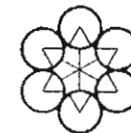


# aipea



ASSOCIATION INTERNATIONALE POUR L'ETUDE DES ARGILES - INTERNATIONAL  
ASSOCIATION FOR THE STUDY OF CLAYS - INTERNATIONALE VEREINIGUNG ZUM  
STUDIUM DER TONE - МЕЖДУНАРОДНАЯ АССОЦИАЦИЯ ПО ИЗУЧЕНИЮ ГЛИН

## newsletter

February, 1984, n° 20

Secr. Gen. A.J. Herbillon, Croix du Sud, 1 - B.1348 Louvain-la-Neuve, Belgium

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President's Podium

Once again it is time to wish you all a very happy New Year. I was fortunate last year in meeting many of our colleagues on trips to Japan, to the Fifth Meeting of the European Clay Groups in Prague, to meetings of the British Clay Minerals Group and the Royal Society in London and on a short sprint to the US which included a meeting with the Organizing Committee of the 1985 Conference in Denver. It never ceases to amaze me how easy it is to communicate with clay scientists the world over. Apparently our common interest creates a language of its own.

No one who has visited Japan will be surprised if I say that Japanese hospitality is unsurpassed. May I express my sincere thanks to the Clay Science Society of Japan for all the hospitality extended to my husband and myself. We were deeply impressed by Japan, her people and her culture. It was a pleasure to visit laboratories throughout the country, though I admit that I sometimes turned green with envy of the excellent and diverse equipment and of the ability of all scientists, young and old, to operate it. I was very glad to receive an invitation to lecture to the Clay Science Society of Japan. This afforded a further opportunity of meeting more members of this very active group which, with a membership of over 500, is the largest Affiliated Society of AIPEA and probably the largest national clay group.

The meeting of the European Clay Groups was attended by scientists from 28 countries. The concept of Europe was rather liberally interpreted to include Canada, the U.S.A. and Japan, so that the conference assumed an international character. It was evident that Professor Konta and his Committee worked hard to make the meeting a success and their efforts bore fruit. The programme with three parallel sessions and a hall full of posters, was rich and varied. I was probably not the only one who regretted that it did not leave more time to roam the streets of the beautiful city of Prague, although a city tour was provided. The Czechoslovak Clay Group, though smaller than the Japanese, is equally enterprising. May I suggest that you look out for the beautifully produced Proceedings of their national Conferences on Clay Mineralogy and Petrography. Recent issues contain papers in English, German and Russian.

Council met during the meeting in Prague to discuss current problems and, in particular plans for the next International Clay

Conference in Denver. The Groupe Français des Argiles has kindly invited AIPEA to hold the 1989 Conference in Orleans or Strasbourg. No other proposal has been received to date.

I greatly appreciated an invitation from the British Clay Minerals Group to participate in a meeting sponsored jointly with the Thermal Methods Group of the Royal Society of Chemistry in honour of our ex-President Dr. R.C. Mackenzie, who retired from the Macaulay Institute in September. It is encouraging that although many of the veteran and founding members of AIPEA are reaching retiring age, they are continuing their professional activities in some guise or other. Nevertheless this makes us aware of the necessity to reduce the average age of our membership by recruiting younger scientists to the ranks of AIPEA.

The two-day discussion meeting at the Royal Society provided a "state of the arts" review of structures, behaviour and uses of clay minerals, presented by experts in the fields. The lectures will be published in a monograph which will, no doubt, be of great value to those directly concerned with clay science as well as those with a more marginal interest.

Finally my visit to Denver. I did not see the town, which was covered by a blanket of snow, nor the mountains which hid behind a curtain of fog, but I stayed at the hotel which will probably be the venue of our meeting and looked at the facilities. I can assure you that they are most suitable. I spent many hours with the Chairman of the Organizing Committee Dr. Hayes, and with members of the Committee. We discussed the programme at length and also the less pleasant subject of finance. I am convinced that the Committee will create a conducive atmosphere for scientific discussion, arrange field trips to satisfy all interests and show us the best of the American way of life. Good weather is guaranteed. If the costs of attending the meeting seem high (and the Organizing Committee is trying hard to reduce them) start saving now! I am sure that you will be well rewarded.

I must end on a sad note. It was during this last trip that I learned of the death of George Brindley. His obituary appears elsewhere in the Newsletter but allow me to use this forum to pay tribute to a great scientist and a good friend.

L. Heller-Kallai

## Council Affairs

During the meeting of Council held in Prague on September 2 1983, the following decisions were taken.

### 1. Affiliation of National Societies

The applications submitted by the following national or regional clay groups were unanimously approved : Gruppo Italiano of AIPEA, The Spanish Clay Group, The Nordic Clay Group, The Australian Clay Minerals Society and the German Clay Groups. On January 1st 1984, there are, therefore, eleven national societies officially affiliated to AIPEA.

During the same meeting, the Council decided to keep the present friendly and unformal contacts with all the national groups which do not have presently access to the foreign currencies necessary to pay their fee of Affiliated AIPEA Society.

### 2. Bradley Award

Council appointed the following AIPEA members to the Selection Committee :

Prof. L. Heller-Kallai, President, ex officio  
Dr. R.C. Mackenzie  
Prof. J. Konta  
Prof. U. Schwertmann  
Prof. S.W. Bailey

The monetary value for the 1985 Award was set up at 1.000 US \$.

### 3. Nominating Committee

The following members were appointed :

- a) as Ordinary Councillors : Dr. G. Pedro and Prof. K. Nagasawa.
- b) as individual AIPEA members : Prof. L. Stok and Prof. M.M. Mortland.

The President, Prof. L. Heller-Kallai is an ex officio member of the Nominating Committee.

### 4. Legal domicile of AIPEA

The legal domicile of AIPEA was fixed to be the place of business of the Treasurer.

During the same meeting, the Council also discussed the schedule of activities of the 1985 International Clay Conference in Denver. More details on this topic is given elsewhere in this Newsletter (see p. 23).

Two meetings of the AIPEA Council are scheduled to take place during the 1985 International Clay Conference.

## The W.F. Bradley Award

The first W.F. Bradley Award will be made in connection with the 1985 International Clay Conference in Denver, Colorado, U.S.A.. Its monetary value has been fixed at 1.000 US \$. All AIPEA members should encourage entries of high quality. You are therefore requested to circulate widely the above regulations and application form.

