International Association of Seismology and Physics of the Earth's Interior

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Prof. A. V. Nikolaev Institute of Physics of the Earth Academy of Sciences of USSR Bolshaya Gruzinskaya, 10 Moscow 123 242 RUSSIA	Prof. C. Froidevaux Laboratoire de Géologie Ecole Normale Supérieure 24 rue Lhomond F-75251 Paris CEDEX 05 FRANCE	Prof. B. L. N. Kennett Research School of Earth Sciences The Australian National University G.P.O. Box 4 Canberra, ACT 2601 AUSTRALIA	Dr. E. R. Engdahl U.S. Geological Survey P.O. Box 25046, Mail Stop 967 Denver Federal Center Denver, Colorado 80225 U.S.A.

Tel: 1 303 273 8422
Fax: 1 303 273 8450
Telex: 510 6014123 ESL UD
Internet: engdahl@gldfs.cr.usgs.gov
Bitnet: eengdahl@usgsresv.bitnet

NEWSLETTER No. 31

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To: National Correspondents, Officers and Representatives of the Association, and related organizations.

This Newsletter is the first to be published in our new two-column format. The content has also been changed to emphasize personal reports by Commission Chairs, meeting organizers, and other member scientists involved in IASPEI sponsored activities. Your comments on both the format and content, as well as contributions to future Newsletters, are invited.

IASPEI involvement in Decade activities, as you will see from the reports in this issue, is on the increase and we are targeting the 1994 General Assembly in Wellington as a focus for these efforts. We are encouraging the fuller participation of Commissions and member scientists in the IDNDR program and we invite your proposals for hazards-related work in the 1990s.

This Newsletter also contains reports on a number of successful meetings held in 1992 with IASPEI support. Planning is now well underway for our New Zealand meeting. A First Circular has been distributed and a Second Circular containing the Call for Papers will be distributed early next year. For the future, IASPEI has yet to receive a formal invitation for the venue of its 1997 General Assembly. I urge you to bring this matter to the attention of your National Committees for their consideration as a significant opportunity to bring our science to the forefront in your country.

E. R. Engdahl

Secretary-General

ASSOCIATION AFFAIRS

Progress Report, IASPEI/IDNDR Demonstration Project

Presented to the 4th Session of the Scientific and Technical Committee (STC) of the UN/IDNDR

The comprehensive program described in "Minimizing Earthquake Vulnerability", adopted at the IASPEI General Assembly in Vienna in 1991, was endorsed by the Scientific and Technical Committee (STC) of the UN/IDNDR as a "Demonstration Project". This document contains the goals, activities, and recommendations which cover all aspects of seismic risk reduction and associated research and education for IASPEI and its family of scientists and engineers. A special Commission for IDNDR of IASPEI was charged with developing activities and policies, and an IASPEI/IDNDR Secretariat was established in Beijing to administer the program (c/o Yin Zhijun, IASPEI/IDNDR Secretariat, 63 Fuxing Avenue, Beijing 100036, CHINA).

The central IDNDR goal dealing with earthquakes is to minimize seismic risk to life and economic well-being. This goal has long been a central concern of IASPEI. Therefore, it is intended that IASPEI's Decade activities will be largely executed by the existing organizations within the Association. The

appropriate Commissions have been charged with carrying out the relevant research and information transfer. All IASPEI Commissions and Working Groups have been asked to prepare 1993/1994 proposals with the IDNDR goals in mind. Hazard related proposals will have top priority.

A number of specific steps have been taken by the Commission towards meeting the program goals. In March the Commission for IDNDR met in Geneva to review projects proposed by relevant commissions and initiated by other organizations. Actions were recommended.

At the Beijing Secretariat, a data base containing information on earthquake-related IDNDR activities, within IASPEI and within other organizations, is building up. This library will enable eventual information exchange and transfer among the interested parties. Training and education efforts are being stimulated by contacting relevant international training institutions to identify suitable courses and possible fellowships for providing assistance in the training of seismologists from developing countries. The relevant commissions are also charged with the responsibility of identifying text books and other materials to be used for training. The Commission on Developing Countries, with wide global representation, has met and developed recommendations and actions to advance the study of earthquakes and their consequences in the less technically advanced parts of the world.

IASPEI has been involved in other international demonstration projects. Two representatives from IASPEI attended the WMO Coordination Meeting for the Comprehensive Risk Assessment Project in March, 1992. Relevant activities of IASPEI and direct contributions to the program were presented.

