busse: Finite amplitude convection in rotating systems with planetary applications.
Second session of posters and demonstrations.

Friday morning (Chairman: J. W. Miles)
H. E. Huppert: The intrusion of fluid mechanics into geology.
T. Y. Wu: Generation of solitary waves by moving disturbances.
S. Leibovich: Bending waves on inviscid columnar vortices.
D. G. Crighton: The Taylor internal structure of weak shock waves.
J. E. F. Howes Williams: On the scattering of evanescent waves into sound.
T. Kambe: Acoustic emissions by vortex motions.
T. I. Pedley: Vortex waves in unsteady channel flows.

Friday afternoon (Chairman: M. T. Landahl)
M. J. Lighthill: Waves and the hydrodynamic loading of off-shore structures.
M. S. Longuet-Higgins: Eulerian and Lagrangian wave measurements.
M. L. Banner: Oscillatory properties of spilling zones of quasi-steady breaking waves.
S. Lichter: Nonlinear and chaotic behaviour of cross waves.
Discussion of the question "Is the spirit of G. I. Taylor still alive and still of value?" introduced by J. C. R. Hunt, R. W. Stewart and M. D. Van Dyke.

G. K. Batchelor

2.


Scientific Committee
F. T. Smith (UK), Chairman
B. Fornberg (USA)
K. Gersten (FRG)
Sir James Lighthill (UK)
R. E. Melnik (USA)
M. Nishioka (Japan)
O. S. Ryzhov (USSR)
V. V. Sychev (USSR)
A. I. Van de Vooren (The Netherlands)

Short summary of scientific progress achieved
The proposed theme and scope of the Symposium were designed to help bring about the necessary interaction between experimentalists, computationalists and theoreticians for the furthering of understanding in this challenging subject. The talks and discussions were aimed at, and appeared to succeed to a large extent in, representing the very wide range and application of separating-flow phenomena, which often substantially affect the whole of fluid dynamics at medium to large Reynolds numbers, covering in particular both
laminar and turbulent flow, steady or unsteady, two- or three-dimensional, small- or large-scale, incompressible or compressible, external or internal, from the experimental, computational and theoretical standpoint.

As intended, about 80 scientists participated in the Symposium, with about 25 talks being delivered, to which poster sessions with 8 contributions were added. All the speakers and poster presenters were selected by the scientific committee, although two late replacements of speakers were required. Fruitful discussions, well led by the sessions chairmen, took place formally after each talk and after the poster sessions and informally on other occasions including the social events.

The proceedings of the Symposium appeared to reflect much of the current state of experimental, computational and theoretical work and progress in boundary-layer separation. It is believed that they provided also the basis of ideas, questions and stimulation for all participants, in addition to presenting major recent developments and to emphasizing clearly the theoretical and practical importance of unsteadiness and three-dimensionality in particular.

Countries represented and number of participants

<table>
<thead>
<tr>
<th>Country</th>
<th>Participants</th>
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<td>Australia</td>
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</tbody>
</table>

Last-minute withdrawals were made by other participants from the above countries as well as from China, India, Israel, Italy and Norway.

Publication of Proceedings
The proceedings are to be published by Springer-Verlag, with Professor Susan Brown and Professor F. T. Smith as editors, the publication date to be about the middle of 1987.

Financial Support
International Union of Theoretical and Applied Mechanics (IUTAM)
University College London

SCIENTIFIC PROGRAMME

Tuesday, 26 August
Session 1 (Chairman: N. Riley)
Fornberg, B.: Steady viscous flow past a cylinder and a sphere at high Reynolds numbers.
LeBalleur, J. C. and Girodroux-Lavigne, P.: Prediction of buffeting and calculation of unsteady boundary layer separation over airfoils.

Bogdonoff, S. M.: Observation of the three-dimensional “separation” in shock wave turbulent boundary layer interactions.
Kiya, M.: Structure of flow in leading-edge separation bubbles
Van Dommelen, L. L.: Computing of unsteady separation using Lagrangian procedures.

Session 2 (Chairman: J. H. Merkin)
Sychev, V. V.: On turbulent boundary-layer separation.
Dovgal, A. V., Kozlov, V. V. and Simonov, O. A.: Experiments on hydrodynamical instability of boundary layers with separation.
Drazin, P. G.: Separation of flow in a two-dimensional channel.

Wednesday, 27 August
Session 3 (Chairman: T. C. Adamson)
Lock, R. C.: Velocity profiles for two dimensional turbulent separated flows.
Rothmayer, A. P.: A new interacting boundary-layer formulation for flows past bluff bodies.

Session 4 (Chairman: K. Gersten)
Neiland, V. J.: Some features of the transcritical boundary layer interaction and separation.

Thursday, 28 August
Session 5 (Chairman: H. M. Badr)
Duck, P. W.: Unsteady triple-deck flows leading to instabilities.
Kozlov, V. V.: Interrelation of the flow separation, stability and coherent structures.
Cebeci, T., Kaups, K. and Khattab, A. A.: Separation and reattachment near the leading edge of a thin wing.
Smith, F. T.: Separating flow: small-scale, large-scale, and nonlinear unsteady effects.

Session 6 (Chairman: A. I. Van de Vooren)
Fiddes, S. P. and Smith, J. H. B.: Asymptotic separation from slender cones at incidence.

Poster Session (discussions chaired by T. J. Pedley)
Bippes, H.: Separation patterns on a hemisphere cylinder at incidence.
Chanetz, B.: Experimental investigation of three-dimensional separation on ellipsoid bodies at incidence.
Deriat, E. and Guiraud, J.-P.: Asymptotic theory of high Reynolds number turbulent flows according to the k-e model of turbulence.
Mikkelsen, H. E.: Dynamic interaction between dune shape, flow field and sediment motion.
Page, M.: Low-Rossby-number flow past a circular cylinder in a rotating frame.

Closing of The Symposium
Sir James Lighthill: Closing remarks. F. T. Smith

3.

IUTAM Symposium on Thermomechanical Couplings in Solids, Jean Mandel Memorial Symposium, 1–5 September 1986, Paris, France

Scientific Committee
H. D. Bui (France), Chairman
J. Carlsson (Sweden)
P. Germain (France)
G. Hennig (G.D.R.)
F. A. Leckie (U.S.A.)
Th. Lehmann (F.R.G.)
P. Perzyna (Poland)
A. R. S. Porter (U.K.)

Short summary of scientific progress achieved
The Symposium was devoted to Thermomechanical Couplings in Solids, including essentially the following aspects:
- General conception thermodynamics of irreversible processes, new theoretical methods in thermoelasticity and thermoelastoviscoelasticity;
- Phase transformations, thermal ratcheting, quenching process, thermomechanical couplings induced by fracture, fatigue phenomenon, applications to welding operations and other industrial processes;
- Soil and rock mechanics, composites, polymers and woods;
- Experimental technics based on infrared thermography;
- Numerical analysis on thermomechnical couplings.

The Symposium was held at the Ecole Nationale Supérieure des Mines de Paris. Fourteen Sessions have been scheduled for twentyseven papers and ten short communications. A booklet of abstracts was available to participants.

Countries represented and number of participants
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<td>Canada</td>
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<td>Total</td>
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</table>

Publication of Proceedings
The Proceedings book of the Symposium should be available seven months after the Symposium by North-Holland Publishers Co, Amsterdam.

Financial Support
Apart from the allocation of IUTAM, financial support of the Symposium has been provided by two French Institutions:
- Centre National de la Recherche Scientifique, Paris;
- Electricité de France - Paris.

Scientific Programme

Monday, 1 September
Session I – Thermodynamics (Chairman: P. Germain)
J. Müllcr: Simulation of thermomechanical properties of materials with shape memory.
J. Kestin: Metal plasticity as a problem in thermodynamics.
C. Huet: A new approach for the thermodynamics of materials with delayed response.

Session II – Heterogeneous media (Chairman: Th. Lehmann)
G. J. Dvorak: Thermal deformation of elastic-plastic composite materials.
M. Buisson and A. Molinari: On thermoelastic damping in heterogeneous material.

Session III – Infrared thermography (Chairman: P. Chadwick)
J. L. Lataille: Infrared technique in solid polymers testing at high strain rates. Application to the viscoelasticity of polycarbonate.
A. Chrysochoos: The heat evolved during an elastoplastic transformation at finite strain.
M. P. Luong: A film on infrared observations of Fracture and Damage.

Tuesday, 2 September
Session IV - Fracture and Plasticity (Chairman: G. Herrmann)
J.R. Barber and Maria Comminou: Thermoelastic effects in fracture.
P. Perzyna: Influence of thermomechanical coupling on dynamic fracture of ductile solids.
J. Lubliner: Non-isothermal generalized plasticity.
P. Berest and G. Rousset: Point source of heat in an elastoplastic or viscoplastic medium.

Session V - Composites (Chairman: G. J. Dvorak)
M. Taya: Modelling of thermal cycling damage in metal matrix composites.
C. Huet: Thermo-hygro-mechanical couplings in the technology and rheological behaviours of wood.

Session VI - Cyclic loads (Chairman: P. Perzyna)
F. D. Fischer, F. G. Rammerstorfer, F. Bauer and H. Böhm: Unexpected phenomena in cyclic high-temperature plasticity.
J. F. Jullette, M. Cousin and S. Ignacolli: Metallic structure under mechanical and cyclic thermal loading.

Wednesday, 3 September
Session VIII - Damage (Chairman: E. T. Onat)
A. C. F. Cocks and F. A. Leckie: The thermodynamics of creep damage.
J. Fan: On a thermomechanical constitutive theory and its application to CDM, Fracture, Fatigue and Composite.

Session VIII - Phase Transformation (Chairman: J. Keatin)
J. Gril: An uniaxial model for hygro-thermo-mechanical loading of wood.

Thursday, 4 September
Session IX - Large Deformation (Chairman: E. H. Lee)
Th. Lehmann: Thermomechanical coupling in large deformations particularly in bifurcation problems.
B. Raniecki: Invariance relations in coupled thermoplasticity at finite strain.

Session X - Thermoelasticity (Chairman: I. Müller)
G. A. Francfort: Asymptotic transient thermoelastic behaviour of bodies with micro-structure or small thickness.
Short summary of scientific progress achieved
The Symposium was planned as an continuation of the IUTAM-IUPAP Symposium on the Mechanical Behaviour of Electromagnetic Solid Continua held in 1983, and its topic included magnetomechanics of structural components and superconducting magnets, wave propagation, application of eddy current to a flaw detection, acoustoelectricity and piezoelectricity, and new numerical schemes for eddy current and magnetic field analysis. There was a good balance of fundamental theories and practical applications. Throughout the symposium a rapid advance of numerical methods was noticed, and they will be effective for further development of device technology and wave propagation in magnetic fields.

Countries represented and number of participants
Canada ........................................... 1 Poland ........................................ 10
Czechoslovakia ................................ 1 Singapore ........................................ 1
France .......................................... 3 Sweden ........................................ 2
Germany (West) ................................ 3 Turkey ........................................ 1
Ireland .......................................... 1 United Kingdom ................................ 2
Japan ............................................ 51 USA ........................................... 10
The Netherlands ................................ 3 USSR ........................................ 1
Total ........................................... 90

Publication of Proceedings
The proceedings are due to appear in the spring of 1987 and will be published by North-Holland Publishing Co., Amsterdam (Editors Y. Yamamoto and K. Miya).

Financial Support
Financial support of the Symposium has been generously provided by the International Union of Theoretical and Applied Mechanics and the following institutions:
Commemorative Association for the Japan World Exposition,
Japan Society for the Promotion of Science,
Kajima Foundation,
Mitsubishi Foundation.

SCIENTIFIC PROGRAMME

Monday, 13 October
Opening by Conference Chairman.
General lecture (Presiding: K. Miya)
F.C. Moon: Chaos and unpredictability in magnetic and magneto-mechanical systems.

Session I - Buckling (Presiding: F.C. Moon and J. Tani)
A.A.F. van de Ven: Magneto-elastic buckling of ferromagnetic or superconducting structures.