### Regulations for the 1985 W.F. Bradley Award

1. The object of this award shall be to offer financial assistance to the recipient to enable him or her to participate in an International Clay Conference.
2. Candidates must submit a paper of not less than 2000 words in English, French, German, Russian or Spanish on a topic relevant to one of the sessions at the Conference. Papers written in a language other than English must be accompanied by an extended summary of not less than 1000 words in English. Assessment will be on scientific content only and the winning entry shall form the substance of a paper to be presented by the successful candidate at the Conference to which the award relates.
3. The award will normally be made at four-yearly intervals and initially will not exceed \$ 1000, although the value will be reviewed from time to time. An award shall not be made if it is considered that candidates do not reach the required standard.
4. Persons eligible for the award shall be under 35 years of age on the closing date for submissions: no restriction is placed on the sex or nationality of the candidate or the nature of his or her employment. Every application must be supported by two members of AIPEA.

5. The Selection Committee shall consist of the President of AIPEA and four members nominated by the Council of AIPEA. The paper must be in the hands of the Selection Committee at least six months before the Conference to which it relates.
6. A suitably inscribed certificate will be presented to the successful candidate at the Business Meeting of the General Assembly of AIPEA during the International Clay Conference. A portion of the prize may be sent to the successful candidate in advance in the form of a ticket enabling him or her to travel to the Conference.
7. The attached form must be completed and returned with each entry to arrive before the official closing date.
8. For the 1985 Bradley Award, the closing date is January 20, 1985 and the applications must be sent either to the President of the Selection Committee, Prof. L. Heller-Kallai, President of AIPEA, c/o The Hebrew University, Department of Geology, Jerusalem, Israel, or to the Secretary General, Prof. A.J. Herbillon, Place Croix du Sud 1, B-1348 Louvain-la-Neuve, Belgium.

#### International Clay Activities

##### AIPEA COMMITTEE ON STANDARDIZATION OF PREPARATION TECHNIQUES

A meeting of the SPT Committee was held in Prague (Czechoslovakia) in September 1983 during the European Clay Conference. The aim was to reach a final agreement about the way future work should be carried on. Until now, about 120 laboratories and clay scientists have agreed to participate.

A definitive choice for the sample to be analysed has also been made. This sample was selected as to fulfill the requirements of the various fields of clay sciences (mineralogy, sedimentology, early diagenesis, geotechnics, pedology, raw materials). This sample will be forwarded to the participants at the outset of 1984 together with a flow sheet for its preparation. In order to facilitate the comparison of analytical data, each participant will be free to handle the sample following his usual procedure. However a specific flow sheet will also be imposed for the extraction of the less than 2  $\mu$  fraction. The dead line for the reception of results has been fixed to February 1985. A compilation of data will be presented during the next International Clay Conference to be held in Denver (USA) in 1985.

Any clay scientist who is still interested in participating to the SPT Committee's work is invited to get in touch with its Chairman at the following address :

Prof. J. Thorez, Clay Laboratory, Institute of Mineralogy, Liege State University, Place du 20 Août 9, B-4000 Liège, Belgium.

##### THE 5th MEETING OF THE EUROPEAN CLAY GROUPS IN PRAGUE, AUGUST 31 - SEPTEMBER 3, 1983

Clay substance, composed of clay minerals, represents nearly half or even more of the bulk of the sedimentary lithosphere and weathering crust of the Earth. Both these accumulations cover about 75 per cent of the Earth's surface. Clay minerals are all around us, their domain being the uppermost skin of the Earth's crust. Continental flora and especially cultured plants are dependent on the soil in which the clay minerals, along with humine compounds, represent the main reservoir of nutrients and serve as the regulator of the water regime. Since prehistoric time man has built on and from clay matter or loam. Man learnt to manufacture ceramic vessels and decorative objects much sooner than he developed writing. Clay matter can be relatively easily extracted in nature and used in a dry, plastic or dispersed state. It is easily reworkable and in a plastic or powdered state it can assume many desirable forms that after firing possess the hardness of stone and have high durability in both the atmosphere and hydrosphere.

Clay matter is used in many branches of modern industry, often considerably modified by chemical beneficiation or firing at various temperature. Some authors ascribe fundamental significance to the catalytic effect of the large specific surface area of colloidal particles of clay minerals or the influence of their crystal structure on the synthesis of organic compounds at the very outset of the primeval origin of living matter on our planet. The chemical industry uses different clay minerals as catalytic supporters for the synthesis or cracking of organic constituents or mixtures. Clay matter is used for filtration of liquids and gases, its large specific surface area retaining undesirable admixtures.

For these reasons and many others modern science is interested not only in knowing all the chemical and physical properties of clay substance, its nature down to the most minute details, but also in recognizing the processes of its origin and development throughout the Earth's geological history. This was also

the aim of the 5th Meeting of the European Clay Groups which was held in the Palace of Culture, one of Prague's most modern buildings. The Meeting was organized by the Czechoslovak Group for Clay Mineralogy and Petrology under the auspices of the Faculty of Science of the Charles University and the Association of the European Clay Groups. More than 300 participants from 28 countries attended the Meeting.

Two plenary lectures introduced the Meeting : 1) Professor J. Konta, Charles University, Prague: Man and Clay. 2) Dr. R.C. Mackenzie, the Macaulay Institute for Soil Research, Aberdeen : Soil Clays: Subjects for chemistry, mineralogy or physics ?

Eight scientific sessions were conducted over the first three days, covering all current aspects of theoretical and applied clay research :

Session 1 : Crystal structure and crystallochemistry of clay minerals (18 lectures). Chairman : Professor V.A. Drits, Academy of Sciences, Moscow.

Session 2 : Mineralogy and geochemistry of the argillosphere (19 lectures). Chairman : Professor L. Stoch, Academy of Mining and Metallurgy, Krakow.

Session 3 : Clay substance and recent environments (18 lectures). Chairman : Professor F. Veniale, University of Pavia.

Session 4 : Interaction of clay and organic substance (16 lectures). Chairman : Professor E.T. Degens, Universität Hamburg.

Session 5 : Deposits of clay raw materials (14 lectures). Chairman : Professor M. Störr, Universität Greifswald.

Session 6 : Investigation methods of clay substance (19 lectures). Chairman : Professor J. Thorez, State University, Liège.

Session 7 : Clay substance in soils (19 lectures). Chairman : Dr. G. Pedro, Departement de Science du Sol, C.N.R.A., Versailles.

Session 8 : Applied argillology (13 lectures). Chairman : Professor I.T. Rosenqvist, University of Oslo.