As indicated in our report to the 3rd STC Session of UN/IDNDR, the outputs of IASPEI's program will include a series of manuals and monographs on various techniques and practice. The Commission for IDNDR has decided to support financially the publication of the special book, "World-Wide Assessment of Seismic Hazard Assessment Techniques". Preparation of the book is being carried out by the Sub-Commission on Earthquake Hazard and the European Seismological Commission. This volume will be the first IASPEI/IDNDR manual.

The Commission decided at its Geneva meeting to participate strongly in the implementation of the Global Seismic Hazard Assessment Program (GSHAP) initiated by ILP. IASPEI supported the participation, together with ING and several other international organizations, of key experts in seismic hazard analysis in the Technical Planning Meeting held in Rome in June 1992. Regional Centres and a Coordinating Centre (in Rome) will be established. The proceedings will be published in a second volume to the project on seismic hazard assessment.

As proposed in "Minimizing Earthquake Vulnerability", all available information related to destructive earthquakes will be compiled in special volumes and ultimately in digital form. The compilation in Russia of the Spitak (Armenia) earthquake data base, as a beginning, is being financially supported by IASPEI.

Enhanced study on seismicity and the application of the results in seismic risk reduction is a major concern of IASPEI in the IDNDR. IASPEI sponsored and strongly supported the 2nd International Conference on Continental Earthquakes held in Beijing in October 7-10, 1992, by allocating funds and sending key experts and representatives. The Conference addressed nearly every aspect of continental earthquakes, from monitoring, initiation, prediction, and preparedness, to disaster reduction. A workshop on the World-Wide Map of Future Earthquake Losses was organized during the Conference through the IASPEI Commission on Earthquake Hazard and Prediction to develop in more detail the principles and methodology for the compilation. Particular account was taken of the fact that a substantial part of the work (vulnerability functions) depends on engineers and economists. The IASPEI/IDNDR Secretariat assisted in meeting arrangements and fund allocation.

Recent initiatives of the Commission include participation in a Special Discussion on IDNDR at the 10th World Conference on Earthquake Engineering in Madrid in July. The IASPEI Demonstration Project was explained and support given for a significant IDNDR initiative by IAEE, including closer

contacts with seismologists in IASPEI. A serious problem is that IAEE does not belong to ICSU. On the side of key private programs related to earthquake hazard management of large cities, the Commission was represented at the first meeting of the International Technical Advisory Committee of the Quito Earthquake Project in October. Success of this pilot project could be of great importance for extensions to many mega-cities.

There will be a Special Session dedicated to the IDNDR during the next IASPEI Assembly in New Zealand in January 1994, for the presentation of results of relevant commissions on IDNDR-related efforts. Among the associated Symposia and Workshops will be "Earthquake Hazard and Risk", "Seismological and Tsunami Hazards in the Pacific", "Induced Seismicity", and "Effects of Surface Geology on Seismic Motion". The Commission will also conduct a mid-term review of IDNDR activities of the Association at that time.

Seismic risk reduction activities associated with the Decade, especially those activities leading up to and during the 1994 IASPEI General Assembly in New Zealand, will be the main beneficiaries of 1993 funds.

B.A. Bolt (Chairman, Commission for IDNDR)

International Heat Flow Commission

A new revised version of the World Heat Flow Data Collection has been completed. The present work includes 24,776 entries corresponding to a total of 20,511 data points. The data set is arranged alphabetically by continents, with oceanic data following. Provided for each heat flow station are the datum number, descriptive codes, name of site, geographical coordinates, elevation, minimum and maximum depth, temperature gradient, mean thermal conductivity, heat production, measured and corrected heat flow, year of publication and the corresponding publication reference. The data will be available shortly on floppy disks from the World Data Centers.

Just as the one data base was completed, the IHFC undertook the compilation of another. At the IUGG meeting in Vienna the IHFC established a new Working Group to assemble a global data base of subsurface temperature observations and ancillary data relevant to the understanding of the Earth's recent surface temperature history. This type of data base has been identified as an important component of the International Geosphere Biosphere Program to document global change.

H.N. Pollack (Chairman)

International Symposium on Effects of Surface Geology on Seismic Motion Odawara, Japan 25-27 March 1992

The IASPEI/IAEE Joint Working Group on the Effects of Surface Geology on Seismic Motion has determined that a set of international "blind" prediction experiments would be the best way to assess the various methods used to predict surface geology effects. An initial experiment was conducted using weak motion data recorded at Turkey Flat in California. On 5 August 1990 an M5.1 earthquake occurred at a depth of 14 km beneath the Ashigara Valley, Japan, from which both weak and strong motion data were recorded. Subsequently, the Japanese National Working Group on Effects of Surface Geology conducted a second experiment and organized this International Symposium to assess the ability of various analytical and numerical methods to predict the ground motion observed at the Ashigara Valley Test Site and to evaluate the state-of-the art of strong ground motion prediction generally. The Symposium brought together earth scientists and earthquake engineers from around the world.