H. Ohtsubu and T. Otani: Buckling analysis of the finite ferromagnetic plate in the uniform magnetic field.
P.H. van Lieshout and A.A.F. van de Ven: A variational principle for magneto-elastic buckling.
A. Tylikowski: Dynamic stability of a plate in a transverse magnetic field.
S.A. Ambartsumian and M.V. Belubekian: Some problems of the bending and vibrations of piezoelectric ceramic plates.

Session II - Wave (Presiding: P.J. Chen and E. Matsumoto)
J. Stefanik: Magneto-elastic waves due to a linear source.
E. Matsumoto and S. Motogi: Acoustoelastic effects in soft ferromagnets.
M.F. McCarthy: Acceleration waves in saturated elastic ferromagnets.
S. Dost and P.G. Glockner: Propagation of waves dielectrics with polarization inertia.

Session III - Electric material (Presiding: J. Lenz and S. Minagawa)
Y. Ersoy: A constitutive theory for conduction thermo-electrical materials.
H.T. Savage and C. Adler: Bifurcation phenomena in magnetoelastic amorphous materials.
J.P. Nowacki: Lattice defects in dielectrics with polarization gradient.
B. Maruszewski: Heat and charge carrier relaxation in deformable semiconductors.
T. Honma and Y. Takana: Regular boundary element solutions to convective diffusion equation by method of division into subregions.

Tuesday, 14 October
General lecture (Presiding: A. Bossavit)
C.W. Trowbridge: Recent developments in the computation of eddy current effects.

Session IV - Eddy current (Presiding: T. Honma and C.W. Trowbridge)
C.R.I. Emson: Results from the 3-D eddy current package CARMEN.
F. Matsuoka: Calculation of 3-D eddy current by FEM-BEM coupling method.
A. Bossavit: On "mixed elements" for the computation of eddy-currents in a system of moving conductors.
D.W. Weisskenburger: Some recent studies of the magnetomechanics of magnetic fusion reactor components.
Y. Akahoshi, S. Yoshimura and G. Yagawa: Finite element analysis of alternate electric current distribution around three dimensional crack.
General lecture (Presiding: R. K. T. Hsieh)
G. M. Maugin, M. Sabir and P. Chambon: Coupled magnetomechanical hysteresis effects: Application to nondestructive testing.

Session V - Interaction (Presiding: B. Maruszewski and K. Hara)
D. Rogula: Material continua of identical particles and their interaction with electromagnetic field.
J. Lenz: Dynamical effects in elastically-deformable, magnetically saturated media with cubic structure.
H. F. Tiersten: On the interaction of the electromagnetic field with deformable solid continua.
C. Rymarz: Filtrated models of microstructural medium with electromagnetomechanical fields.

Session VI - Magnetic fracture (Presiding: H. Yanagi and A. A. F. van de Ven)

Session VII - Superconducting magnet (Presiding: E. S. Bobrow and H. Ogihara)
W. Geiger and K. P. Jungst: Magnetoeelastic buckling measurements on the superconducting torus TESPE.
K. Hara and F. C. Moon: Stability and vibration of internal windings of magnets for high fields.

Wednesday, 15 October
General lecture (Presiding: M. F. McCarthy)

Session VIII - Wave (continued) (Presiding: R. K. T. Hsieh and N. Asami)
P. J. Chen: A newly recognized phenomenon of electromechanical interaction - experiments and theory.
B. Collet: Transient nonlinear waves in deformable dielectric materials.
J. Kapalewski: Nonlocal modeling of the near-surface vibronic distortion and related phase transition in some electroelastic materials.
E. Sahin and S. Dost: A compatible electro-acoustic theory of deformable dielectrics with polarization inertia.
K. Majorkowska-Knap: Reflection and refraction of mechano-electric waves in elastic dielectrics with polarization gradient.

Thursday, 16 October
General lecture (Presiding: L. Turner)
W. Lord: Eddy current methods of flaw detection and their modeling.

Session XI - Electromagnetic field (Presiding: W. Lord and T. Honma)
H. Hoshiba and K. Koyama, J. Koido and Y. Ishibashi: Study on remote field eddy current testing.
Z. J. Cendes: Eddy current modeling using delaunay tessellation and tangentially continuous vector finite elements.

Session XII - Electromagnetic field (continued) (Presiding: J. Stefanik)
Lim Chee-Seng: Quasistatic elasto-electromagnetic radiation.
A. Ü. Erdem: A nonlocal theory for the coupling of the magnetic spin and elastic waves.
Session XIII – Magnetoelasticity (Presiding: Y. Yamamoto and J. Brilla)
M. Szytyn: A field model of coupling between electronic forces and mechanical properties of heterogeneous solids.
M. Zorawski: Magnetoelasticity as a gauge field.

Closing by Conference Secretary-General. Y. Yamamoto

5.


Scientific Committee
P.G. Ciarlet (France), Co-Chairman
E. Sanchez-Palencia (France), Co-Chairman
C. Dafermos (U.S.A.)
W. Eckhaus (Netherlands)
P. Germain (France)
G. Geymonat (Italy)
A. L. Goldenweiser (U.S.S.R.)
Z. Hashin (Israel)
E. Kröner (F.R.G.)
A. G. Kulikovski (U.S.S.R.)
M. Van Dyke (U.S.A.)

Short summary of scientific progress achieved
This International Conference was held at the Ecole Normale Supérieure, Paris, under the auspices of the International Union of Theoretical and Applied Mechanics (IUTAM) and of the International Society for the Interaction of Mechanics and Mathematics (ISIMM).
Twenty-four speakers from eight different countries delivered lectures that exemplified the multi-faceted and fruitful interplay between mathematics and mechanics. These lectures covered the most recent advances in the mathematical modeling problems in continuum mechanics where one, or several, small parameters, are found (convergence analysis for linear and nonlinear problems, homogenization methods, singularities and behaviour at infinity in linearized elasticity, controllability, optimal design, etc.) as well as the more mechanical aspects (plates, rods, alveolar and thin structures, delamination of multilayered plates, composite materials, crack propagation, thermoelasticity, gas dynamics, surface waves, lubrication, sedimentation, etc). Most lectures revealed a wealth of often quite challenging open problems, whose difficulty and variety were distinctive features of this conference.
It is a pleasure to express our warmest thanks to all the invited lecturers, whose inspiring communications made the success of this conference. The small percentage of foreign participation is essentially due to the fact that the theme of the conference has been so far significantly more developed in France than abroad.

Countries represented and number of participants
Chile ........................................... 1  Poland ....................................... 4
Federal Republic of Germany ........ 2  Portugal ........................................ 1
France ......................................... 49  Spain ......................................... 3
Greece ........................................... 1  USA ............................................. 2
Israel ........................................... 1  Yugoslavia .................................... 1
Italy ............................................. 5  Total ......................................... 70

Two Soviet participants did not attend the Symposium, but their communication was read and it will appear in the Proceedings.

Publication of Proceedings
A contract has been concluded with Editions Masson, Paris, to publish the Proceedings in camera-ready form, as a volume of the collection “Recherche en Mathématiques Appliquées”. All written contributions were available one week after the Symposium.

Financial Support

Scientific Programme

Monday, 24 November
Opening addresses: G. Poitou, Director of the Ecole Normale Supérieure, host institution of the Symposium. P. Germain, Perpetual Secretary of the French Academy of Sciences, Member of the IUTAM and ISIMM.
Morning (Chairman: P.G. Ciarlet)
C. Bardos: “Practical application of the notion of propagation of singularities in hyperbolic equations”.
B. Perthame: “Smoluchowski approximation in Ornstein-Uhlenbeck theory”.
Afternoon (Chairman: H. Zorski)
J.P. Guiraud: “Asymptotic modelling and conservation laws”.
F. Mainardi: “Surface Waves in Viscous Liquids of Finite Depth.”
A. Negro: “Some problems of homogenization in quasi stationary Maxwell equations”.

Tuesday, 25 November
Morning (Chairman: R. Valid)
M. Vogelius: “Relaxation of a compliance functional for a plate optimization problem”.
D. Caillerie: “Models of thin or thick plates and membranes”.
P. Destuynder: “A model for studying the delamination of thin multilayered plates”.

Afternoon (Chairman: E. Kröner)
G. Bayada: “On the various aspects of the thin film equation in hydrodynamic lubrication when the roughness occurs”.
F. Chatelin: “Problèmes de valeurs propres en analyse statique non linéaire.”
A. van Harten: “On a singularity perturbed dynamic free-boundary problem”.

Wednesday, 26 November
Morning (Chairman: A. van Harten)
P. G. Ciarlet: “Asymptotic method for nonlinear plates: recent progress and open problems”.
J. M. Viano Rey: “Derivation of generalized models for linear elastic beams by asymptotic expansion methods”.
G. Gejman: “Stress distribution in elastic composite beams”.

Thursday, 27 November
Morning (Chairman: M. Vogelius)
F. Murat: “Homogénéisation en problèmes elliptiques”.
L. Tartar: “Résultats d’homogénéisation sans hypothèse de périodicité”.
J. L. Lions: “Contrôlabilité exacte et homogénéisation (in absentia)”.
E. Sanchez-Palencia: “Some problems in singularity theory and related topics”.

Afternoon (Chairman: H. Cabannes)
D. Gioranescu: “Structures flancées; problème de pylônes et des tours”.
T. Levy: “An application of homogenization to particulate sedimentation.”

Friday, 28 November
Morning (Chairman: M. Roseau)
Z. Tutek: “A homogenized model of rod in linear elasticity”.
P. Grisvard: “Singularités dans la théorie de l’elasticité”.

Afternoon (Chairman: P. Grisvard)
W. Zajączkowski: “On the edge singularities in composite media”.
Nguyen Quoc Son: “Energy methods in fracture mechanics: bifurcation and second variations”.

Closing address: E. Kröner

P. G. Ciarlet and E. Sanchez-Palencia.

Other Meetings

INTERNATIONAL UNION OF THEORETICAL AND APPLIED MECHANICS

TREASURER’S REPORT

Balance December 31, 1985 ........................................ US $ 262,252
Excess of cash revenues collected over expense paid for the year ........................................ 44,609

Balance December 31, 1986 ........................................ 306,861

Statement of cash revenues collected and expenses paid for the year:

Cash revenues collected:
Subscriptions ....................................................... 55,454
Interest income .................................................... 20,797
Allocation ICSU ................................................... 10,694
Repayment symposia ........................................... 5,664

................................................................. 92,699

Expenses paid:
Symposia ............................................................ 40,000
Meetings Bureau ................................................... 5,388
Meetings Congress Committee ................................ 5,548
Printing of Report 1985 ....................................... 3,646
Contribution to ICSU ........................................... 1,035
Contribution to Committee on the Teaching of Science
Audit fee ........................................................... 400
Administration ..................................................... 1,016
Bank charges ....................................................... 22

................................................................. 57,322

Excess of cash revenues collected over expenses paid for the year before gain (loss) from translation
of other currencies into US dollars ................................ 35,286
Gain (loss) from translation of currencies .................... 9,323
Excess of cash revenues collected over expenses paid for the year ........................................ 44,609
# Statements of movements on IUTAM bank accounts

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## Checking Accounts

| Deutsche Bank         | 23,633.94            | 7,769.71             | 2,810.80    | 2,411.99  | 7,370.00  | DM        |
| Marquette Bank        | 103,311.78           | 28,037.73            | 93,629.65   | 98,966.25 | 33,374.98 | $         |

## Bank Accounts of IUTAM

Treasurer: Prof. Dr. Ir. L. van Wijngaarden, T. H. Twente, Postbus 217, 7500 AE Enschede, The Netherlands.
Assistant Treasurer: Prof. Philip G. Hodge, Jr., 107 Akerman Hall, University of Minnesota, Minneapolis, MN 55455, USA
Marquette Bank University, 718 Washington Avenue S.E., Minneapolis, Minnesota 55414 (USA), acc. nr. 103-1178
Deutsche Bank A.G., Filiale Darmstadt, D-6100 Darmstadt (FRG), acc. nr. 2363398

## Payment of Annual Dues

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*DM* = Deutsche Mark
*hfl* = Hollandsche bankbiljetten
*$*$ = US dollars

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Representation in other organizations

ICSU
Prof. J. Hult represents IUTAM in the General Committee of the International Council of Scientific Unions.