Besides the oral lectures 48 posters were presented.

A half-day seminar headed by Professor J. Thorez was devoted to "Investigation Methods of Clay Minerals". The Working Group "Genesis of Kaolins" met on the afternoon of Friday, September 2. The representants of the European Clay Groups had a meeting in the Carolinum building and decided that the 6th Meeting of the

European Clay Groups would take place in Spain, 1987, in an appropriate small university town.

Professor F.V. Ghukhrov and Dr. R.C. Mackenzie were awarded the E. Borický medal of the Faculty of Science for their lifelong work in argillology. Professors E.T. Degens, I.T. Rosenqvist and F. Veniale were conferred with the Charles University medal by the Rector of the Charles University.

The Council of AIPEA, headed by its President Professor L. Heller-Kallay, held an afternoon meeting in the Palace of Culture. The editorial Board of the Journal Clay Minerals, headed by Dr. D.J. Morgan, also had a meeting in Prague.

A one-day excursion on September 3 to the Plzen basin and Karlovy Vary Spa area took participants to three deposits of ceramic clays and kaolins.

The Organizing Committee edited the following publications :

a) The Scientific Programme; b) Abstracts (193 pages); c) List of participants. Few exemplars of Abstracts are still available.

The Proceedings of the 5th Meeting of the European Clay Groups will be edited by the Charles University by the end of 1984. They will contain 60 selected papers.

Jiri Konta  
President of the 5th Meeting of  
the European Clay Groups  
Charles University  
Albertov 6  
128 43 Prague 2

#### National Clay Groups

##### Belgium

The Belgian Contact Group on Clays held in April a meeting on the theme "Clay-Organic Interactions". The meeting took place in Louvain-la-Neuve with Prof. P. Cloos as local organiser. The following papers were read :

- Transformation of simple aromatic molecules on montmorillonite under near-pedogenic conditions.  
M. O'Callaghan, A. Moreale, C. Badot and P. Cloos (U.C.L.).

- Problèmes spécifiques rencontrés dans l'adsorption de tensioactifs anioniques et de polymères neutres et anioniques par les argiles.  
B. Siffert (C.N.R.S., Mulhouse, France).
- Interaction of phenethylamines and phenethylimidazoles with montmorillonite and with lewaticite.  
M.S. Stul, D.P. Vliers and J.B. Uytterhoeven (K.U.L.).
- Mesure des énergies de surface des argiles. Application à l'étude de l'influence des revêtements organiques sur les propriétés des associations organo-minérales.  
P. Chassin and R. Prost (I.N.R.A., Versailles, France).

W.E.E. Stone.

China

The First National Symposium on Ceramic Materials was held in Fujian province from October 21 to 31. It was organized by the Association of Mining Geology of the Geological Society of China. Approximately 60 participants attended the symposium. Field excursions were arranged to visit the pyrophyllite, kaolin and refractory clay deposits in Changle, Dehun and Zhangzhou.

During that period, it was decided that the 2nd National Clay Conference will be held in 4th trimester 1984 in Fujian province. It is a famous province for its kaolin deposits in China.

Zheng Zhi

Great Britain and Ireland

Two meetings were organized for the Spring of 1982. The first was held at the University College of Wales, Aberystwyth on March 29th, 1983 and was on the theme of "Recent Developments in Clay Mineral Applications". The following papers were read.

- Synthesis of imogolite and possible applications.  
V.C. Farmer (Macaulay Institute, Aberdeen).
- Smectite-polymer interactions.  
S. Burchill et al. (University of Birmingham).
- Properties and industrial uses of clays which swell in organic solvents.  
T. Jones (ECLP & Co. Ltd, St Austell).

- Characterization of clay-organic systems.  
D.T. Tennakoon et al. (University of Cambridge).
- Ion-exchanged smectites as catalysts for organic reactions.  
J.M. Adams (University College of Wales, Aberystwyth).
- Organic reactions in a clay micro-environment.  
J.A. Ballantine and J.H. Purnell (University College of Swansea) and J.M. Thomas (University of Cambridge).
- Catalysis by montmorillonites.  
J.M. Adams and D.E. Clement (University College of Wales, Aberystwyth).
- Clay supported ferric nitrate and some of its applications to organic synthesis.  
A. Cornélis and P. Laszlo (University of Liège).
- Examinations of reaction products or organic dyestuff molecules with acid-treated montmorillonite.  
R. Fahn and K. Fenderl (Süd-Chemie AG, München).
- A novel heat resistant glass fibre/vermiculite composite.  
T. Fortress, W.N.E. Meredith and K.T. McAloon (ICI).

Many of these papers will be published in a special number of Clay Minerals in December, 1983, partly supported by contributions from industry, along with papers from a meeting of the French Group on a similar theme.

A second Spring meeting was organized at the University of Cambridge on April 7 to 8, 1983 jointly with the Petroleum Exploration Society of Great Britain on the theme "Patterns of Mineral Diagenesis on the North West European Shelf and their relations to hydrocarbon accumulations". The papers read were as follows :

- Processes controlling secondary porosity development.  
M.R. Giles (Shell, Rijswijk) and J.D. Marshall (University of Liverpool).
- Early diagenesis and the destruction of source and reservoir potential in Phanerozoic sediments of the N.W. European Shelf.  
J.G. Gluays (B.P., Aberdeen).
- Response of heavy mineral suites to diagenetic processes: examples from the North Sea Basin.  
A.C. Morton (I.G.S., Leeds).
- Controls of mineral authigenesis on Coal Measures sandstones of the East Midlands, UK.  
Jennifer Hugget (Imperial College, London).

- Nature, origin and distribution of clay minerals in M.Jurassic Ravenscar and Brent Group sandstones.  
J. Kontorowicz (University of Hull).
- Diagenesis, facies and reservoir character of Jurassic shore-line sandstones: Beatrice Field, North Sea.  
R.S. Haszeldine (Britoil Glasgow).
- Diagenetic history and reservoir quality of a distal Brent Sand sequence.  
G. Blackbourn (Britoil, Glasgow).
- Petrological controls on porosity and permeability in Triassic sandstones of the Marchwood Borehole, Hampshire.  
R.O'B. Knox, W. Burgess and K.S. Wilson (I.G.S., Leeds).
- Distribution and origin of authigenic minerals in the Triassic Sherwood Sandstone Group, U.K..  
S. Burley (University of Hull).
- Diagenesis of volcanoclastics in the light of hydrocarbon exploration - a review.  
U. Seeman and M. Scherer (Shell Exploration and Production UK, London).
- Interpretation of wireline log and core data from a mid-Jurassic sand/shale sequence.  
R. Peveraro and K. Russell (Britoil, Glasgow).
- Ar<sup>39</sup>/Ar<sup>40</sup> dating of feldspar overgrowths in sediments.  
P. Gaffney (University of Cambridge).
- Estimation of kinetics of geochemical reactions with geo-physical basin models and applications.  
A.S. Mackenzie (Julich, West Germany).
- SEM study of clay mineral morphology in some Scottish sandstones.  
W.J. McHardy, M.J. Wilson and J.M. Tait (Macaulay Institute for Soil Research, Aberdeen).
- Stability of authigenic clay minerals: new evidence from analytical transmission electron microscopy.  
C.D. Curtis and B.J. Ireland (University of Sheffield).