The published proceedings constitute a permanent record of the International Symposium, containing results of the Ashigara Valley and Turkey Flat blind prediction experiments, as well as of invited lectures, general papers, and panel discussions. The results presented in these proceedings represent a major contribution toward a better understanding of the effects of surface geology and the methods used to predict these effects. With over forty participants in the Ashigara Valley blind prediction experiment, a broad spectrum of methods and approaches has been examined. These proceedings provide the basis for assessing current prediction methodologies and indicate the research needed to develop improved methodologies.

It is hoped that additional blind prediction experiments will be conducted at sites around the world so that a wider range of different

geologic settings as well as different levels of acceleration can be studied. The results of the Ashigara Valley experiment should stimulate interest in the study of surface geology effects and give added momentum to the blind prediction experiment program.

W.D. Iwan (Co-Chairman, Joint Working Group on the Effects of Surface Geology)

Technical Planning Meeting ILP Global Seismic Hazard Assessment Program Rome, Italy 1-3 June 1992

The International Lithosphere Program's (ILP) proposal for a Global Seismic Hazard Assessment Program (GSHAP) has been endorsed , as an international demonstration project, by the Scientific and Technical Committee (STC) of the UN's International Decade of Natural Disaster Reduction (IDNDR), with the strong support of the International Council of Scientific Unions (ICSU) and of UNESCO. GSHAP embodies many of the strategies and policies defined by the IDNDR. The primary goal of GSHAP is to ensure that national agencies be able to assess seismic hazard in a regionally coordinated fashion and with the most advanced methods, in order to minimize the loss of life, property damage and social and economic disruption caused by earthquakes. the program will be coordinated at global level but implemented at regional and local scale and it will be based on the establishment of Regional Centres to assist national efforts; the ultimate benefits will be national assessments of seismic hazards, available before the end of the Decade, to be introduced in the implementation of risk mitigation strategies.

The GSHAP Technical Meeting was held at the University of Roma on June 1-3, 1992, chaired by D. Giardini and P. Basham, and under the joint sponsorship of the Istituto Nazionale di Geofisica of Roma and of several international agencies. The scope of the meeting was to verify the consensus of the scientific community on GSHAP and to define the program goals and specifications. Representatives of 27 countries and of all major international and regional agencies involved in hazard assessment were present, ensuring the needed coordination and expertise to guide the program. The meeting was successful in identifying the needs of the scientific community and the private sector to establish new standards for worldwide assessment of seismic hazard, complying with the request of the United Nations to develop a program geared to practical application in the IDNDR framework. To fulfill the GSHAP strategy for long-standing improvements, Regional Centres will be created for the coordination of seismic hazard assessment activities. Nine locations for Regional Centres have been proposed: Mexico City, Potsdam, Rabat, Nairobi, Moscow, Teheran, Beijing, Manila and a location in South America to be selected by CERESIS.

D. Giardini (ILP GSHAP Coordinator)

3rd International SEDI Symposium Mizusawa, Japan 6-10 July 1992

The theme of the Symposium was "Core-mantle boundary region, structure and dynamics". The attendance was very good with 158 scientists from many countries. Participation of the host country was, of course, the largest and Japanese students were well represented. There were 17 participants from the USA, 7 from France, 6 from Russia, 5 from Germany, 4 from Canada, 4 from Australia, and 10 from various other countries. Sessions started with lead talks of 30 minutes followed by a brief presentation of posters and ample time for discussion.

The scientific level of the Symposium was excellent and enabled the participants to assess the considerable progress made since the last Symposium, two years ago at Santa Fe. Recent seismic data now consistently point to a radially and laterally heterogeneous D" layer; methodological progress in seismic tomography is also noteworthy. The study of deep Earth using superconducting gravimeters was an important topic, especially since Japan is at the forefront in this area (there are as many superconducting gravimeters in Japan alone as in the rest of the world). Mineral physics has now a well acknowledged place in SEDI. New and interesting contributions in the study of core motions are also noted.

The Symposium was a success, especially in that the interaction between various disciplines was stronger than in the past. SEDI national committees are active in the USA,

Japan, Canada and France. SEDI sessions are planned for the European Union of Geosciences meeting in Strasbourg, France (April 1993), for the IAGA meeting in Buenos Aires, Argentina (August 1993), and for the 1994 IASPEI General Assembly in Wellington, New Zealand. The next SEDI Symposium will take place in 1994 in Canada.