CODATA
Prof. D. C. Drucker acts as Representative of IUTAM in the Committee on Data for Science and Technology.

COSPAR
Prof. W. Fizdon acts as Representative of IUTAM in the Committee on Space Research.

COSTED
Prof. R. Narasimha acts as Representative of IUTAM in the Committee on Science and Technology in Developing Countries.

IUPAP
Sir James Lighthill represents IUTAM as an associate member of the International Commission on Acoustics under IUPAP.

SCOPE
Prof. G. M. Lespinard acts as Representative of IUTAM in the Scientific Committee on Problems of the Environment.

SCOR
Prof. T. B. Benjamin represents IUTAM in the Scientific Committee on Oceanic Research.

CTS
Prof. S. Berndt acts as Representative of IUTAM in the Committee on the Teaching of Science.

Donations in 1986

Donations given to IUTAM Symposia are recorded under the heading "Financial support" of the Reports of Symposia held in 1986.

Summary Record
of the General Assembly of IUTAM
in London, England, on 29 and 30 August 1986

The General Assembly was held in the Gustave Tuck Lecture Theatre, University College London.

The mornings were devoted to general lectures as follows.

Friday, 29 August 1986
Professor A. R. Hall: "On the completion of the first volume of Newton's Principia in 1686";
Professor J. M. T. Thompson: "Applications of the theory of chaos to engineering mechanics".

Saturday, 30 August 1986
Professor F. T. Smith: "On boundary-layer transition";
Professor G. Battimelli: "Early history of IUTAM".

The afternoons were devoted to business sessions which started at 14.00 hours.

The persons present
a) Representatives of adhering organizations:

b) Elected members:
G. Batchelor (UK), B. A. Boley (USA), W. Fizdon (Poland), N. J. Hoff (USA), W. T. Koiter (Netherlands), Y. H. Ku (USA), F. I. Nordson (Denmark), L. I. Sedov (USSR).

c) Representatives of affiliated organizations:
d) Invited observers:
G. Battinelli (Italy), S.H. Crandall (USA), S. Juhasz (USA), M. Życzkowski (Poland).

The persons represented by proxies
a) Adhering organizations
Belgium: P. Janssens represented by J. Kestens
Brazil: L. Bevilacqua represented by M. Frota
Canada: K.W. Neale represented by S.B. Savage
China: T.C. Lin represented by Zheng Zhemin
Czechoslovakia: J. Nemec represented by V. Křupka
FRG: H. Lippmann represented by W. Schiehlen
GDR: W. Albring represented by K. Hennig
Italy: C. Cercignani, D. Galletto, P. Villagio represented by G. Bianchi
Japan: I. Tani represented by I. Imai
Netherlands: J. Blauwendraad represented by J.F. Besseling
Poland: W. Szczepinski represented by W. Fiszdon
Spain: M. Bautista Aranda represented by P. del Notario
Sweden: S. Berndt, J. Carlsson represented by J. Hult
USA: S. Davis represented by A. Acrivos
USSR: I.F. Obraztsov represented by G.K. Mikhailov

b) Elected members
P.Y. Zhou (China) represented by Wang Ren (China)

Agenda 29 August

1. Opening of the meeting by the President
2. Report by the Secretary-General
3. Report by the Treasurer on financial matters
4. Preliminary discussion on annual dues
5. Report on relations with ICUS
6. Report of the Secretary of the Congress Committee of IUTAM
7. Matters concerning Adhering Organizations
8. Matters concerning Affiliated Organizations
9. Matters concerning Inter-Union Committees and Commissions
10. Preliminary discussion on future IUTAM Symposium
11. Report on progress in work on the history of IUTAM

Proceedings of the General Assembly

Item 1 - Opening of the meeting by the President
The President, Sir James Lighthill, opened the meeting and greeted all members and observers welcome. The President asked the General Assembly for views on the institution of general lectures during the General Assembly. There were very positive views only.

Item 2 - Report by the Secretary-General
The Secretary-General, Professor W. Schiehlen, submitted the following report to the General Assembly on the activities of IUTAM since the last General Assembly in Lyngby, Denmark, on 23 August 1984.

Mr. President, Dear Colleagues,
Two years have passed since our last General Assembly in Lyngby, Denmark. During that time I have had the sad duty of recording the death of six colleagues and friends who have served our Union in the past. May I ask you all to stand in honour of our deceased, while I read their names.
Professor Ernst Becker of the Federal Republic of Germany died on 14 November 1984. He was the Treasurer of our Union from 1980 to 1984, and he represented his country in the General Assembly since 1964. From 1968–1976 he was also the Secretary of our Congress Committee.
Professor Maurice Roy of France died on 23 June 1985. He was a member of the Bureau from 1956 to 1972, as Secretary-General, as President and as Vice President. He represented his country in the General Assembly from the early beginning in 1949, and up to his death he was an elected member of our General Assembly.
Professor Hans Ziegler of Switzerland died on 6 August 1985. He was a member of our General Assembly from 1950 to 1976 as the first representative of his country.
Professor Sten Einar Stenij of Finland died on 2 September 1985. He was the first representative of his country in our General Assembly from 1952–1970. Professor Zoran Zarić of Yugoslavia died on 14 December 1985. He represented our Affiliated Organisation, the International Centre of Heat and Mass Transfer in Beograd, Yugoslavia, since 1980.
Professor William Henry Wittrick of UK died on 2 July 1986. He represented his country in our General Assembly since 1979.
Our sympathy and our grateful thoughts for their excellent work for our Union go to their families and to their nations.

I) National Adhering Organizations
An inquiry to join IUTAM as a National Adhering Organization has been received from the King Abdullah City for Science and Technology in Riyadh, Saudi Arabia. A formal application is expected in future.
Applications for change in membership status have been received from Argentina, China and Yugoslavia. They will be discussed today under Item 7.
The Bureau has taken measures to activate the relations to the Section of Applied Sciences of the Roumanian Academy of Sciences without any success. A proposal of the Bureau will be discussed today under Item 7.
A number of changes have been made in the personal representation of various adhering and affiliated organizations. They are recorded in my printed annual Reports of 1984 and 1985, which you have all received.
We thank sincerely our colleagues and friends retired before 31 December 1985 from our General Assembly for their devoted work.
Prof. R.I. Tanner of Australia, Prof. J.P. Guiraud and Dr. R. Legendre of France, Prof. G. Schmidt of GDR, Prof. J. Szabó of Hungary, Prof. S. Tjøtta of Norway, Dr. G.P. del Puerto of Spain, Prof. M. del Pedro of Switzerland, Dr. J.M. Prentis of UK, Profs. J.B. Keller and P.M. Naghdi of USA, Prof. R.S. Rivlin of International Committee on Rheology.

We welcome our colleagues appointed before 31 December 1985 and look forward to a long and fruitful cooperation for the progress and success of our Union.


II) Affiliated Organizations

The Bureau discussed the relations between the Union and its Affiliated Organizations. IUTAM is interested to obtain full information on the activities of all Affiliated Organizations.

III) Meetings of the Bureau

First meeting. The Bureau met in Grenoble, France, on 24 and 25 August 1985. A summary record of that meeting was mailed to all members of the General Assembly.

At this meeting the Bureau discussed the establishment of a library collecting all IUTAM publications listed in the annual report of IUTAM. This proposal will be discussed tomorrow under Item 15.

Second meeting. The Bureau met yesterday here in London. That meeting was mainly devoted to the preparation of our General Assembly now in session.

Third meeting. The Bureau will meet again on Sunday this week for the implementation of decisions taken by the General Assembly. On this occasion the Bureau will decide the date and venue of its next annual meeting, to be held in 1987. This will be reported to all of you in the minutes of the Bureau meeting.

IV) Symposia held

In all 14 IUTAM Symposia have been held in the period of this report. Full accounts of the five symposia held in 1984 and the nine symposia held in 1985 are given in my printed annual Reports for 1984 and 1985.

In 1986 the following two symposia have been held so far:

Two years ago, I obtained an excellent introduction to the office of the Secretary-General by Professor Jan Hult. And since that time I had the pleasure of repeating advice from many of you in dealing with the duties of this office. Let me close with a short comment. Even if mechanics isn’t one of the latest sciences it is a real fundamental science for all engineering applications. The progress in mechanics is achieved by theoretical, experimental and computational means. Our Union should take care of all these disciplines and especially the very fruitful interactions between theory, experiments and computing.

I thank you for your attention.

The report of the Secretary-General was unanimously adopted.

Item 3 – Report by the Treasurer

The Treasurer, Professor L. van Wijngaarden, submitted the following report to the General Assembly.

Dear Mr. President, dear Colleagues,

At the meeting of the General Assembly in Copenhagen, August 1984, it was decided that I would assume the duties of Treasurer of our Union when Prof. Ernst Becker, at the time seriously ill, would no longer be able to carry out this task. In November 1984 Prof. Ernst Becker passed away. This meant a great loss to his family in the first place but also to mechanics in Germany and to our Union, in the service of which he did so much valuable work. Feeling, that with such eminent predecessors as Ernst Becker and Daniel Drucker, I have much to learn, I carried on with the finances as good as I could.

Prof. Philip Hodge has been and continues to be of indispensable help, (in particular regarding the Time Savings Deposits in the USA).

I would like to discuss here the state of our finances, the details of which you may find in the report for 1985. We have three sources of income. Most important are the annual dues paid by the adhering national organizations. Then there is the interest gained from our time deposits and finally there is an allocation from ICSU. While the latter tends to decrease, from $12,000 in 1985 to $7,600 in 1986, we have been able to increase the income from interest, even with a decreasing interest rate. This is because we have had over the past few years an excess of revenues over expenses.

The expenses are in the first place the grants to our IUTAM Symposia. In 1985 this has been $5,000 for each symposium, apart from additional ICSU grants, and is currently $6,000. Then there are the fees to ICSU, printing costs, and also important, expenses paid for travelling of Bureau members and members of the Executive Congress Committee.

While this is the state of affairs now, we have to look at the future. One of our tasks at this meeting of the General Assembly is to decide upon the amount of the unit annual dues for 1988 and 1989.

It was decided in 1974 to adjust the annual dues each year based upon the OECD inflation index. Let me give you this index and the corresponding rate of inflation for the past 6 years.

### Table I. Inflation rates

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<td>(%)</td>
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Since we meet once in two years and have access in the year x to the OECD figures up till and including the year x−1, we decide on the dues in year x+2 and x+3 based on the inflation rate x−1. For example in 1982, at Cambridge, U.K. it was decided to raise the unit due of $320 in 1984 and $350 in 1985, based on the rate of inflation of 10% in 1981.

### Table II. Unit of annual dues in $ / x 1000

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However in 1983 the rate of inflation was 5% rather than 10%. An increase based on 6.5% (the average of 1982 and 1983) would have led to a unit annual due of $310 in 1984 and $330 in 1985. Likewise the increase to $372 for 1986 and $400 for 1987, decided in 1984, was based on an expected rate of inflation of 6.7% in 1984 and 1985. Actually the rate of inflation in 1984 has been a little lower than that. Based on an average inflation index of 5.3% for 1984 and 1985, the annual due for 1986 and 1987 would have been $348 and $370. If we now stick to our rule and increase for 1988 and 1989 the annual due with an amount based upon the rate of inflation of 4.3% in 1985 we come to $385 and $402 respectively. In view of this I propose not to increase the annual due for 1988 but to keep it at $400 for 1988 and increase this to $415 in 1989. Countries wishing to pay equal amounts in each year will be asked to pay a unit of $408 in 1988 and 1989.