Many of these papers will be published in a special number of Clay Minerals in April 1984 which has been generously supported by contributions from the oil industry.

#### Autumn 1983

The November meeting of the Group was organized as a tribute to mark the retirement of Dr. R.C. Mackenzie from the Macaulay Institute for Soil Research at Aberdeen. The Meeting on 7 to 8th November 1983 was organized jointly with the Thermal Methods Group of the Royal Society of Chemistry. That part of the Meeting organized by the Group included the following papers.

- Thermal Changes in Clay Mineral-Fatty Associations.  
L. Heller-Kallai (The Hebrew University, Jerusalem).
- The Soil Clays of Great Britain: I. England and Wales.  
P.J. Loveland (Rothamsted Experimental Station).
- The Soil Clays of Great Britain: II. Scotland.  
M.J. Wilson, D.C. Bain and D.M.L. Duthie (Macaulay Institute for Soil Research).
- Proto-Imogolite and Soil-Forming Processes.  
V.C. Farmer (Macaulay Institute for Soil Research).
- Interparticle Diffraction; a New Concept for Interstratification of Clay Minerals.  
P.H. Nadeau, M.J. Wilson, W.J. McHardy and J.M. Tait (Macaulay Institute for Soil Research).
- The Crystallinity and Surface Characteristics of Ferrihydrite and Some Clay Minerals.  
A.M. Saleh and A.A. Jones (University of Reading).
- Selective Chemical Dissolution Techniques in the Characterization of the Mineral Components of Soils.  
B.F.L. Smith and B.D. Mitchell (Macaulay Institute for Soil Research).
- Cation Exchange Capacity and Charge Distribution Characteristics of Korean Fullers Earth.  
D.J. Morgan and Hi Soo Moon (Institute of Geological Sciences and Dept of Geology, King's College, London).
- High Gradient Magnetic Separation of Soil Clay Minerals.  
J.D. Russell, A.R. Fraser and A. Birnie (Macaulay Institute for Soil Research).
- Clay Mineralogy and the Clay Minerals Group: Some Personal Historical Perspectives.  
D.M.C. MacEwan (Hythe).

At the Annual General Meeting of the Group the following committee was elected to serve for the coming year.

Chairman	Dr C.V. Jeans
Secretary	Dr M.J. Wilson
Treasurer	Dr D.C. Bain
Principal Editor	Dr D.J. Morgan
Committee Members	Dr A.G. Leach
	Dr P.J. Loveland
	Dr W.J. McHardy
	Miss N. Pallatt
	Dr H.F. Shaw

Spring 1984

The Group is organizing a meeting in collaboration with the Geochemistry Group and the Metamorphic Studies Group on the theme "Diagenesis and Low Temperature Metamorphism". The meeting will be held on April 12-13, 1984 at the University of Bristol and will be a residential one. Details of the programme may be obtained by writing to Dr D. Robinson, Dept of Geology, University of Walk, Bristol BS8 1TR.

India

The two first issues of Clay Research, the new Journal published by the Clay Minerals Society of India came out of press. The contents of this first volume are as follows :

Number 1.

- Clay Research - Is there a need for a new journal ?  
S.K. Mukherjee.
- Mechanism of Terra Rossa red coloration.  
M.L. Jackson and T.A. Frolking.
- Clay mineralogy of some laterite and associated soils of Goa, India.  
T.V. Rao and G.S.R. Krishna Murti.
- Interstratified layer silicates.  
B.L. Sawhney.
- Seasonal volume changes in Black Cotton soil deposits.  
J.M. Kate.
- Clay mineral distribution in catenary soils on the slopes of Uluguru Mountains, Tanzania.  
P. Rengasamy, C.T. Figueiredo and M.S. Chowdhury.

- Adsorption of metribuzin on chlorite dominant clays: Role of different metal ions.  
A.K. Agnihotri and K.V. Raman.

Number 2.

- Composition of cation exchange capacity of acid soils as determined by titrimetric methods.  
B.S. Kapoor and Neeta Cheema.
- pH dependent charge of soil amorphous material.  
G.S.R. Krishna Murti, M. Bhavanarayana, T.V. Rao and K.P.C.Rao.
- Clay mineralogy of the soils of Udhampur District of Jammu and Kashmir in relation to parent material climate and vegetation.  
R.D. Gupta and K.R. Awasthi.
- Mineralogy and diagenesis in the Eocene Wilcox shales, Gulf Coastal-Plain, U.S.A..  
T. Ramamohana Roa.

Any information regarding this new Clay Journal may be obtained from the Editor :

Prof. G.S.R. Krishna Murti  
Division of Agricultural Physics  
Indian Agricultural Research Institute  
New Delhi 110012 (India)

Israel

The annual meeting of the Israel Society for Clay Research was held at the Faculty of Agriculture of the Hebrew University of Jerusalem in Rehovot on May 16, 1983.

Ten papers were presented covering a wide range of fields of interest. These included flow through porous media, studies on adsorption of metals in the presence and absence of fulvic acids and inorganic ions, use of clays in geochemical studies, industrial uses of clays and the possible role of clays in the origin of life.

The meeting which was attended by some 30 scientists and students was organized by the members of the executive council of the Israel Society for Clay Research, R. Keren, M. Gal and N. Lahav.

At this annual meeting, the following executive council was elected for the year 1983-1984 :

Chairman	Dr U. Mingelgrin
Secretary	Dr D. Shaked
Treasurer	Dr M. Gal

N. Lahav

Hungary

During the sessions held by the Clay Minerals Group of the Hungarian Geological Society, the following papers were read :

February

- Genesis and synthesis of zeolites.  
Beyer H.
- Report on the 9th Czechoslovak Conference on Clay Mineralogy and Petrology, Zvolen, 1982.  
Viczman I., Takats J., Földvari M.