J.-P. Poirier (Chairman, Commission on Physical Properties of the Earth's Interior)

5th International Symposium on Seismic Reflection Probing of the Continents and their Margins
Banff, Alberta, Canada
6-12 September 1992

The Symposium convened at The Banff Centre for Conferences on Sunday, September 6 with a Welcoming Icebreaker for all delegates and accompanying members. This day followed an overnight blizzard which coated the surrounding mountains with fresh white snow, an absolutely magnificent vista; and thereafter the weather improved to sunny skies so that all delegates could enjoy their outdoor surroundings.

About 130 delegates registered for the Symposium with an additional 30 accompanying members. Of the delegates, almost 60 of them were from outside North America, strongly indicating the international nature of the meeting. Almost 30 students were included among the delegates and a good number of these also were from outside North America.

The Scientific Program of the Symposium was developed around seven scientific themes: 1. Integrated multidisciplinary studies of key geological targets; 2. Seismic reflection techniques and applications relevant to mineral and petroleum exploration and studies of natural hazards; 3. Seismic signatures of plate boundaries; 4. Orogenic scale studies; 5. Deep seismic studies of Precambrian shields; 6. Rock property, drilling-related and special studies; and 7. Deep lithospheric (lower and upper mantle) reflections.

To address these themes, 58 oral presentations and 72 poster presentations were made during the Symposium. No simultaneous sessions were included, an aspect that we consider very important for this type of specialized meeting. The posters were on display throughout the duration of the meeting and three separate poster session times were built into the program. Delegates appreciated the continuing display of the posters. The technical and scientific content of both oral and poster presentations was of a particularly high caliber.

For six of the seven themes, one or more invited speakers provided timely and cogent discussions of the topic. Altogether, we had 13 invited speakers, seven of whom were distinguished scientists whose fields of study would not normally have brought them to such a meeting, but fields which were directly relatable to the seismic reflection theme of the Symposium. Our purpose here was to emphasize the need for integrated studies of the crust and subcrustal lithosphere.

A special feature of the Symposium was a public lecture on the evening of Wednesday, 9 September, following a "free" day during which more than half the delegates took advantage of a planned trip to Lake Louise and the Columbia Icefields. Dr. Robin Riddihough, Chief Scientist, Geological Survey of Canada gave an entertaining and informative lecture to a packed hall on the subject of "Logan's Legacy: 150 Years of Exploring Canada from the Ground Down". The subject reflected the fact that 1992 is the 150th anniversary of the establishment of the Geological Survey of Canada.

The 5th International Symposium was a great success: scientifically in both the oral and poster presentations and the informal discussions that continued throughout the meeting; and socially with the special events and opportunities to enjoy the beautiful surroundings.

Ron Clowes (Co-Chairman, Organizing Committee)

23rd General Assembly, European Seismological Commission
Prague, Czechoslovakia
7-12 September 1992

The biennial General Assembly of ESC, 7-12 September 1992, was organized by the Geophysical Institute of the Czechoslovakian Academy of Sciences and hosted on the premises of the Faculty of Mathematics and Physics of Charles University in Prague. The venue was in the northern suburbs of the city,

with very convenient accommodation in the student housing blocks nearby.

About 350 registered Participants from more than 30 countries attended the four main Symposia on 1. Mechanics of faulting and problems of earthquake prediction, 2. Strong and weak earthquake ground motions, 3. Three-dimensional structure of European lithosphere-asthenosphere system, 4. Study of seismic source-theory and observations, and the about 20 other workshops and sessions of the various ESC Working Groups. A special session was held on Strong earthquakes in Europe. About 280 oral papers and 70 posters were presented, and 8 instrument makers exhibited their latest products. The Proceedings will be printed in the first half of 1993. Contact for copies is V. Schenk, Chairman LOC, Geophysical Institute CAS, Bocni II, 141 31 Prague-4, CSFR.

The newly elected Bureau consists of L. Waniek, Czechoslovakia (President), G. Sobolev, Russia (First Vice-President), J. Drakopoulos, Greece (Second Vice-President), P. Suhadolc, Italy (Secretary-General) and D. Mayer-Rosa, Switzerland (Assistant Secretary-General). Great appreciation was expressed of the work done by the retiring Secretary-General, Dr. D. Mayer-Rosa, during his six-year term. The following Sub-Commission Chairman were appointed: A. Seismicity, K.C. Makropoulos (Greece); B. Data Acquisition, Theory and Interpretation , L.P. Vinnik (Russia); C. Physics of Earthquake Sources, A. Deschamps (France); D. Deep Seismic Sounding, U. Luosto (Finland); E. Earthquake Prediction Research, H. Berckhemer (Germany); and F. Engineering Seismology , V. Schenk (Czechoslovakia).