As mentioned, our main expense is formed by the grants to IUTAM Symposia. Keeping in mind that the sole purpose of this is to help participants, notably young ones, by taking care of part of their costs for travel and subsistence, and looking for increasing prices for travel and hotels, I propose to increase in 1988 the grant with $500 to 6500.

I believe that this expansion of our activities, together with the moderation, in the adjustment of annual dues, will not endanger the financial health of our Union. The latter is in good state. To illustrate this I give you our total assets as they were at the end of the past few years and what they would have been if they were only corrected for inflation but kept otherwise constant.

### Table III. Total assets in $ x 1000

<table>
<thead>
<tr>
<th>Year</th>
<th>1982</th>
<th>1983</th>
<th>1984</th>
<th>1985</th>
</tr>
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<tbody>
<tr>
<td>31 Dec.</td>
<td>181</td>
<td>203</td>
<td>238</td>
<td>262</td>
</tr>
<tr>
<td>1983</td>
<td>181</td>
<td>190</td>
<td>200</td>
<td>209</td>
</tr>
</tbody>
</table>
All what is said holds under the provision that adhering organizations continue to pay their dues in time. While a great majority is doing so, there is a tendency among others to postpone payment till after repeated reminders from the Treasurer. I hope and trust that this is of incidental nature.

Finally, I would like to mention our time investments. Those of you who have seen previous reports will remember that most of our time deposits in the USA were with Urbana National Bank and with Bloomington. We changed our account in the US to Marquette at Minnesota where Philip Hodge lives and deposited part of our assets there, part with other banks in order to spread the risk.

I would like to thank everybody who cooperated with me for their support and I hope that I can count on that support in the coming two years.

The report of the Treasurer was unanimously adopted.

Item 4 - Preliminary discussion on annual dues

The recommendation given in the Treasurer's report was supported by the General Assembly. It was noted that the final decision regarding annual dues would be made in second session of the General Assembly (see Item 14 below).

Item 5 - Report on relations with ICSU

The representative of IUTAM on the General Committee of ICSU, Professor J. H. J. Hult, reported that the 1985 meeting of the General Committee took place in Munich, FRG, 14 - 15 October 1985. For further details he referred to his statements in the IUTAM annual report for 1985. The next General Assembly of ICSU will take place in Berne, Switzerland, 14 - 19 September 1986. The President, Sir James Lighthill, pointed out that ICSU has been asked by IUTAM to support primarily the bilateral cooperation between the members of the ICSU family. Multilateral programs like "A Study of Global Change" cannot be organized at such a high scientific level as bilateral activities like joint symposia.

Item 6 - Report by the Secretary of the Congress Committee

The Secretary of the Congress Committee, Professor H. K. Moffatt, submitted the following report.

Mr. President, Colleagues:

I am glad to report that the planning for the XVIth Congress, which is to be held in Grenoble in August 1988 is well under control. The Executive Committee met in Grenoble last year, and agreed on outline plans for the Congress. We agreed to follow the pattern established at the Lyngby Congress which involved two new ingredients, namely, the introduction of three topics that would be given special emphasis through minisymposia organized within the framework of the Congress, and the introduction of poster/discussion sessions, so that a larger number of contributed papers could be accommodated within the programme, and allowing for a more varied style of presentation. These two new features will be retained at the Grenoble Congress.

I am very glad to announce that the Opening Lecture of the Congress will be delivered by Professor V. I. Arnold of Moscow University, and the Closing Lecture will be delivered by Professor J. W. Miles of the University of California, San Diego (UCSD). There will also be 16 sectional lectures, and the Congress Committee has been hard at work, making a selection from the extremely strong field of approximately 80 proposals sent in by National Committees, members of the General Assembly and members of the Congress Committee. We hope to complete this task this weekend.

The three special topics that have been selected for the Grenoble Congress are:
1. Mechanics of large deformation and strength of materials; Convenor: J. Lemaître (France).
2. The dynamics of two-phase flow; Convenor: G. K. Batchelor (UK).

Each special topic will have an introductory half-day session at which the lectures will be expository in character, followed by a sectional lecture and contributed papers structured in both lecture and poster/discussion sessions. Each of these minisymposia will be concluded by a round-table discussion.

As regards the poster/discussion sessions, we are most anxious that these should be of the same high quality as the lecture sessions. The poster/discussion sessions will be held in three parts: one hour during which the posters will be on view, one hour during which there will be a discussion at which each author may briefly introduce his work, and one hour during which authors will remain by their posters for follow-up discussion.

As usual, the papers submitted to the Congress Office from the larger countries of the Union will be referred to the National Committees for advice, but the final decision on acceptance rests with the Executive Committee advised by the International Papers Committee, which has been appointed. This Committee consists of R. Moreau (France), H. Aref (USA), Z. Mroz (Poland), N. Olhoff (Denmark).

Finally, Mr. President, on behalf of the Congress Committee, I wish to make some proposals concerning membership of the Congress Committee. There are a present 31 members of the Committee. Nine members have served for 4 years, and are eligible for re-election: A. Acivos (USA), E. R. de Arantes e Oliveira (Portugal), S. Kaliszky (Hungary), T. C. Lin (China), G. Maler (Italy), R. Moreau (France), W. Schiehlen (FRG), W. Schneider (Austria), J. R. Willis (UK). We recommend that all these should be re-elected.

Two members are retiring, namely S. Dhawan (India) and P. Y. Zhou (China), and I would like to record our warm thanks for their services to the Committee.

We would like to propose the following new members: R. Narasimha (India), J. Lemaître (France), J. Achenbach (USA), J. R. Philip (Australia).
This will bring the membership to 33, and we think this number is about right; it should not be more than this, because the Committee would then be too unwieldy, but it should not be less if we are to maintain reasonable representation of the many countries of the Union. May I ask the General Assembly to approve these proposals.

The report of the Secretary of the Congress Committee was unanimously adopted. The election of the members of the Congress Committee was postponed to the second session of the General Assembly, see Item 16 below. The General Assembly discussed also proposals for the venue of the XVIIIth International Congress of Theoretical and Applied Mechanics (ICTAM 1992). The following cities have been cited: Athens (Greece), Beijing (China), Hamburg (FRG), Rio de Janeiro (Brazil), Vienna (Austria). The final decision will be taken in 1988.

The Congress Committee expects written proposals from all those Adhering Organizations interested in hosting the ICTAM 1992. The proposals should give full detailed information on the location, the date, local mechanics research groups, transport and accommodation, the facilities for the congress and the financial budget. The proposal should be send before 30 June 1987 to the Secretary of the Congress Committee, Professor H. K. Moffatt.

Item 7 - Matters concerning Adhering Organizations

1. Saudi Arabia. An inquiry for membership had been received from the King Abdulaziz City for Science and Technology, the national government agency responsible for the promotion and coordination of scientific research in the Kingdom of Saudi Arabia. The Bureau is in favour of this inquiry and had asked for further information. The General Assembly agreed to postpone any decision.

2. China. The Chinese Society of Theoretical and Applied Mechanics had applied for a change in membership status from category I to category IV. The application was approved.

3. Yugoslavia. The Yugoslav Society of Mechanics had applied for a retrospective change in membership status from category II to category I. The application was approved, the change in membership is effective from 1985.

4. Argentina. The present Adhering Organization, the Sociedad Argentina de Mecánica Teórica y Aplicada, is no longer active. A recently formed society, the Asociación Argentina de Mecánica Computacional (AMCA), has applied for membership as future Adhering Organization, also category I. Dr. M. H. Gradowczyk from Argentina declared that the Asociacion Argentina de Mecánica Computacional promotes not only computational mechanics but also theoretical mechanics including structural mechanics, dynamics, fluid mechanics and thermodynamics. The application was approved.

5. Roumania. The General Assembly gave authority to the Bureau to terminate the membership of the present Adhering Organization, the Section des Sciences Techniques de l'Académie de la RS de Roumanie, and to invite an application of a new Adhering Organization of Roumania.

Item 8 - Matters concerning Affiliated Organizations

Several reports of some Affiliated Organizations are missing. The General Assembly pointed out that regular reports are needed from all Affiliated Organizations.

Item 9 - Matters concerning Inter-Union Committees

1. The Bureau noticed that the Committee on Science and Technology in Developing Countries (COSTED) had not been very helpful for IUTAM. The future activities of COSTED will be critically observed.

2. Professor W. Fiszdon presented a report on the XXVIth Plenary Meeting of the Committee on Space Research (COSPAR) in Toulouse, France. The following members are proposed to represent IUTAM in the scientific committees of COSPAR: Prof. Hide (UK), Planetary Atmospheres; Prof. H. K. Moffatt (UK), Physics of the Planets (crust, interior); Prof. J. Carlsson (Sweden), Asteroids and Comets (collisions, break up); Prof. W. Fiszdon (Poland), Material Sciences. The General Assembly approved the proposal.

Item 10 - Preliminary Discussion of future Symposia

The Secretary-General reported on the preparations made in this matter. A total of 25 proposals had been received from the members of the General Assembly, and these proposals had been scanned by the two Symposia Panels. Preliminary reports on the 21 proposals received in time had been sent to all members of the General Assembly. During a joint meeting of the two panels in London on 28 August 1986 the proposals had been grouped into three categories according to the system used since 1978.

The following proposals were given an alpha rating, indicating that the panels agreed that they were highly recommended:

- Transonicum III
- Laminar-turbulent transition
- Topological fluid mechanics
- Atmospheric aerosols
- Recent advances in nonlinear fracture mechanics
- Discretizations in nonlinear stability of plates and shells joint with domain decomposition and coupling in discretization methods
- Elastic wave propagation and ultrasonic nondestructive evaluation
- Nonlinear dynamics in engineering systems
- Dynamics of controlled mechanical systems
- Structural optimization and reliability
- Liquid metal magnetohydrodynamics.
The following proposals were given beta rating, indicating that the panels looked for further discussion and voting by the General Assembly:

- Turbulence in variable density flows
- Drag reduction and turbulent structure
- Inelastic deformation of composite materials
- Probabilistic approaches to thermomechanical problems in structures
- Optical methods and applications in non-linear solid mechanics
- Ice-structure interaction
- Adiabatic waves in liquid-vapor systems
- Jets and separation flow
- Dynamical problems for mechanical systems and structures.

The following proposals were given gamma rating, indicating the panels would not now recommend a symposium to be held:

- Nonlinear hydrodynamic instability phenomena
- Elastic wave propagation
- Generalized continua, theory and applications
- Identification of dynamical systems.

The Chairman of the Fluid Mechanics Panel, Professor G.K. Moffatt, and the Chairman of the Solid Mechanics Panel, Professor S.H. Crandall, then gave further comments on the various proposals and the reasons for the presented rating.

The General Assembly discussed the Panels' recommendation and decided to change the rating from gamma to beta for the following proposal:

- Elastic wave propagation.

The President, Sir James Lighthill, expressed the appreciation of the General Assembly for the good work done by the two panels and their Chairmen. It was agreed that the final decision on the future IUTAM Symposia programme would be made in the second session of the General Assembly under Item 12.

Item 11 - Report on progress in work on the history of IUTAM
Dr. S. Juhasz had informed the members of the General Assembly by memorandum of 31 July 1986 on the progress in the work on the history of IUTAM. Dr. S. Juhasz gave the General Assembly a slide presentation summarizing the state of work.

The President, Sir James Lighthill, expressed the thank of the General Assembly for the extensive work done by Dr. S. Juhasz.

The meeting then adjourned.

The meeting reconvened on 30 August 1986.

Agenda 30 August

12. Continued discussion and final decision regarding future IUTAM Symposia
13. Discussion of the work on the history of IUTAM
14. Continued discussion and final decision regarding annual dues
15. Preliminary discussion on the establishment of a IUTAM library
16. Election of members of the Electoral Committee
17. Election of members of the Congress Committee of IUTAM
18. Election of member of a Symposia Panel of IUTAM
19. Date and venue of the next General Assembly
20. Any other business

Proceedings of the General Assembly

Item 12 - Continued discussion and final decision regarding future IUTAM Symposia
The General Assembly decided to accept the 11 proposals rated alfa and to reject the 3 proposals rated as gamma, see Item 10 above. After further discussion of the remaining 10 proposals a vote was taken and the following 5 proposals rated as beta were selected:

- Drag reduction and turbulent structure
- Inelastic deformation of composite materials
- Elastic wave propagation
- Ice-structure interaction
- Adiabatic waves in liquid-vapor systems.