May

- Types of alteration connected with andesitic magmatism in the Velence Mts., central Transdanubia.  
Darida-Tichy M., Horvath I., Farkas L., Földvari M.

September

- Interaction of clay minerals with organic compounds.  
Lagaly G. , Kiel.

November

- Transformation of biotite in wall-rock alteration of intermediate volcanics.  
Dagnié A., Beograd, Panto Gy.
- Clay mineralogy of Neogene sedimentary rocks in the area between Meesek Mts. and Lake Balaton, southern Transdanubia.  
Viczman I.

December

- Depth zones of clay mineral formation around hydrothermal mineralization.  
Széky-Fux V.

On May 9-10 an Illite Meeting was organized at Zamardi, Lake Balaton, 24 papers were read on the following subjects :

- definition and nomenclature of illites

- structure, crystal chemistry and methods of investigation
- genesis and mining problems of illite deposits (with special regard to the deposits at Füzérradvány, Tokaj Mts., northeast Hungary).
- industrial application of illites.

Further, a lecture on the genesis and mineralogy of Central Slovakian hydrothermal clay deposits was given by I. Kraus (Bratislava).

Istvan Viczman

Nordic Clay Group

The spring meeting was held in Norway, May 25-26, at the Norwegian Institute of Technology in Trondheim.

Twelve scientific papers were presented in areas ranging from geotechnical and engineering applications (mostly from the petroleum industry), microstructures in sediments, diagenesis, and analytical techniques (DTA-Thermozoneometry).

A working group for the standardization of mineral analyses by XRD was established, with H.O. Augedal as the coordinator.

The program also included a visit to the following institutions : Department of high temperature - silicate chemistry, Department of petroleum technology, Geotechnical Institute (all of Norwegian Institute of Technology) and the Continental Shelf Institute.

The annual meeting, November 2-3, was set to Ljungbyhed i central Scania, Sweden. The main theme of both the scientific sessions the first day and the field trip the following day, was kaolin weathering crusts in the Precambrian basement of southern Sweden. The present kaolin prospecting has shown this kaolin weathering crust to be more extensive than formerly believed.

The following papers were presented :

- The Precambrian of Scania and Blekinge, and the main in situ kaolin weathering areas.  
K.A. Kornfält and H. Wikman (SGU, Lund, Sweden).
- Erosional forms and weathering phenomena in South Sweden.  
K.L. Bergström (Lund University, Sweden).
- Present kaolin prospecting activities in Sweden.  
N.A. Shaikh (SGU, Uppsala, Sweden).

- Clays and clay weathering in Mesozoic sediments of northeastern Scania.  
J. Bergström (SGU, Lund, Sweden).
- Kaolin deposits of the Puolanka area, middle Finland.  
J. Venäläinen (Geol. Survey of Finland, Lojo Co.).
- Clay mineralogy of some representative soils of Bangladesh.  
E. Islam and E. Lotse (Agric. Univ. of Sweden, Uppsala).

There were reports from the European clay groups meeting in Prague by E. Roaldset and A.M. Bruswitz, and from the working group on standardization of clay mineral analyses by XRD, by H.O. Augedal. The working group had a second meeting.

The group has presently close to 200 members and 9 supporting companies. The new board consists of :

- President : N.A. Shaikh, (SGU, Uppsala, Sweden)
- Secretary : A. Sjödin, (SGU, Uppsala, Sweden)
- Treasurer : P.-A. Melkerud, (Agric. Univ. of Sweden, Uppsala)  
E. Roaldset, (Norsk Hydro, Bergen, Norway).

The national representatives are :

- Denmark : J. Bondam, GGU (with suppl. O.B. Nielsen, Aarhus University).
- Finland : L. Carlson, Helsingfors Univ. (Suppl. M. Romu, Abo Univ.).
- Iceland : H. Kristmannsdottir, Orkustufnun (Suppl. J. Tomasson)
- Norway : H. Rueslätten, NTH, (Suppl. P. Aagaard, Univ. of Oslo)
- Sweden : B. Hultén, Lunds Univ. (Suppl. A. Erikson, AIB).

The address of the group secretary is :

Nordic Clay Group/Arne Sjödin  
SGU  
P.O. Box 670  
751 28 Uppsala, Sweden

Our 1984 spring meeting is preliminary planned to be held in Finland.

Per Aagaard

#### South Africa

The inaugural meeting of the clay mineral study group of the mineralogical association of South Africa, organized by Dr R.W. Fitzpatrick, took place on Friday, 15 January 1982 at the Soil and Irrigation Research Institute and was attended by forty-two

people. During the morning session of this meeting, members of various Institutes in Pretoria - National Building Research Institute of the South African Council for Scientific and Industrial Research (N.B.R.I./C.S.I.R.), Soil and Irrigation Research Institute (S.I.R.I.), Geological Survey, National Transport Research Institute of the South African Council for Scientific and Industrial Research (N.T.R.I./C.S.I.R.) and Co-operative Scientific Programmes (C.S.P./C.S.I.R.) - reported briefly on the work done at the specific Institutes. In the afternoon session a workshop was held on instrumentation and methodology of the following : Thermal Analysis, X-ray cameras, X-ray transmission, X-ray diffraction, X-ray fluorescence and Infrared.

On 11 August 1983 a clay standards working group meeting took place at the Council for Mineral Technology (MINTEK) in Johannesburg. A project for characterizing clay minerals has been launched with the aim to provide the public with secondary standards. To start off in 1984 homogenised samples with different kaolinite types from various localities will be sent to about twelve laboratories within South Africa with instructions of the procedures - mineralogical composition, chemical analysis and physical tests - to be followed. Results will be evaluated statistically and final analysis given with a 95 percent confidence limit.

The third symposium of the Mineralogical Association of South Africa (MINSA) was held in Johannesburg at MINTEK. Among eleven papers read was one dealing with clay minerals.

Identification of clay minerals with reference to some clays from South Africa, D. Bühmann (University of Natal, Pietermaritzburg).

The revived clay group of South Africa needs some consolidation and will apply in 1984 to the AIPEA for the status of an Affiliated Society.

Dieter Bühmann

#### U.S.S.R.

The main scientific event of the 1984 in the U.S.S.R. was the XIIth All-Union Clay Conference held in Baku, November 21-24. Its programme covered the main aspects of the study and use of clays and clay minerals (geology, applications, crystal chemistry, the use of different methods etc.).