ESC's ruling body is the "Council" with representatives of the 36 European and Mediterranean member countries, the Chairpersons of the Sub-Commissions and the Members of the Bureau. Three new European countries applied to become members of the European Seismological Commission, but it was pointed out that no action could be taken until they had been admitted to IUGG.

All participants agreed in the final open session that the dramatic changes in Europe make it mandatory to seek new opportunities and strategies for a closer scientific cooperation. ESC's role of bridging political gaps between East and West clearly has second priority, while North-South relations gain interest. New ways of financing meetings and projects must be found, since classic funding through Academies in Eastern Europe is declining. It is concluded that international coordination within the UN International Decade for Natural Disaster Reduction is the prime goal for the 1990s.

An invitation was accepted to hold the next Assembly in Greece. This will be in Athens, in 1994, probably in the third week in September. Potsdam is being considered as a possible venue for the 1996 Assembly.

D. Mayer-Rosa (ESC Past Secretary-General)
R.D. Adams (for IASPEI Secretary-General)

Committee for Developing Countries

Members of the IASPEI Committee for Developing Countries and other interested scientists took the opportunity of holding an ad hoc meeting on 9 September, during the European Seismological Commission Assembly at Prague. This was the Committee's first opportunity to meet since its formation at the Vienna Assembly in 1991; it was attended by 10 Committee members and 13 others. Lively discussions took place on the topics of networks, hazard assessment, geothermal studies, training, publication and possible regional assemblies. One topic was the relative merit in developing countries of simple analogue seismological recording with individual stations compared with modern digital data acquisition and analysis systems. It was finally agreed that the requirements of each network had to be looked at individually, taking into consideration the environmental constraints, the level of training of local staff and national requirements, but maintaining as advanced a technical system as was feasible.

The setting up of the GSHAP project was reported by D. Giardini and its relevance to developing countries explained. G.F. Panza spoke of the initiatives of the International Centre for Theoretical Physics, Trieste, in high-level training, and P. Bormann gave details of the long running training courses held at Potsdam, where 260 scientists from 53 countries have now been trained. The Committee strongly supported the holding of Regional Assemblies and was in favour of one in South America in 1994 if this could be arranged.

Regional discussions followed on Latin America, Africa, the Indian region, Southeast Asia and the Arab region, and recent developments in all areas noted. In general discussion S.E. Pirhonen pointed out the benefit to developing countries of participating in the ISOP programme, particularly if ISOP training courses could be arranged in their region. It was also suggested that it could be useful for a Newsletter to be produced detailing topics of interest to developing countries, and this is being considered by the Committee.

It was agreed that this was a most useful interim gathering and that the Committee would hold its first formal meeting during the Wellington General Assembly in January, 1994.

R.D. Adams (Chairman)

2nd International Conference on Continental Earthquakes Beijing, China 7-10 October 1992

In response to and support of the IDNDR, the State Seismological Bureau (SSB) of the People's Republic of China, in cooperation with the Seismological Society of China and the Disaster Prevention Association, held the Second International Conference on Continental Earthquakes. The Conference was attended by more than 300 scientists, including 54 delegates from 18 countries. The purpose of this Conference was to provide worldwide specialists in earthquake studies and disaster mitigation efforts with an opportunity to get together in an international forum where they could exchange ideas and information. During the Conference, scientists demonstrated the latest developments in many fields, such as continental seismicity, precursors of continental earthquakes, seismogenesis and source processes of continental earthquakes, active tectonics and strong intra-continental earthquakes, earthquake engineering and engineering seismology, countermeasures for earthquake disaster, and earthquake disaster management. Two meetings, a Workshop on a World-Wide Map of Future Earthquake Losses and a Working Group Meeting on the GSHAP Beijing Centre, were also held during the Conference.

The IASPEI/IDNDR Secretariat in Beijing was inaugurated on October 8, 1992. Present at the ceremony were Prof. C. Froidevaux (First Vice-President), Prof. B.A. Bolt (Chairman, Commission for IDNDR) and Prof. Fang Zhangshun (Director-General of SSB). Also in attendance were Prof. Chen Zhangli (Deputy Director-General of SSB), Prof. L Esteva (Mexico) and Prof. S. Rattin (USA).

Yin Zhijun (IASPEI/IDNDR Secretariat)

27th General Assembly, IASPEI Wellington, New Zealand 10-21 January 1994

Planning for the January 1994 IASPEI Assembly in Wellington, New Zealand, is going well. The Chairman of the Local Organizing Committee is Dr. Fred Davey. The First Circular was issued in September. The Second Circular will contain a Call for Papers and will be sent out in January 1993 to those replying to the First Circular. The planned scientific program listed below includes a broad range of Lectures, Symposia and Workshops.