The Bureau had discussed a cooperation between the International Commission on Acoustics (ICA) and IUTAM with respect to the Symposium on Nonlinear Acoustics in Novosibirsk, USSR, 24–28 August 1987. On the recommendation of the Bureau the General Assembly decided to co-sponsor this symposium.

Item 13 - Discussion of the work on the history of IUTAM
The General Assembly decided to restrict the work on the history of IUTAM to historical facts only. Recommendations on future IUTAM policies must be omitted.

Item 14 - Continued discussion and final decision regarding annual dues
Following the proposal made by the Treasurer, Professor L. van Wijngaarden, see Item 4, the General Assembly decided the following amounts for the units of dues:

US $ 400 in 1988
US $ 415 in 1989
or US $ 408 for 1988 and 1989 for those who prefer equal payments in the two years.

Item 15 - Preliminary discussion on the establishment of a IUTAM library
Three proposals for the establishment of a IUTAM library had been received: CISM, Udine, Italy; University of Toronto Library, Toronto, Canada; Northwestern University, Evanston, USA.
The General Assembly discussed also the possibility of a IUTAM archive. It was agreed to continue the investigation of this matter by the Bureau.

Item 16 - Election of members of Electoral Committee
The following members of the General Assembly were elected to serve, together with the President, Sir James Lighthill, on the Electoral Committee:

Professor P.G. Hodge, Jr.
Professor G.K. Michailov
Professor F.I. Nordson
Professor I. Tani.

Item 17 - Election of members of the Congress Committee
The General Assembly decided to elect the following persons as members of the Congress Committee for the period 1986 through 1990: J. Achenbach (USA), A. Acrivos (USA), E.R. de Arantes e Oliveira (Portugal), S. Kaliszky (Hungary), J. Lemaître (France), T.C. Lin (China), G. Maier (Italy), R. Moreau (France), R. Narasimha (India), J.R. Philip (Australia), W. Schiehlen (FRG), W. Schneider (Austria), J.R. Willis (UK).

Item 18 - Election of member of a Symposia Panel of IUTAM
Professor P. Germain resigned as a member of the Solid Mechanics Symposia Panel due to this duties as President of the XVII International Congress of Theoretical and Applied Mechanics. The General Assembly elected Professor J. Salençon as new member of the Solid Mechanics Symposia Panel.

Item 19 - Date and venue of the next General Assembly
The General Assembly will meet again, in two consecutive sessions, during the XVII International Congress on Theoretical and Applied Mechanics in Grenoble, France, in August 1988.

Item 20 - Any other business
a) The General Assembly decided to arrange at its meeting in 1990 two general lectures, and one round-table discussion on future trends in mechanics.
b) According to the procedure for election of the Bureau of IUTAM the members of the General Assembly will be asked for proposals in due time.

c) By tradition and according to the statutes of IUTAM the officers of IUTAM have to be members of the General Assembly. The Adhering Organizations are asked by the General Assembly to take care of this matter.

There was no other business, and the President closed the meeting.

W. Schiehlen, Secretary-General

Report
on
The activities of the Congress Committee during 1986

The Congress Committee met at University College London on 28 August 1986, there being 23 members present. The Committee noted with great sadness the death on 23 June 1985 of Professor Maurice Roy who had served the Committee for many years.

The Committee considered and approved the detailed plans, as reported by the Secretary, for the XVIIth Congress, to be held in Grenoble, 21-27 August 1988. The Opening Lecture is to be given by Professor V.I. Arnold (USSR) and the Closing Lecture by Professor J.W. Miles (USA). Proposals for Sectional Lecturers were discussed, it being left to the Executive Committee to make the final selection. Preliminary consideration was given to the question of possible locations for the XVIIIth Congress in 1992, expressions of interest having been received from Athens, Beijing, Hamburg, Rio de Janeiro and Vienna. Proposals will be considered by the Executive Committee in September 1987, and the decision will be taken by the Congress Committee when it meets in Grenoble during the XVIIth Congress in August 1988.

The Executive Committee met both before and after the meeting of the Congress Committee on 27th and 30th August 1986. At the latter meeting, it agreed on a list of 12 invited Sectional Lecturers, together with a further 3 to be recommended to the convenors of the three mini-symposia. All 15 invited lecturers have now accepted, and their names are included in the First Announcement of the Congress which has been widely circulated.

The Executive Committee also considered the present method of 'preselection' of contributed papers by the larger countries of the Union (Canada, France, FRG, Japan, Poland, UK, USA, USSR) and agreed that the People's Republic of China should be added to this list. In all cases, the final decision on acceptability of papers rests with the International Papers Committee, which will meet in Grenoble in April 1988.

The next meeting of the Executive Committee will be held in Paris on 18th and 19th September 1987.

H.K. Moffatt
Report on Relations with ICSU

The 21st General Assembly of ICSU was held in Berne, Switzerland, 14-19 September 1986. Meetings to the General Committee of ICSU took place in close conjunction with the General Assembly during 12-13 and 18 September. IUTAM was represented at both events by the Treasurer Professor Leen van Wijngaarden.

Attendance at the General Assembly was the largest ever: about 250 scientists from more than 50 countries. Thanks to a generous grant of $10,000 from the Swiss authorities 20 participants from Third World countries had part or all of their expenses paid. A matching grant had been provided by ICSU itself.

Another reason for the strong interest in the ICSU meetings were two ICSU Symposia, which were organized in conjunction with the General Assembly:

1) An open Symposium of the Environmental Consequences of Nuclear War (ENUWAR) was held to present findings of a study carried out by the ICSU Scientific Committee on Problems of the Environment (SCOPE). The General Assembly decided to disseminate the findings of the study to a wide audience, including decision-makers, the general public and scientists, to increase awareness of the catastrophic effects on humanity of a nuclear war.

2) A Symposium on an International Geosphere-Biosphere Programme: “A Study of Global Change” was held to launch this programme, which will probably continue to the end of this century. It will include a wide range of studies of the environment of our planet and of changes, both natural and man-made, which are taking place.

Lengthy discussions were devoted to the finances of ICSU, the ICSU Press, problems relating to the free circulation of scientists and related matters. Various suggestions for changes in the Statutes, relating to the structure of ICSU itself, were also discussed. None of the matters discussed here had any immediate relevance to present IUTAM activities.

COSPAR transmitted a proposal for an International Space Year in 1992, modeled on the successful International Geophysical Year 1957. The proposal is being considered by the Executive Board of ICSU.

The following Officers were elected:

President: Prof. Sir John Kendrew (UK)
President-elect: Prof. M. G. K. Menon (India)
Vice-President: Prof. W. A. Rosenblith (USA)
Secretary General: Prof. L. Ernster (Sweden)
Treasurer: Prof. K. Thurauf (FRG)

The following were elected as Ordinary Members of the Executive Board:

International Scientific Unions
- Prof. J. E. Allende (IUB, Chile)
- Dr. W. E. Gordon (URSI, USA)
- Prof. P. Scott (IGU, Australia)

National Members
- Prof. T. Cao (China)
- Prof. Bl. Sendov (Bulgaria)

Invitations were submitted to hold the next General Assembly of ICSU in Japan or in China in 1988. Next meeting of the General Committee of ICSU will be held in Rome 29-30 October 1987.

Jan Hult

Report on Committee on Data for Science and Technology

In the words of the current President and former Secretary-General, Dr. David R. Lide, Jr., “CODATA is a framework which provides a mechanism for people to work together voluntarily — to catalyze and encourage the Task Groups, Working Groups, and Commissions.” The recent adjustment of the values of the physical constants attracted world-wide attention and provides a good example. Of great importance in physics, chemistry, crystallography, biology, and several other scientific fields, the activity of CODATA is of much less interest to most research workers in theoretical and applied mechanics. However, that interest will increase for some now that CODATA is moving strongly into the field of materials science and engineering, under the leadership of Dr. J. H. Westbrook.

Daniel C. Drucker

Report on Committee on Space Research

The XXVI Plenary Cospar Meeting, held at Toulouse, France, 30 June - 11 July, 1986, was very successful (1666 registered participants). Great attention to results of the latest planets explorations, Halley’s comet encounter, future, missions in space and earth related problems.
The next XXVII COSPAR Meeting will be held at Helsinki Finland in 1988. The scientific meetings scheduled for 1986/1988, of possible interest to IUTAM, are:
- Symposium on study of travelling interplanetary phenomena,
- Symposium on middle atmosphere and clouds of Venus,
- International symposium on collisionless shocks.

COSPAR expressed support for the following:
- Solar terrestrial energy programme,
- Remote sensing of global change programme,
- Upper atmosphere, thermosphere and ionosphere research programmes.

It was proposed that 1992, the 500th anniversary of the landing of C. Columbus in the New World and 35 years after the launching of the first spacecraft be named the International Space Year and involve important space related research.

To facilitate a closer participation of IUTAM in COSPAR activities the following scientists were appointed by the General Assembly of IUTAM to represent IUTAM in the relevant scientific committees of COSPAR:
- Prof. R. Hide (UK), Planetary atmospheres,
- Prof. K. Moffat (UK), Physics of the planets (crust, interior),
- Prof. A. Carlsson (Sweden), Collisions break up,
- Prof. W. Fiszdon (Poland), Material sciences.

Prof. W.I. Axford was elected President of COSPAR.

W. Fiszdon

Report

on

Committee on Science and Technology in Developing Countries

From the 1986 Annual Report of COSTED, it appears that the number of travel fellowships that were awarded strictly in the area of theoretical and applied mechanics was only 2, but there were 4 others in related subjects. This seems to be somewhat better than in previous years, but much less than what was received for 1976, when 12 delegates were supported by COSTED, for the International Congress. Prof. Radhakrishna generally agreed that COSTED activity of interest to IUTAM was not very strong.

Considerable discussion took place with Sir John Kendrew, Chairman of COSTED, and the other Members of the Committee, about how this interaction could be improved. We came to the conclusion that wider understanding of the role of COSTED and of the criteria they use for supporting various programmes would be desirable. COSTED has agreed to make pamphlets on the subject and give them wider circulation.

A second idea that emerged from the discussions was that of visiting lecturerships. Especially in those subjects where rapid progress is taking place elsewhere in the world, it would help to bring a large number of younger scientists in developing countries in contact with these developments if distinguished lecturers could visit the countries and meet such scientists. Partial support from the Third World Academy is likely to be available for such a programme.

R. Narasimha

Report

on

International Commission on Acoustics

The 1986 meetings of the International Commission on Acoustics were held in Toronto, Canada on 23 July and 30 July, while the 12th International Congress of Acoustics was taking place in the Metro-Toronto Convention Centre. The Congress had 1075 full participants and 582 papers were presented. Its organisation was regarded by the Commission as having been admirable, and the layout of the Convention Centre was seen as most excellently suited to such a Congress, at which large numbers (up to 12) of different sessions needed to be presented in parallel with conveniently quick interchange between sessions. Substantial consideration was given by the Commission to the planning of the 13th Congress, which will be held from 24 to 31 August 1989 in the Sava Centre, Belgrade, Yugoslavia. The Commission also agreed to recommend IUPAP sponsorship for two symposia: (i) Prospects in Modern Acoustic (19 to 21 May 1987 in Gdansk, Poland); and (ii) Nonlinear Acoustic (24 to 28 August 1987 in Novosibirsk, USSR; a Symposium which the General Assembly of IUTAM later agreed to co-sponsor).