B. Zvyagin

Poland

Last news. As the present Newsletter was almost ready for printing, we received the following information.

2nd National Conference "Clays and Clay Minerals"

The 2nd Polish National Conference on Clays and Clay Minerals was held on 7-9 September 1983 at the Academy of Mining and Metallurgy in Cracow. It was organized by the Section of Clay Minerals of the Mineralogical Society of Poland, the Academy of Mining and Metallurgy and the Committee of Mineralogical Sciences of the Polish Academy of Sciences. The conference was devoted to the contemporary problems of clay minerals science and technology. There were 120 participants and 75 papers were delivered.

The conference was opened by a plenary session with three lectures: L. Stoch - "Clay Minerals and Problems of Modern Technology", A. Derdacka-Grzymek - "A Complex Technology for obtaining Aluminium Oxide, Titanium Oxide and Iron from Clays and E. Stepkowska" - "A model of the Microstructure of the Clay-Water Systems". Further works of the conference consisted in meeting of sessions devoted to the following problems: 1. Mineralogy, Petrography and Geochemistry of Clays, 2. Geology of Deposits, 3. Physical and Chemical Properties of Clay Minerals, 4. Technology and Industrial Utilization of Clays, 5. Soils and Environment Protection, 6. Engineering Geology of Clays. A special session on weathered basalts of Lower Silesia and round table discussions on the following topics: 1. "Actual problems of clay deposits development and technology of clays", and 2. "Modern methods of clay minerals investigations", were also held.

The following most important subjects presented in the delivered papers were: structure of magnesium smectites and beidellites and the position of iron in beidellites structure as studied by the Mössbauer spectroscopy, trace elements in kaolins and kaolinite clays, clay minerals of weathered basalts of Lower Silesia, their genesis, structure and morphology as well as suitability for the production of bleaching earths, for foundry and other industrial applications, obtaining metals (Al, Mg, Ti, Fe and others) from clays, mineralogical composition and genesis of the Miocen, Lias and Cretaceous clays covering vast areas of Poland and their suitability for production of ceramic materials.

The most significant papers presented at the conference will be published in a special issue of the Journal "Archiwum Mineralogiczne".

L. Stoch

**Recent Death**

GEORGE W. BRINDLEY (1905-1983)



George W. Brindley, Emeritus Professor of Mineral Sciences at the Pennsylvania State University, died on 23 October 1983 in State College, Pennsylvania. He is survived by his wife, Catherine, a son and a daughter.

George was born on 19 June 1905, in Stoke-on-Trent, England, a son of a school teacher. He graduated with B.Sc. (1926) and M.Sc. (1928) degrees in Physics from the University of Manchester. His first paper, with Prof. R.W. James as a co-author, was published in the Proceedings of the Royal Society in 1928. They worked together, in the department led by Sir Lawrence Bragg, on X-ray scattering factors. George continued to contribute significantly to the early development of X-ray diffraction while a Demonstrator and subsequently an Assistant Lecturer in the Department of Physics at the University of Leeds, which awarded him his Ph.D. in 1933. By this time he had published no fewer than 27 papers on the calculation of atomic scattering factors, the deformation of metals, and lattice vibrations. His twin careers as a careful researcher and as an inspiring teacher were truly launched.

Meanwhile he had met Catherine Fenton, whom he married on 2 May 1931. He was promoted at Leeds becoming eventually Reader in X-ray Physics. In 1953 he transferred to the Pennsylvania State University as Research Professor of Mineral Sciences. In 1955 he became Professor of Solid State Technology and Head of the Department of Ceramic Technology. In 1962 he became Professor of Mineral Sciences until his "retirement" in 1973. He was one of the founders of the renowned Materials Research Laboratory at Penn State. His research activities and involvement with learned societies continued until within a few weeks of his death.

Although his early X-ray studies on metals were of major importance, George Brindley will be most remembered for his enormous contributions to clay mineralogy. His interest in clay minerals must have been prompted by his childhood spent in the English potteries and was further stimulated by the amateur geological field work that he carried out during the Second World War. A colleague at Leeds, Prof. A.L. Roberts, asked him about the difference between china clay, fireclay and halloysite, and a new era in our understanding of the crystal structures of clay minerals began. Brindley's researches on clay minerals were always firmly founded in crystallography, but it must have been a major challenge for him to switch from studying the order of metals to the disorder of layer silicates. He carried out a crystal structure analysis on kaolinite and helped to elucidate its relationship to other kandites. He extended this work to include serpentines and chlorites, and then turned his attention to the thermal reactions of kaolinite. This led to a postulated structure for metakaolin and to the proposal that the spinel phase formed from metakaolin may not simply be  $\gamma\text{-Al}_2\text{O}_3$ , but may contain some silicon. He became interested in topotaxy and extended his studies to many hydroxides and hydrous silicates. Independently from, but more or less simultaneously with, Prof. H.F.W. Taylor he developed the theory of an inhomogeneous mechanism for these dehydroxylation processes.

These X-ray studies were complemented by kinetic studies of mineral decompositions and transformations, some related to natural weathering processes. A further extension of this work was to solid state reactions between pure oxides and he played a major role in establishing the kinetics and mechanism of several such systems, e.g.  $\text{MgO-SiO}_2$  and  $\text{CaO-Al}_2\text{O}_3$ . Still later, in the 1960's, his research was to develop in yet another direction when he became interested in clay-organic complexes and the possible relationship between clays and petroleum deposits. Many of the more recent of his 300 or so papers have dealt with clay-organic complexes.

His research was always carried out with meticulous attention to detail and his papers are written in a characteristic style. Their logical argument and lucidity serve as a model for others to seek to emulate. In 1970 he was awarded the Roebling Medal, the highest award of the Mineralogical Society of America, for scientific eminence as represented primarily by scientific publication of outstanding research in mineralogy.

George Brindley was not merely an excellent research scientist. He was always an ambassador for clay mineralogy, telling

the world of his fascination for his subject and extolling others to help him to understand it better. He did this through his contributions to learned societies, his lectures, his books and his review articles.

Several learned societies are greatly indebted to George Brindley. Together with D.M.C. MacEwan he was the moving spirit behind the creation of the Clay Minerals Group in the U.K. in January 1947. He was elected its first Chairman and served from 1947 until 1949. He played a major role in the development of Clay Minerals Bulletin, which was later to become Clay Minerals. He initiated the production of specialized monographs as part of the work of the group, and, of course, he himself edited and contributed five chapters to the first monograph, "X-ray Identification and Crystal Structures of Clay Minerals", published by the Mineralogical Society in 1951. The third edition, co-edited by G. Brown, was published as recently as 1980 and ensures that future generations new to the field will come under the Brindley influence.