LECTURES: '...when men and mountains meet...', R.I. Walcott; and *The Statistical Mechanics of Earthquakes*, J.B. Rundle.

SYMPOSIA: International Decade for Natural Disaster Reduction; Wave propagation in heterogeneous media: Deterministic and stochastic; Earthquake hazard and risk; Sedimentary basins of the Asia-Pacific region and their tectonic setting; Deep Earth discontinuities: Configuration and dynamics; Structure and composition of the Earth's interior and their relation to planetary evolution; Earthquake prediction; Seismic tomography and mantle dynamics; Subduction zones and back arc basins; Geothermal aspects of lower crustal structure, petrology and rheology; Location and quantification of regional earthquakes; Milli- and micro-Hz seismology; and Detailed seismic studies in ridge areas.

WORKSHOPS: Seismological and tsunami hazards in the Pacific; Upgrading global seismological practice; Anisotropy on large

and small scales; Delay times and seismic tomography: Statistics, algorithms and errors; Earthquake source modeling and fault mechanics; Induced seismicity; Non-linear seismology; Effects of surface geology on seismic motion; Space geodesy and real time tectonics; Heat flow and hydrothermal circulation; Broad-band seismology and seismic sources; and New findings on strong ground motions from recent great earthquakes.

The Assembly will be held at Victoria University of Wellington, which is on a ridge overlooking Wellington Harbour, with mountains behind. The Lectures will be held in the MacLaurin Lecture theatre block and the adjacent Cotton Building which houses the Research School of Earth Sciences. The Research School is chaired by Prof. Jim Ansell who is also Chairman of the Assembly Facilities Sub-committee. (The buildings are named after Prof. Richard MacLaurin, who was the Inaugural Professor of Mathematics and Law until 1907 and then left to build a small Boston college into MIT, and Prof. Sir Charles Cotton the Inaugural Professor of Geology and an internationally recognized geomorphologist.)

Accommodations will be available in nearby hotels and student hostels. Local and wider field excursions are being organized to take advantage of the plate boundary setting, with transpression (mountains), subduction (beach ridges) and back-arc spreading (volcanoes and geothermal areas).

To receive the Second Circular please contact the LOC (Phone +64-4-473-8208; Fax +64-4-471-0977; E-mail IASPEI94@m2g.gns.cri.nz).

Jim Ansell (Local Organizing Committee)

21st General Assembly, IUGG
28th General Assembly, IASPEI
Boulder, Colorado, USA
July 1995

The XXI General Assembly of IUGG will meet in Boulder, Colorado, on the campus of the University of Colorado, in July, 1995. The invitation of the National Academy of Sciences of the United States to IUGG to meet in the U.S.A. was accepted by the Union Council on August 24, 1991. The overall organization of the scientific program will be managed by the American Geophysical Union, working through a Program Committee consisting of the Presidents of the Associations, with a Chairman (D.S. Chapman) appointed by the U.S. National Committee for IUGG in consultation with the Union Bureau. The goal of the Program Committee is to organize an excellent scientific program with a minimum of scheduling conflicts.

Of particular interest to IASPEI participants is the proximity of the meeting venue to both the National Earthquake Information Center, U.S. Geological Survey, in Golden and the National Geophysical Data Center, NOAA, in Boulder. An expected highlight of the Assembly is the presentation of some of the first important scientific results of the U.N.'s International Decade of Natural Disaster Reduction, in which IUGG and IASPEI are active participants.

C. Kisslinger (Chairman, Host Committee)

Publications

Sato, H. (Editor), Special Issue, Scattering and Attenuation of Seismic Waves, Proceedings of the IASPEI Symposium held during the 25th General Assembly in Istanbul, Turkey, Physics of the Earth and Planetary Interiors, v. 67, 1991.

Wyss, M. (Editor), Special Issue, Earthquake Prediction, selected papers from the IASPEI Symposium held during the 25th General Assembly in Istanbul, Turkey, Tectonophysics, v. 193, 1991.

Cermak, V. (Editor), Special Issue, Forward and Inverse Problems in Geothermal Modelling, Proceedings of the IASPEI Symposium held during the 25th General Assembly in Istanbul, Turkey, Tectonophysics, v. 194, 1991.

Scholz, C.H. (Editor), Special Issue, Modelling the Earthquake Source, Proceedings of the IASPEI Symposium held during the 25th General Assembly in Istanbul, Turkey, Tectonophysics, v. 195, 1991.

Wyss, M. (Editor), Evaluation of Proposed Earthquake Precursors, American Geophysical Union, Washington, D.C., U.S.A., 94 pp., 1991.