J. Lighthill

Report

on

Committee of the Teaching of Science (CTS)

The activities of CTS, financed by grants from ICSU, the Unions and Unesco, are mainly aimed at helping solve educational problems in developing countries. During 1986 the follow-up to the Bangalore Conference on "Science and Technology Education and Future Human Needs" got under way. Regional follow-up meetings were arranged in UK, Australia, USA, Malaysia and Africa, and a few more are being planned. The publication of the nine Conference Volumes, by the ICSU Press through Pergamon Press, experienced some delay, but is expected to be completed by the summer of 1987.

Sub-committees have been active during 1986 with such subjects as Primary Science, Locally-Produced Equipment and Technician Training. Professor D.J. Waddington, University of York, UK, is the new Secretary of CTS.

S.B. Berndt
International Centre for Mechanical Sciences (CISM)

1. Courses and Seminars
The regular programme of courses and seminars planned by the Scientific Council for 1986, took place in the two Scientific Sessions, the Boltzmann Session (June–July, 1986) and the Wiener Session (September–October, 1986). The topics, always at an advanced level, included different fields of mechanics and related computer sciences, both at a basic and applied level. Some courses and seminars were sponsored by UNESCO, CNR (National Research Council of Italy) and other Institutions.

The Boltzmann Session (June–July, 1986):
- Kinetic Theory and Gas Dynamics
- Applications of System Identification in Engineering
- Chaotic Motions in Nonlinear Dynamic Systems
- Mathematical Programming Methods in Structural Plasticity

The Wiener Session (September–October, 1986)
- Expert System Design: Methodologies and Tools
- Continuum Damage Mechanics: Theory and Applications
- Stochastics in Combinatorial Optimization
- Finite Element and Boundary Element Techniques from Mathematical and Engineering Point of View

2. Various International Events
Besides the courses various other activities were organized by CISM in 1986. The following ones were particularly noteworthy:

Post-Graduate Programme in Mechanical Sciences (November 1985 – October 1986)
This new initiative was devoted to the basic formation of researchers working in the field of Mechanical Sciences. The programme, partly supported by the Italian Ministry for Foreign Affairs, was open to researchers from all countries, with particular reference to the developing ones. The first year of activity included two fundamental courses, on Continuum Mechanics and on Elasticity, plus a number of shorter courses on other topics in Mechanical Sciences. A similar one year programme started in November 1986.

Sixth CISM-IIFoMM Symposium on Theory and Practice of Robots and Manipulators (Cracow, September 9 – 12, 1986)
The Symposium was organized jointly by the International Centre for Mechanical Sciences (CISM) and the International Federation for the Theory of Machines and Mechanisms (IIFoMM) in order to bring together the world's leading experts on the theory and practice of Robots and Manipulators. The terms Robots and Manipulators were intended to include also such areas as locomotion systems (pedipulators, walking machines, exoskeleton and rehabilitation manipulators). Within this broad framework the topics for this Symposium were the following aspects of Robots and Manipulators:

Mechanics; Control of Motion; Sensing and Machine Intelligence; Synthesis and Design; Man-Machine Systems; Computer Enhanced Teleoperation; Biomechanics of Motion; Applications and Performance Evaluation.

3. Editorial Activities
The lectures of several of the courses held at CISM are published in book form and distributed by the following publisher: Springer-Verlag, Vienna – New York.

In 1986 the following books were printed:

A. Lagarde – Static and Dynamic Photoelasticity and Caustics: Recent Developments
J.P. Boehler – Applications of Tensor Functions in Solid Mechanics
G. del Piero – Il Consolidamento delle Costruzioni (2nd printing)
G. del Piero – Calcolo Automatico delle Strutture in Cemento Armato

The international journal for rapid publication “Mechanics Research Communications” (bimonthly), created by CISM and Pergamon Press, Oxford – New York in 1973, published in 1986 its thirteenth volume. It contains scientific and applied communications on research related to a wide domain of Mechanics. The journal, whose Editor-in-Chief is Professor Bruno A. Boley, plays an important role in implementing CISM’s aims and activities.

4. Scholarships
During the courses a limited number of participants who were not supported by their own Universities, were granted free lodging and board by the Centre, priority being given to young researchers coming from countries that contribute to CISM’s operating resources. Travel expenses as well as board and lodging of participants from developing countries have been covered by UNESCO. Some scholarships were also granted thanks to the financial support from the Stiftung Volkswagenwerk.

5. International participation
In 1986, 29 lecturers from 9 countries delivered lectures in the Boltzmann Session of CISM courses; 28 lecturers from 10 countries in the Wiener Session. The two sessions were attended by 377 participants coming from 35 countries. Besides, the international meetings organized by CISM were attended by numerous participants from European and extra European countries.

G. Bianchi
Report
on
European Mechanics Committee (Euromech)

During 1986 the European Mechanics Committee organized the following Euromech Colloquia:

Euromech 206 13–16 January, Grenoble, France: Viscoelasticity of polymeric liquids (Processing of polymer solutions and melts)
Euromech 207 7–9 April, Delft, The Netherlands: Natural convection
Euromech 208 14–16 April, Göttingen, Germany: Explosions in industry
Euromech 209 5–7 June, Como, Italy: Vibrations with unilateral constraints
Euromech 210 16–19 June, Jablonna, Poland: Post-critical behaviour and fracture of dissipative solids
Euromech 211 24–27 June, Glasgow, Scotland: Heat and mass transfer in the flow of thin liquid films
Euromech 213 8–21 September, Marseille, France: Active methods of controlling sound and vibration
Euromech 214 16–19 September, Dubrovnik, Yugoslavia: The mechanical behaviour of composites and laminates
Euromech 216 22–25 September, Leeds, England: Integrable systems in nonlinear analytical mechanics
Euromech 217 13–16 October, Matrafured, Hungary: Dynamic plastic response for structures
Euromech 218 18–20 November, Poitiers, France: The interaction of free and forced convection
Euromech 219 23–25 September, Kassel, Germany: Refined dynamical theories of beams, plates and shells and their applications

The First European Turbulence Conference took place in Lyon, France, 1–4 July.

H.H. Fernholz

Report
on
International Society for the Interaction of Mechanics and Mathematics (ISIMM)

The Society has now nearly 250 members. Its main activities are:

a) To organize a “Symposium on Trends in Applications of Pure Mathematics to Mechanics” (STAMM) every second year;

b) to support irregularly held minisymposia on topics in line with the aims of the Society;

c) to become patron of scientific meetings if these correspond to the aims of the Society;

d) to edit scientific books written by members of the Society in the Spirit of the Society.


In 1987, two minisymposia are being held, namely on “Unilateral Problems in Mechanics”, Rome, Italy, April 6–8, local organization by M. Como, A. Grim maldi, F. Maceri and P. Podio-Guidugli and on “Kinetic Theory and Extended Thermodynamics”, Bologna, Italy, May 18–22, organized by T. Ruggeri and I. Müller.

A symposium on the “Application of Multiple Scaling in Mechanics” was held under the joint auspices of IUTAM and ISIMM in Paris, France, November 24–28, 1986 under the chairmanship of E. Sanchez-Palencia and Ph. Ciarlet. The report on this symposium is printed in the Section Symposia.


E. Kröner

Report
on
International Congress on Mechanical Behaviour of Materials (ICM)

The Fifth International Conference on Mechanical Behaviour of Materials (ICM 5) will be arranged in Beijing, June 2-6, 1987. Contact person for this conference is Professor Yan Minggao, Inst. of Aeronautical Mat., Beijing.

J. Carlsson

STATUTES
Statuts de l’Union Internationale de Mécanique Théorique et Appliquée

ART. I
“L’Union Internationale de Mécanique Théorique et Appliquée” ci-après dénommée “l’Union” est une organisation scientifique à la fois internationale et non-gouvernementale.
ART. II
Les Principaux objectifs de l’Union sont
a) de constituer un lien entre personnes et organisations engagées dans le travail scientifique (théorique ou expérimental) concernant la mécanique ou les sciences associées;
b) d’organiser les congrès internationaux de mécanique théorique et appliquée par l’Intermédiaire de son Comité permanent des Congrès (cf. Art. XII ci-après), et d’organiser d’autres réunions internationales sur des sujets relevant de la mécanique théorique et appliquée;
c) de s’engager en d’autres activités visant à promouvoir le développement de la mécanique, aussi bien théorique qu’appliquée, en tant que branche de la science.

ART. III
L’autorité suprême de l’Union est son Assemblée Générale.
Cette Assemblée détient le pouvoir de décider sur toute question affectant l’Union, notamment sur toute modification de ses Statuts. Sur des questions spécifiques, elle peut déléguer tout ou partie de ses pouvoirs à un ou à des organismes appropriés.
La composition de l’Assemblée Générale est régie par l’article VI ci-après.

ART. IV
Dans toutes ses décisions, l’Assemblée Générale doit être guidée par la tradition de libre coopération scientifique internationale développée par les Congrès Internationaux de Mécanique Théorique et Appliquée.
En poursuivant ses objectifs, l’Union respectera le principe général de nondiscrimination et reconnaîtra le droit pour tout homme de science dans le monde d’adhérer ou de s’associer à une activité scientifique internationale sans rencontrer d’opposition pour motif de race, de religion, de philosophie politique, d’ origine ethnique, de citoyenneté, de langage ou de sexe.

ART. V
Dans les votes de l’Assemblée Générale, chaque membre ne dispose que d’une voix.
Pour une modification des Statuts, la majorité requise est de deux tiers des votes exprimés.
Pour toute autre décision la majorité simple des votes exprimés est requise.
Tout membre se trouvant dans l’impossibilité d’être présent à une réunion peut désigner, à l’avance et par lettre adressée au Secrétaire Général, un autre membre qu’il charge de voter en son nom.

Dans l’intervalle entre réunions de l’Assemblée Générale, un vote peut être émis par correspondance sur proposition formulée par le Bureau (cf. Art. XI ci-après). En pareil cas, le résultat du vote n’est valablement obtenu que si le nombre des participants effectifs n’est pas inférieur aux deux tiers du nombre total des membres de l’Assemblée Générale.

ART. VI
L’Assemblée Générale se compose:
a) des représentants des “organisations adhérentes” (cf. art. VIII);
b) des membres élus par l’Assemblée Générale de l’Union et qui doivent être des personnes réellement engagées dans le travail scientifique concernant la mécanique ou les sciences associées;
c) s’il y a lieu, et sur décision de l’Assemblée Générale, des représentants de comités ou groupes d’hommes de science.
La durée de fonction de tout membre élu doit être précisée, lors de son élection, par l’Assemblée Générale.

ART. VII
L’Assemblée Générale doit tendre à une représentation adéquate de tout groupe d’hommes de science poursuivant des recherches en mécanique théorique ou appliquée et non représentés par une organisation adhérente.

ART. VIII
Les organisations d’hommes de science en mécanique théorique ou appliquée (ou les unions de telles organisations) qui représentent effectivement une activité scientifique indépendante dans un pays ou dans un territoire bien défini peuvent être admises dans l’Union par l’Assemblée Générale comme “organisations adhérentes” pourvu que leur dénomination exclut tout malentendu quant à la qualification du pays ou du territoire en cause.
En principe, une seule organisation pourra être admise pour chaque pays ou chaque territoire.

ART. IX
Chaque “organisation adhérente” dispose d’un certain nombre de représentants dans l’Assemblée Générale et doit acquitter une cotisation annuelle à l’Union (cf. Art. XIV ci-après).

ART. X
Des organisations internationales dont les domaines principaux d’activité sont en étroite relation avec ceux de l’Union peuvent être admises par l’Assemblée Générale en qualité “d’organisations affiliées” à l’Union.
Chaque organisation affiliée a la faculté de désigner un observateur qui est invité à participer, sans droit de vote, à l’Assemblée Générale de l’Union. Le
Bureau de l'Union (Article XI) a réciproquement la faculté de désigner un observateur, sans droit de vote, au Conseil Scientifique ou à l'organe équivalent de l'organisation affiliée. L'organisation affiliée et l'Union sont tenues de s'informer mutuellement de toutes leurs activités importantes et des mesures affectant leur fonctionnement. En préparant les rencontres scientifiques internationales qu'elles organisent, l'Union et chaque organisation affiliée sont tenues de prendre soigneusement en considération toutes les décisions déjà prises par l'Union et les organisations affiliées de manière à assurer la bonne coordination de toutes ces activités scientifiques. Les organisations affiliées n'ont à payer aucune cotisation annuelle à l'Union.