Not content with a national society, Brindley played a major role in the foundation of CIPEA, which was the forerunner of AIPEA, in 1948. His involvement with AIPEA has been considerable, especially in the work of the Nomenclature Committee. From 1969-1970 he was President of the Clay Minerals Society, which presented him with the Distinguished Member Award in 1973. He was an honorary member of the Ceramic Association of Brazil and of the Mineralogical Society of Great Britain, and a member of honour of the French Society of Mineralogy and Crystallography. The University of Louvain, Belgium, awarded him their Doctor of Science, *honoris causa* in 1969.

A somewhat different but major honour was bestowed in 1978 when Maksimovic and Bish named a nickel-rich aluminous serpentine mineral, *brindleyite* (*Amer. Mineral.*, 63, 484-489, 1978). With characteristic modesty Brindley published a paper in the same journal a year later on some nickel-containing minerals without reference to *brindleyite*! He continued to be active in research after his retirement and his recent publications have maintained the very high standards that he always set himself.

George Brindley was also a superb lecturer, whose enthusiasm for his subject and clarity of exposition have inspired many generations of students. In 1969 he received the Matthew J. and Anne C. Wilson Outstanding Teaching Award from the College of Earth and Mineral Sciences at Penn State for "the unequalled excellence and long-lasting effectiveness of his teaching". Many conferences

have been enlivened by his presentations. Whether plenary review lectures or short research contributions, they were always planned with meticulous attention to the smallest detail and betrayed his fascination for the topic to be discussed.

Another facet of George Brindley's character was his interest in people from all countries. He travelled widely and his research group at Penn State was almost always a mini-United Nations. He forged particularly strong links with Dr. J. Mering in Paris, Dr. M. Nakahira in Tokyo and Prof. J.J. Fripiat in Louvain and Orleans, but he had many other liaisons, including those in Brazil, Mexico, Taiwan, Korea, Germany, Italy, Spain and most parts of the British Commonwealth. He lived his life as an ambassador for goodwill and understanding between peoples of all nations.

George Brindley was proud of his relationship to James Brindley (1716-1772), who was largely responsible for the canal system of England which became a foundation of the Industrial Revolution. It is not too much to suggest that his own contributions to the revolution in our understanding of clay minerals place him in a prominent position alongside his distinguished ancestor.

J.H. Sharp  
Department of Ceramics, Glasses  
and Polymers,  
University of Sheffield  
U.K.

**Eighth International Clay Conference - 1985**

Denver, Colorado, U.S.A.

Denver, Colorado, U.S.A. has been selected as the site for the Eighth International Clay Conference of the Association Internationale pour l'Etude des Argiles (AIPEA). Hosts for the Conference are the Clay Minerals Society and the United States Geological Survey. All scientists interested in clays, zeolites, and related materials are invited to attend.

The Conference will be held Sunday, July 28, 1985, through Friday August 2, 1985, at the convention center of the Sheraton Hotel in the Denver Technological Center. Registration will begin Sunday morning, July 28, 1985. No activities are scheduled for July 27; field trip participants will return to Denver then.

Situated on the western edge of the High Plains, immediately adjacent to the Rocky Mountains, Denver is a cosmopolitan city of about 650.000 inhabitants, with more than 1.350.000 people living in the immediate metropolitan area. Denver is readily accessible from Denver Stapleton International Airport, which is served by direct air connections to Europe and Asia. Denver's central location makes it the ideal point to begin or end trips throughout the United States and especially the Rocky Mountain West.

Location and facilities

All technical sessions, poster sessions, workshops, exhibits, council meetings, and many social functions will take place in the Sheraton Hotel, the official headquarters hotel for the Conference. Some field trips, and the laboratory, and social excursions will begin and end at the Sheraton. Conference participants will find it most convenient to book lodging at the Sheraton. Hotel registration forms will be mailed with the Second Circular. The Organizing Committee urges registrants to book their lodging early to take advantage of special room rates provided for Conference participants by the Sheraton. For students, junior faculty members, and others on very limited budgets, the Organizing Committee will arrange for dormitory style lodging at a university campus about 8 kilometers from the Sheraton. Such accommodations will be strictly limited, however, and preference will be given to students.

Languages

The working language for the Conference will be English, with no translation services provided.

Accompanying persons

Spouses, family, and friends of participants are encouraged to attend the Conference as accompanying persons. The Organizing Committee has planned a special social and cultural program for participants and accompanying persons.

Conference organizing committee

- |                     |                  |
|---------------------|------------------|
| - John B. Hayes     | General Chairman |
| - Paul Blackson     | Treasurer        |
| - Donald L. Gautier | Publicity        |
| - Haydn H. Murray   | Fund Raising     |

- Richard P. Pollastro Exhibits, Workshops, Poster Sessions, Science Thea
- Leonard G. Schultz Technical Program, Co-Editor of Proceedings
- Harry A. Tourtelot Field Trips
- Caroline Watkins Social and Guest Programs
- Harry Starkey Facilities

#### Visas

It is advisable that participants apply to a U.S. Consular Office for a visa at least three months before the date on which they plan to depart for the United States. Those wishing to visit Canada or Mexico as part of their trip should request multiple re-entry visas. Should a participant apply for a visa through a U.S. Consular Office located outside of his own country, it would be helpful for such information to be promptly conveyed to the Organizing Committee.

#### Technical program

The Conference will cover all aspects of clay mineral research and related subjects, including zeolites. Themes to be emphasized include (1) clays in energy exploration and resource development and (2) mixed layer clays. Any original research of wide interest that has not been published previously can be accepted. Abstract forms and instructions will be included in the Second Circular in July 1984; abstract deadline will be in January, 1985. Both oral and poster presentations are solicited.

The Technical Program will probably include sessions on colloids, ion exchange, and surface chemistry; catalysts; crystal chemistry and structure; mixed-layer clays; industrial applications; clays in energy exploration; analytical techniques; geology and geochemistry; soils; rock and soil mechanics; amorphous material and metal hydroxides; and zeolites. Please contact the organizing committee if you have suggestions for symposia, panel discussions, or workshops.