Iwan, W.D. (Editor), The Effects of Surface Geology on Seismic Motion, Proceedings of

the IASPEI/IAEE International Symposium held in Odawara, Japan, Association for Earthquake Disaster Prevention, Tokyo, Japan, v. 1, 355 pp., v.2, 517 pp., 1992.

Hurtig, E., and Haack, H. (Editors), Geothermal Atlas of Europe, Rudolf Muller International Booksellers, Amsterdam, The Netherlands, 36 maps, 156 pp, 1992.

Ebinger, C.J., Gupta, H.K., and Nyambok, I.O. (Editors), Special Issue, Seismology and Related Sciences in Africa, selected papers from the IASPEI Regional Seismological Assembly held in Nairobi, Kenya, August 1992, Tectonophysics, v. 209, 1992.

Ohnaka, M. (Editor), Special Issue, Earthquake Source Physics and Earthquake Precursors, Proceedings of the IASPEI sponsored Symposium held in Tokyo, Japan, November, 1990, Tectonophysics, v. 211, 1992.

Poirier, J.-P., and Ahrens, T.J. (Editors), Special Issue, Physical Properties of the Earth's Interior: Mantle to Core, Proceedings of the IASPEI Symposium held during the 26th General Assembly in Vienna, Austria, Physics of the Earth and Planetary Interiors, v. 74, 1992.

Giardini, D. (Editor), Special Issue, Lateral Heterogeneity and Earthquake Location, Proceedings of the IASPEI Symposium held during the 26th General Assembly in Vienna, Austria, Physics of the Earth and Planetary Interiors, v. 74, 1992.

We have been advised that UNESCO still has a few copies of "Anatomy of Seismograms", Volume I of the IASPEI Software Library for personal computers, and the IASPEI 1991 Seismological Tables, which could be made available to suitable institutions in developing countries on written request. The request should be made to: Dr. M. Hashizume, Division of Earth Sciences, Science Sector, UNESCO, 7 place de Fontenoy, 75700 Paris, FRANCE (Fax: 33-1-4306 1122).

Death of George Eiby

One of New Zealand's most prominent seismologists, George Eiby, died on 26 February 1992 after a long illness. He was born in Wellington in 1918 and, apart from four years during the Second World War, served in the Department of Scientific and Industrial Research from 1939 until 1979, when he retired as Superintendant of the Seismological Observatory.

He published more than 150 research papers in the fields of seismology, astronomy, and the history of science. His book EARTHQUAKES, has established itself as a standard work, running to 5 editions, the most recent in 1989.

He was recognized internationally as New Zealand's foremost authority on historical earthquakes. In addition, he had recently completed a book on volcanoes, which is expected to be published shortly.

Throughout his career, he was very active in fostering the development of seismology, not only in New Zealand, but also in the wider South West Pacific region. He was the motivating force behind the Seismological Society of the South West Pacific, and served as convenor and Newsletter editor for the Society from 1968 to 1974. He also served on several UNESCO Seismological Missions to Southeast Asia and the South West Pacific.

His non-scientific interests were very wide.

Martin Reyners

UNION AFFAIRS

Bureau and Executive Committee meetings of our parent body, the International Union of Geodesy and Geophysics, were held in Beijing, China, from June 2 through June 5, 1992. IASPEI was represented at the meeting by our President A.V. Nikolaev. Agenda items of interest to IASPEI are summarized below.

The Executive Committee agreed to the admission of Taiwan on the basis of scientific grounds, but that changes of statutes are necessary. The changes proposed by the President were accepted, but they will have to be adopted by the Council at Boulder before the final admission of Taiwan is declared. For new countries of CIS, the Executive Committee agreed on the following: Russia will replace the former USSR, but should indicate its new category; and the other republics, as represented by their Academies of Sciences, are eligible for automatic admission as Member Countries to IUGG if they so desire and if they indicate their category of membership, being willing to assume an adequate share in the maintenance

of the Union. Estonia's admission should be considered definitive. Scientific merit is recognized formally for Croatia, and the Executive Committee now awaits the formal application, on receipt of which the Bureau should proceed according to by-law 14.

The previous Executive Committee which met in Vienna had recommended the formation of a Geochemistry Committee. The new Executive Committee, encouraged by new developments in IAVCEI, and plans for collaboration between IAVCEI and IASPEI in connection with the Earth's interior, and with geochemistry plans of the "fluids" group, concluded that the goals could and should be accomplished by inter-Union activities, and that a Committee on Geochemistry was not needed. A Union Symposium on Geochemistry is now being planned for the 1995 Boulder Assembly. Any persons named by the Associations can act as advisors to the co-convenors (P. Gasparini from IAVCEI for solids and U. Shamir from IAHS for fluids).