ART. XI
Pour exécuter les décisions de l'Assemblée Générale et pour assurer entre ses sessions le travail de l'Union, l'Assemblée Générale élit les membres d'un Bureau pour une durée de quatre ans au plus. Le Bureau est composé d'un Comité Directeur (un Président, le précédent Président qui remplit la fonction de Vice-Président, un Secrétaire Général et un Trésorier) et de quatre autres membres de l'Assemblée Générale.

Les membres, qui ne sont pas au Comité Directeur, ne peuvent être recevoir plus de deux mandats consécutifs. Les membres du Bureau nouvellement élus entrent en fonction au 1er novembre qui suit l'Assemblée Générale qui a procédé à leur élection.

Le Bureau doit se réunir au moins une fois par an. Tout membre du Bureau empêché de prendre part à une réunion de celui-ci peut désigner par lettre adressée au Secrétaire Général un autre membre de l'Assemblée Générale pour le remplacer à cette session.

Le Secrétaire Général centralise toutes les questions concernant le fonctionnement de l'Union y compris ses relations avec les organisations adhérentes, affiliées ou autres.

Le domicile légal de l'Union se situe au domicile du Secrétaire Général. Le Bureau a le droit de désigner un trésorier-assistant en tout pays où l'Union est titulaire d'un compte bancaire. Les trésoriers-assistants peuvent être désignés en dehors des membres du Bureau mais parmi les membres de l'Assemblée Générale.

Le Bureau doit dresser un budget prévisionnel pour l'année à venir, administrer les finances de l'Union et soumettre à l'Assemblée Générale un rapport financier annuel. Le Vice-Président remplit les fonctions du Président pendant toute période où celui-ci se trouve empêché de les exercer. Entre les réunions de l'Assemblée Générale, il incombe au Bureau de désigner un remplaçant temporaire pour remplir les fonctions du Vice-Président, du Secrétaire Général ou du Trésorier si cela s'avère nécessaire.

1) Adopté par l'Assemblée Générale de l'Union le 22 août 1984 à Lyngby (Danemark).

ART. XII
L'Assemblée Générale désigne un Comité permanent des Congrès chargé de l'organisation à intervalles réguliers des Congrès Internationaux de Mécanique Théorique et Appliquée.

a) Le Président de l'Union préside aussi ce Comité des Congrès.
b) Les Membres de ce Comité sont élus par l'Assemblée Générale; ils sont des hommes de science actifs dans le domaine de la mécanique théorique ou appliquée, n'appartenant pas nécessairement à l'Assemblée Générale.
c) Le Comité des Congrès élit ou réélit, pour une durée qu'il juge convenable, son Secrétaire Général.

ART. XIII
Les ressources financières de l'Union sont constituées par;

a) les cotisations annuelles des "organisations adhérentes";
b) les dons et subventions que l'Union peut recevoir. L'Union doit tenir une liste de ses bienfaiteurs où doivent être mentionnés pour chaque année les noms des personnes ou institutions qui ont fait bénéficier l'Union de donations, legs ou subventions.

ART. XIV
Le nombre des représentants d'une "organisation adhérente" et le montant de la cotisation annuelle qu'elle doit acquitter sont déterminés, selon le tableau suivant, par la catégorie à laquelle elle a appartenu l'organisation, après accord de l'Assemblée Générale.

<table>
<thead>
<tr>
<th>Catégorie</th>
<th>Nombre de représentants</th>
<th>Nombre d'unités de cotisation annuelle</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1</td>
<td>1</td>
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<td>II</td>
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<td>III</td>
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<td>IV</td>
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<td>8</td>
</tr>
<tr>
<td>V</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

Le montant de l'unité de cotisation annuelle est fixé par l'Assemblée Générale, au moins une année avant celle à laquelle cette cotisation devient exigible.

Résolution de l'Assemblée Générale de Pallanza
(27 juin 1950)

En confirmation des opinions exprimées précédemment à l'Assemblée Générale de septembre 1948 au moment où les présent statuts ont été adoptés:

1. L'Assemblée Générale estime que, dans les pays où il existe plus d’une organisation nationale active dans le champ de la mécanique théorique et appli-
Règles de fonctionnement du Comité des Congrès de l'Union

1. Le Comité des Congrès se réunit au moins une fois lors de chaque Congrès.
2. Le Comité des Congrès peut instituer un Comité Exécutif chargé de prendre en son nom toutes les décisions nécessaires pendant la période qui s'écoule entre deux Congrès successifs, et de lui en faire rapport à sa prochaine réunion. Le Comité Exécutif comprend le président et le secrétaire du Comité des Congrès et un ou plusieurs membres désignés par le comité des Congrès.
3. L'organisation effective d'un Congrès est confiée à un Comité local d'Organisation, élu par le pays ou l'organisation qui invite, et ce Comité est également responsable de la publication des Comptes rendus du Congrès. Le Comité d'Organisation fera son rapport au Comité des Congrès soit au cours du Congrès qu'il organise, soit avant, s'il le juge préférable.
4. Le Comité d'Organisation devra obtenir l'approbation du Comité des Congrès (normalement par l'intermédiaire du Comité Exécutif) pour toutes les questions relevant de la politique générale du Comité des Congrès, en particulier pour celles qui concernent:
   4.1 le but du Congrès;
   4.2 la sélection des communications pour le Congrès;
   4.3 le choix des conférences générales pour le Congrès;
   4.4 la désignation des présidents de session du Congrès;
   4.5 les principes généraux régissant les arrangements financiers du Congrès.
5. Le comité d'Organisation percevra, de tous les membres du Congrès, une contribution (dont le montant sera proposé par le Comité du Congrès et approuvé par le Bureau) afin de couvrir les dépenses administratives du Comité du Congrès. Ces contributions seront reversées à l'IUAM immédiatement après le Congrès.

Statutes of International Union of Theoretical and Applied Mechanics

I

"The International Union of Theoretical and Applied Mechanics" hereinafter called "the Union" is an international non-governmental scientific organization.

II

The principal objectives of the Union are
a) to form a link between persons and organizations engaged in scientific work (theoretical or experimental) in mechanics or in related sciences;
b) to organize international congresses of theoretical and applied mechanics through a standing Congress Committee (Article XII), and to organize other international meetings for subjects falling within the field of theoretical and applied mechanics;
c) to engage in other activities meant to promote development of mechanics, both theoretical and applied, as a branch of science.

III

The highest authority of the Union is its General Assembly.
The General Assembly has the power to decide all questions affecting the Union, including alterations of the Statutes. On specified questions it may delegate its power to appropriate bodies.
The composition of the General Assembly is regulated in Article VI.
Meeting of the General Assembly will take place at times decided by the Bureau (Article XI) or on the request of at least 10 members of the General Assembly.

IV

In all its decisions the General Assembly shall be guided by the tradition of free international scientific cooperation, developed in the International Congresses for Theoretical and Applied Mechanics.
In pursing its objectives the Union shall observe the basic policy of nondiscrimination and affirm the rights of scientists throughout the world to adhere to or to associate with international scientific activity without regard to race, religion, political philosophy, ethnic origin, citizenship, language or sex.

V

In voting every member of the General Assembly shall dispose of one vote.
For an alteration of the Statutes the majority required is 2/3 of the votes brought forward.
For all other decisions a simple majority of the votes brought forward is required.
Any member who is unable to attend a meeting may by a letter to the Secretary General constitute another member of the General Assembly as proxy.
Between meetings of the General Assembly voting may be carried out by correspondence upon proposals made by the Bureau (Article XI); in this case decisions will be valid only provided the number of persons taking part in the vote is not less than 2/3 of the total membership of the General Assembly.
VI
The General Assembly is composed of:
(a) representatives of the adhering organizations (Article VIII);
b) members elected by the General Assembly of the Union, who shall be persons actually engaged in scientific work in mechanics or in related sciences;
c) representatives of committees and groups of scientists, if so decided by the General Assembly.
The term of an elected member shall be determined by the General Assembly at the time of the election.

VII
The General Assembly shall provide for an adequate representation of any group of scientists carrying out research in theoretical or applied mechanics and not represented by an adhering organization.

VIII
Organisations of scientists in theoretical or applied mechanics (or unions of such organizations) which effectively represent independent scientific activity in a country or in a definite territory can be admitted by the General Assembly as adhering organizations of the Union provided they can be listed under a name that will avoid any misunderstanding about the country or territory represented.
In general only one organization from each country or territory will be admitted.

IX
Each adhering organization shall have representatives in the General Assembly of the Union, and pay an annual subscription to the Union in accordance with Article XIV.

X
International organizations mainly occupied in fields closely related to that of the Union can be admitted by the General Assembly as affiliated organizations of the Union.
Each affiliated organization has the right to appoint an observer, who is invited to take part in the General Assembly without voting rights. The Bureau of the Union (Article X) has the reciprocal right to appoint a nonvoting observer to the corresponding council or other executive body of the affiliated organization.
The affiliated organization and the Union are mutually obliged to keep each other informed about all important activities of and organizational measures taken.

In organizing international scientific meetings the Union and each of the affiliated organization are obliged to consider carefully all measures already taken by the Union and its affiliated organizations in order to coordinate such international scientific activities.
Affiliated organizations pay no annual dues to the Union.

XI
To execute the decisions of the General Assembly and to carry out work between meetings, the General Assembly elects members of a Bureau for a period of at most four years. The Bureau consists of the officers (President, the retiring President who serves as Vice-President, Secretary-General, and Treasurer) and four other members of the General Assembly. The maximum continuous period of service as a member of the Bureau, other than an officer, is limited to eight years. Newly elected members of the Bureau enter into office on the date of November 1, following the General Assembly at which they were elected. The Bureau will meet at least every year. A member of the Bureau who is prevented from attending a meeting may by letter to the Secretary-General designate another member of the General Assembly as a replacement. The Secretary-General will act as a permanent center for all matters affecting the Union, including relations with adhering, affiliated and other organizations. The legal domicile of the Union shall be the place where the Secretary-General lives. The Bureau is authorized to appoint Assistant-Treasurers in those countries where the Union has a bank account. The Assistant-Treasurers must be members of the General Assembly but need not be members of the Bureau. The Bureau shall draft a budget for each coming year, and shall administer the finances. The Bureau shall submit an annual financial report to the General Assembly. The Vice-President shall normally fulfill the duties of the President should the President become unable to discharge them. Between meetings of the General Assembly the Bureau shall decide who shall undertake the duties of the Vice President, Secretary-General, or Treasurer should a temporary replacement be necessary.

XII
The General Assembly establishes a standing Congress Committee which is responsible for the organization of International Congresses of Theoretical and Applied Mechanics at regular intervals.
(a) The President of the Union shall also serve as President of the Congress Committee.

1) Adopted by the General Assembly on August 22, 1984 in Lyngby (Denmark).
The members of the Congress Committee are appointed by the General Assembly as scientists active in theoretical or applied mechanics and need not be members of the General Assembly.

c) The Congress Committee appoints a Secretary, without stated terms of office.

d) The rules of procedure of the Congress Committee shall be approved by the General Assembly.

XIII
The financial means of the Union are formed by:

a) the annual subscriptions of the adhering organizations;

b) gifts and grants.

The Union shall maintain a roll of benefactors on which shall be inscribed annually the names of those persons or institutions which have accorded gifts, legacies or other subventions to the Union.

XIV
The number of representatives of an adhering organization and the amount of the annual subscription to be paid by that organization will be regulated according to one of the following categories, as proposed by the adhering organization and after approval of the General Assembly of the Union:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of representatives</th>
<th>Units of annual subscription</th>
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<tbody>
<tr>
<td>I</td>
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<td>1</td>
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<td>II</td>
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<td>V</td>
<td>5</td>
<td>12</td>
</tr>
</tbody>
</table>

Changes in the amount of the unit annual subscription will be decided by the General Assembly not less than one year in advance.