#### Field trips

Field trips are being planned to increase participants' knowledge of clays and clay minerals, industrial minerals, and soils in the United States. The following trips are being planned :

- 01 Kaolin and bauxite districts in Georgia and Alabama.
- 02 Missouri refractory clays, Arkansas bauxite, and Tennessee ball clays.
- 03 Clays, bentonites and soils of central Texas.
- 04 Bentonite, coal, and uranium deposits, Black Hills, South Dakota and plains and mountains in Wyoming.
- 05 Clays and industrial minerals, Colorado and New Mexico.
- 06 Clays and clay minerals, Western Colorado and Eastern and Central Utah.
- 07 Clay minerals and geology, Montana Disturbed Belt in and around Glacier National Park, Montana.
- 08 Clays in petroleum industry, clay minerals, and zeolites, California

#### Social program

Social plans for the International Clay Conference include a welcoming reception and cocktail party for Sunday night July 28, 1985. No events will be scheduled for Monday and Tuesday evenings.

Wednesday, July 31 participants will leave by bus for Georgetown, Colorado, approximately 50 miles west of Denver. In Georgetown participants will ride the famous Georgetown loop narrow gauge railroad, will have a guided tour of an early gold-silver mine, and visit the historic houses, hotels and other landmarks of this beautiful Old West community. At 7:00 p.m. we will all meet for cocktails and a real western barbecue with all the trimmings. After that the busses will return everyone to the Sheraton.

On Thursday, August 1, there will be an elegant buffet dinner and a symphony concert by the Colorado Philharmonic Orchestra in the cool mountain air near Evergreen, Colorado. Friday, August 2, will feature the closing ceremonies and awards and the farewell lucheon at the Headquarters hotel.

#### Exhibits

The Organizing Committee is considering having numerous commercial educational exhibitors at the Conference to display state-of-the-art technology and to provide information. The number and variety of exhibitors depends, to a great extent, upon the number of participants expected and upon the interests of the participants.

Workshops

Workshops are being considered in the areas of methods of quantitative mineral phase analysis, computer applications to XRD and clay mineral analysis, and teaching methods in clay science. Other suggestions are welcome and encouraged.

Correspondence

By the time you read this newsletter, the First Circular will have been mailed to AIPEA members. If you did not receive one, or would like extra copies for colleagues, please send your requests to :

Organizing Committee  
1985 AIPEA  
USGS : P. Blackmon  
Box 25046, M.S. 917  
Denver, Colorado 80225  
U.S.A.

The Second Circular, containing finalized schedules and costs, will be mailed in July, 1984. It is important that the Organizing Committee have your name and address in order for you to receive the Second Circular. Please communicate directly with the Organizing Committee regarding any questions or problems you may have.

Donald L. Gautier

**Calendar of Meetings**

- March 15th : Spring meeting of the French Clay Group in Paris. Theme : "Scanning Transmission Electron Microscopy (STEM) for the Study of Clays".  
(Dr M. Rautureau, Groupe Français des Argiles, Laboratoire de Cristallographie, rue de Chastres, 45046 Orléans Cedex, France).
- April 12th-13th : Diagenesis and low temperature metamorphosis. University of Bristol (U.K.).  
(Dr D. Robinson, Department of Geology, University of Walk, Bristol BS8 1TR, U.K.)

- August 24th-25th : Symposium on Clay Mineralogy in Industry and the Environment. Calgary, Alberta Canada.  
(Prof. G.K. Rutherford, Department of Geography, Queen's University, Kingston, Ontario, K7L3N6 Canada)
- September 24th-29th : Joint Meeting of the "Gruppo Italiano dell "AIPEA" and "Sociedad Espanola de Arcillas"  
(Prof. Antonio Pozzuoli, Instituto di Mineralogia, Università, Via Mezzocannone 8, 80734 Napoli (Italy)).

**New Books**

- Minéralogie des Argiles. - S. Caillère, S. Hénin et M. Rautureau. Masson, Paris 1982, 2 Vol. (This is the 2nd edition of the former "Minéralogie des Argiles" by Caillère and Hénin).
- Soils with variable charge. - B.K.G. Theng, editor. Published by New Zealand Society of Soil Science, 448 pages, U.S. \$ 18.5. (Order to be sent to Treasurer, New Zealand Society of Soil Science, Private Bag, Lower Hutt, N.Z.).
- Minerals of the World. - Elsevier, Amsterdam, U.S. \$ 13.

# aipea



ASSOCIATION INTERNATIONALE POUR L'ETUDE DES ARGILES - INTERNATIONAL  
ASSOCIATION FOR THE STUDY OF CLAYS -- INTERNATIONALE VEREINIGUNG ZUM  
STUDIUM DER TONE - МЕЖДУНАРОДНАЯ АССОЦИАЦИЯ ПО ИЗУЧЕНИЮ ГЛИН

## MEMBERSHIP

AIPEA accepts as members clay scientists, institutions, and companies. Members may join individually or through cooperating national scientific societies.

Please fill in the attached form for joining AIPEA and send it along with your dues payment to the Treasurer.

The annual membership fees are as follows :

Individual member of an Affiliated Society *	US \$	4.00
Individual member	US \$	6.00
Institution or Company (Corporate member)	US \$	15.00
Life members (Individuals)	US \$	120.00

Your cooperation in observing the following suggestions in paying your membership fees will be appreciated :

1. Pay fees by (a) bank money order, payable in US dollars, or  
(b) international postal money order, payable in US dollars.
2. Pay membership fees for three or five-year periods.
3. Make check or money order payable to AIPEA and mail to :

Dr. H. Kodama  
A.I.P.E.A. Treasurer  
Chemistry and Biology Research Institute  
Agriculture Canada  
C.E.F. Ottawa, Ontario K1A 0C6  
Canada

- \* You may join AIPEA in this category if you are member of a national society affiliated with AIPEA.

A.I.P.E.A. MEMBERSHIP APPLICATION FORM  
(Please print or type)

Family Name : \_\_\_\_\_  
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Title : \_\_\_\_\_  
Mailing Address : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Amount of Dues Enclosed \$ \_\_\_\_\_ for \_\_\_\_\_ years

Type of membership \_\_\_\_\_

If you are an individual member of an Affiliated Society give  
the name of the Society \_\_\_\_\_

Date \_\_\_\_\_

Signature \_\_\_\_\_

CHANGE OF ADDRESS NOTICE

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Date effective : \_\_\_\_\_

Please mail to the AIPEA Treasurer Dr H. Kodama, Chemistry and  
Biology Research Institute, Agriculture Canada.  
CEF Ottawa, Ontario, K1A0C6, Canada.