The Executive Committee agreed that IUGG should make a first set of proposals of Symposia for the Boulder Assembly, after the matter has been discussed in the Associations. The membership of the Program Committee, chaired by D. Chapman and comprised of Association Presidents or their designates, was augmented by the Union Vice-President, P. Wylie, with G. McBean as back-up.

FORTHCOMING MEETINGS

The following is a selection of forthcoming meetings in fields of interest to the Association:

1993 April 4-8
EUROPEAN UNION OF GEOSCIENCES VII MEETING, Strasbourg, FRANCE
EUG VII Organizing Committee, Geological Survey of The Netherlands, P.O. Box 157, 2000 AD Haarlem, THE NETHERLANDS

1993 May 3-7
EUROPEAN GEOPHYSICAL SOCIETY XVII GENERAL ASSEMBLY, Weisbaden, GERMANY
EGS Office, Postfach 49, Max-Planck Str. 1, W-3411 Katlenburg-Lindau, GERMANY

1993 June 14-16
6th INTERNATIONAL CONFERENCE ON SOIL DYNAMICS AND EARTHQUAKE ENGINEERING, Bath, England, UNITED KINGDOM
Elizabeth Cherry, Conference Secretariat, SDEE '93, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southhampton, England SO4 2AA, UNITED KINGDOM

1993 June 20-26
WORKSHOP ON PHYSICAL AND NUMERICAL MODELLING OF MANTLE CONVECTION AND LITHOSPHERIC DYNAMICS, Oléron, FRANCE
Jean-Pierre Vilotte, Département T.A.O., Ecole Normale Supérieure, 24 Rue Lhomond, 75231 - Paris Cedex 05, FRANCE

1993 August 6-13
INTERNATIONAL ASSOCIATION OF GEODESY GENERAL MEETING, Beijing, CHINA
Local Organizing Committee for IAG General Meeting 1992, Chinese Society for Geodesy, Photogrammetry, and Cartography, Baiwanzhuang, Beijing 100830, CHINA

1993 August 8-20
7th SCIENTIFIC ASSEMBLY OF THE INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY, Buenos Aires, ARGENTINA
Michael Gadsen, IAGA, Physics Unit, Fraser Noble Building, Aberdeen University, Aberdeen AB9 2UE, Scotland, UK 573838

1993 August 16-18
3rd INTERNATIONAL SYMPOSIUM ON ROCKBURSTS AND SEISMICITY IN MINES, Kingston, CANADA
R. Paul Young, Engineering Seismology Laboratory, Dept. of Geological Sciences, Queen's University, Kingston, Ontario, CANADA K7L 3N6

1993 August 29-September 3
5th INTERNATIONAL CONFERENCE ON NATURAL AND MAN-MADE HAZARDS, Quingdao, CHINA
Mohammed I. El-Sabh, President, Natural Hazards Society, Centre Océanographique de Rimouski, 310 Allée des Ursulines, Quebec, G5L 3A1, CANADA

1993 September 21-23
2nd INTERNATIONAL SYMPOSIUM ON ANDEAN GEODYNAMICS, Oxford, England, UNITED KINGDOM
Pierre Soler, ISAG '93, ORSTROM, Cs1, 213 rue Lafayette, 75480 Cedex 10, FRANCE

1993 September 25-October 1
IAVCEI 1993 GENERAL ASSEMBLY: ANCIENT VOLCANISM & MODERN ANALOGUES, Canberra, AUSTRALIA
IAVCEI General Assembly, C/-ACTS, GPO Box 2200, Canberra, ACT, 2601 AUSTRALIA

1993 October 13-15
IDNDR CONFERENCE, The Royal Society, London, England, UNITED KINGDOM
Rachel Coninx, IDNDR, The Conference Office, Institution of Civil Engineers, 1-7 Great George St., London SW1P 3AA, UK

1993 October 18-23
INTERNATIONAL SYMPOSIUM ON NEW DEVELOPMENTS IN GEOTHERMAL MEASUREMENTS IN BOREHOLES, Potsdam, GERMANY

1994 January 10-21
27th GENERAL ASSEMBLY, IASPEI, Wellington, NEW ZEALAND
The Secretary, IASPEI 94, Institute of Geological and Nuclear Sciences, P.O. Box 1320, Wellington, NEW ZEALAND (Phone +64-4-473-8208; Fax +64-4-471-0977; or E-mail IASPEI94@m2g.gns.cri.nz)

1995 July
21st GENERAL ASSEMBLY, IUGG,
28th GENERAL ASSEMBLY, IASPEI
Boulder, Colorado, USA