Resolution of the General Assembly at Pallanza
(June 27, 1950)
In confirmation of the views already expressed at the General Assembly of September 1948 when the present statutes were framed:

1. The General Assembly expects that in those countries where more than one national organization is active in theoretical and applied mechanics, a national coordinating committee will be formed. In general it is expected to recognize only one adhering body in each country;

2. The General Assembly believes that a gradual transition should be made in its composition, so that ultimately it will consist mainly of representatives of organizations adhering to the Union with the category of elected members reserved for exceptional and unusual cases. To this end it gives notices of its intention to reduce the number of elected members when the terms of the present elected members expire in 1952.

Rules of procedure for the Congress Committee of IUTAM
1. The Congress Committee meets at least once at every Congress.

2. The Congress Committee may appoint an Executive Committee to take all necessary actions on its behalf in the period between two successive Congresses, and to report to it at its next meeting. The Executive Committee will consist of the president, the secretary and one or more members appointed by the Congress Committee.

3. The actual organization of a Congress is delegated to a local Organizing Committee, elected by the host-country or host-organization, which is also responsible for publication of its Proceedings. The Organizing Committee will report to the Congress Committee either during or, if it sees fit, before the Congress which it organizes.

4. The Organizing Committee will obtain the approval of the Congress Committee (normally through the Executive Committee) with regard to all matters affecting the general policy of the Congress Committee, in particular with regard to:

   4.1 the scope of the Congress;
   4.2 the screening of papers of the Congress;
   4.3 the selection of general lectures for the Congress;
   4.4 the appointment of chairmen of sessions of the Congress;
   4.5 the broad principles regarding financial arrangements for the Congress.

5. The Organizing Committee will levy a fee (the level to be recommended by the Congress Committee and approved by the Bureau) for administrative expenses of the Congress Committee, from all Congress members. This fee will be paid over to IUTAM after the Congress.

Procedure for election of the Bureau of IUTAM

1.
At the General Assembly, preceding the one at which the new Bureau is elected, an Electoral Committee (EC) shall be elected, consisting of the President of the Union and two to four other members of the Assembly, who are not members of the Bureau.

2.
The President is Chairman of the EC.

3.

Proposals by members of the General Assembly with voting rights for members of the Bureau, viz. for President, Treasurer, Secretary-General, and the other four members to be elected, must be addressed to the Chairman of the EC within a time limit set by the Committee. All proposals will be treated confidentially by the Committee.

4.

Taking into account all material received the EC is charged with the duty of presenting to the General Assembly such proposals as it deems will have at least a reasonable support by the General Assembly. The EC will make sure that the candidates thus proposed are willing to accept an election. The proposals by the EC will be circulated to all members of the General Assembly during the first session of the meeting of the Assembly at which the Bureau will be elected.

5.

Proposals not identical with the ones of the EC are considered to be withdrawn, unless they are sustained and supported by at least ten members of the General Assembly before its second session.

6.

The General Assembly will vote on those candidates mentioned in the proposals of paragraph 4 and 5.

List of Publications

a) Annual Reports, available at the Secretariat
   The Union publishes since 1948 every year a Report with detailed information on all its activities.

b) Publications on Symposia, etc., available from the publisher
   1. Problems of Cosmical Aerodynamics, Proceedings of the Symposium on the Motion of Gaseous Masses of Cosmical Dimensions held at Paris, France, August 16-19, 1949, organized by IUTAM and IAU.
      Published by: Central Air Documents Office, Army-Navy-Air-Force, U. B Building, Dayton 2, Ohio, USA.
   2. Colloque international de Mécanique, Palianza, Lago Maggiore, Italy, 23-24 juin 1950, organized par l'IUTAM.
   3. Colloquium on Plastic Flow and Deformation within the Earth, Hershey, Pennsylvania, USA, September 12-14, 1950, organized by IUTAM and IUGG.

   Published by the American Geophysical Union in the “Transactions American Geophysical Union”, vol. 32, n° 4, pp. 497-543, 1951.
   A few copies can be obtained from the Secretary, American Geophysical Union, 1530, P. Street, N. W., Washington, D. C. (USA).
   4. Colloque sur les Vibrations Non-Linéaires, tenu à l’île de Porquerolles, Var, France, 18-22 septembre 1951, organisé par l’IUTAM et l’URSI.
   6. 2nd Symposium on Gas Dynamics of Interstellar Clouds, Cambridge (UK), 1953, in cooperation with IAU.
      “Gas Dynamics of Cosmic Clouds, edited by H. C. van de Hulst and J. M. Burgers (IAU Symposium series, n° 2), Amsterdam”.
      Published by North-Holland Publishing Company, Amsterdam (Netherlands), 1953.
      Published by Imprimerie Dioncre, Chaussée de Boondael, 602-602a, Ixelles-Bruxelles (Belgique).
   8. Colloquium on Fatigue (Stockholm, Sweden, 25-27 May 1955), organized by IUTAM.
      Published by Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, West Berlin (Germany), 1956.
   9. Colloquium on Deformation and Flow of Solids (Madrid, Spain, 26-30 September 1955), organized by IUTAM.
      Published by Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, West Berlin (Germany), 1956.
   10. Third Symposium on Cosmical Gas Dynamics (Cambridge, Massachusetts, USA, 24-29 June 1957, in cooperation with IAU).
      Published by Reviews of Modern Physics, American Institute of Physics, 335 East 45th Street, New York 17, N. Y. (USA), 1958.
      Published by Springer-Verlag, Heidelberger Platz 3, Berlin-Wilmersdorf, West Berlin (Germany), 1958.
   13. Symposium on Non-Homogeneity in Elasticity and Plasticity (Warsaw, Poland, 2-9 September 1958), organized by IUTAM.
      Published by Pergamon Press, Ltd., 4 & 5 Fitzroy Square, London W 1 (UK), 1959.


53. Second IUTAM/IUGG Symposium on Turbulent Diffusion in Environmental Pollution (Charlottesville, Virginia, USA, April 8-14, 1973).


56. IUTAM Symposium on Buckling of Structures (Harvard University, Cambridge, Massachusetts, USA, June 17-21, 1974). The Proceedings of the Symposium edited by B. Budiansky have been published by Springer-Verlag, Berlin, 1976.


73. IUTAM Symposium on Non-Newtonian Fluid Mechanics (Louvain-la-Neuve, Belgium, 28 August – 1 September 1978).

74. IUTAM Symposium on Metal Forming Plasticity (Tutzing, FRG, 28 August – 3 September 1978).

The Proceedings of the Symposium, edited by E.A. Müller, have been published by Springer-Verlag, Berlin, 1979.

76. Third IUTAM Symposium on Shell Theory (Tbilisi, USSR, 22-28 August 1978).


78. IUTAM Symposium on Structural Control (Waterloo, Ontario, Canada, 4-7 June 1979).

79. IUTAM Symposium on the Physics and Mechanics of Ice (Copenhagen, Denmark, 6-10 August 1979).

80. IAHR/IUTAM Symposium on Practical Experiences with Flow-Induced Vibrations (Karlsruhe, FRG, 3-6 September 1979).


82. IUTAM Symposium on Laminar-Turbulent Transition (Stuttgart, FRG, 16-22 September 1979).

83. IUTAM/AUGG Symposium on Monsoon Dynamics (Delhi, India, 5-9 December 1977).


85. IUTAM Symposium on Non-linearities in Structural Analysis (Senlis, France, 27-30 May 1980).
The Proceedings of the Symposium, edited by J. Hult and J. Lemaitre, have been published by Springer-Verlag, Berlin 1981.


88. IUTAM Symposium on Three-Dimensional Constitutive Relations and Ductile Fracture (Dourdan, France, 2-5 June 1980).

89. ICMT/IUTAM Symposium on Heat and Mass Transfer and the Structure of Turbulence (Dubrovnik, Yugoslavia, 6-10 October 1980).


The Proceedings of the Symposium, edited by L. Bengtsson and J. Lighthill, have been published by Springer-Verlag, Berlin 1982.


The Proceedings of the Symposium, edited by M. Pichal, have been published by the Institute of Thermomechanics, Czechoslovak Academy of Sciences, Prague, Czechoslovakia.

95. IUTAM Symposium on Three-Dimensional Turbulent Boundary Layers (Berlin-West, 29 March – 1 April 1982).


97. IUTAM/COSPAR Symposium on Giant Planets and their Satellites (Ottawa, Canada, 16 May – 2 June 1982).

98. IUTAM/COSPAR Symposium on Fundamental Aspects of Material Science in Space (Ottawa, Canada, 16 May – 2 June 1982).


100. IUTAM Symposium on Structure of Complex Turbulent Shear Flow (Mar- seille, France, 31 August – 3 September 1982).

The Proceedings of the Symposium, edited by J. M. T. Thompson & G. W. Hunt, have been published by Cambridge University Press 1983.

102. IUTAM Symposium on Random Vibrations and Reliability (Frankfurt/Oder, GDR, 31 October – 6 November 1982).
The Proceedings of the Symposium, edited by K. Hennig, have been published by Akademie-Verlag, Berlin 1983.

103. IUTAM/ISIMM Symposium on Modern Developments in Analytical Mechanics (Torino, Italy, 7-11 June 1982).
The Proceedings of the Symposium, edited by S. Benenti, M. Francaviglia and A. Lichnerowicz, have been published by the Academy of Sciences of Torino 1983.

104. IUTAM Symposium on Mechanics of Composite Materials (Blacksburg, Virginia, USA, 16-19 August 1982).
The Proceedings of the Symposium, edited by Z. Hashin and C. T. Hara-
kovich, have been published by Pergamon Press 1983.


108. IUTAM/UGG Symposium on Seabed Mechanics (Newcastle upon Tyne, UK, 5-9 September 1983).
The Proceedings of the Symposium, edited by B. Denness, have been published by Graham & Trotman, London 1983.


110. IUTAM/UGG Symposium on Atmospheric Dispersion of Heavy Gases and Small Particles (Delft, The Netherlands, 29 August-2 September 1983).

111. IUTAM Symposium on Turbulence and Chaotic Behavior in Fluids (Kyoto, Japan, 5-10 September 1983).
The Proceedings of the Symposium, edited by T. Tatsumi, have been published by North-Holland, Amsterdam, 1984.


c) Proceedings of the International Congresses for Applied Mechanics. Until September 4, 1964 the organization of the International Congresses for Applied Mechanics was supervised by the “International Committee for the Congresses of Applied Mechanics” and for each Congress separately entrusted to a local Organizing Committee undertaking also the publication of the Proceedings. Consequently, there is no central point from which Proceedings can be ordered, and for each volume, application must be made to the publishers who took care of that particular volume.

Since September 4, 1964 the same task will be fulfilled by the Standing Congress Committee of IUTAM, and local Organizing Committees to be established.

The titles of the volumes and the names of the publishing firms are given below.

1st Congress, Delft (Netherlands), 22-26 April 1924.
No more copies are available for sale at Delft.

2nd Congress, Zurich (Switzerland), 12-17 September 1926.

3rd Congress, Stockholm (Sweden), 24-29 August 1930.
AB. Sveriges Litografiska Tryckerier, Stockholm, 1931.


5th Congress, Cambridge (Massachusetts, USA), 12-16 September 1938.


8th Congress, Istanbul (Turkey), 20-28 August 1952. Proceedings published by the Organizing Committee (Vol. I, Vol. II). Faculty of Sciences, University of Istanbul, P.O. Box 245, Istanbul (Turkey), 1953.


12th Congress, Stanford, Cal. (USA), 26-31 August 1968. The Proceedings, edited by M. Hetényi and W.G. Vincenti, have been published by Springer-Verlag, Berlin (Germany), 1969.


(Please note: The publications listed above, except the Annual Reports, are not available at the IUTAM Secretariat. Please order directly from the publisher.)

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