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EDITORIAL: AIPEA, WHAT AND WHY

Science is, by definition international. Its aim is knowledge of nature for the benefit of mankind, whatever his race, political and religious convictions and social position. This is certainly so for clay science, not only because clays and clay minerals are raw materials for multibillion dollar industries but especially, because they are vital in the determination of soil fertility and in the protection of our environment.

Progress in clay science means two things: (1) advancement of our understanding of the properties of clays and clay minerals; (2) dissemination of this knowledge among scientists and through the community at large. Especially important is the dissemination (distribution) of scientific results obtained in laboratories of so-called developed countries to scientists in laboratories of countries "under development". Such a dissemination requires a common language all over the world. This is what AIPEA stands for.

AIPEA has six activities to achieve this goal.

1. It supervises the International Clay Conferences (ICC). These are the meetings at which clay scientists from all over the world meet and discuss the progress of their science. To promote participation in ICC's, reduced registration fees are provided for AIPEA members and student travel grants have been installed (see this newsletter).
2. The nomenclature committee watches over our uniform language by proposing mineral names for new phyllosilicates and a uniform nomenclature to describe clay structures.
3. The teaching committee organizes the dissemination of teaching aids via symposia at the international conferences.
4. The newsletter is a forum for world-wide distribution of clay activities. It can also be used by individual AIPEA members or affiliated societies to express opinions on the field, to disseminate information on research centers and research groups; on international cooperation and so on. All members and societies are asked to do so, more than in the past.
5. Brilliant young clay scientists are encouraged via the Bradley Award and Student Travel Grants.
6. Outstanding active scientists are honoured with an industry-sponsored AIPEA medal.

All these activities are made possible with the extremely small annual membership fee of $ 4.00 for members of affiliated societies and $ 6.00 for individual members. Corporate members contribute $ 15.00 annually. If AIPEA is to maintain these activities, it needs the membership fee. Only if all clay scientists are members of AIPEA, can we reach our goals and maintain our activities at the present level.

PRESIDENT’S PODIUM

Dear Colleagues:

It is again time to wish you all a very happy New Year. It is my sincere hope that the great political changes that have taken place in the world during the last years will lead to peace and understanding among all the countries of the world and that national interests do not conflict with the freedom of the individuals. International associations like AIPEA, dedicated to promote co-operation among individuals of all countries and nationalities have contributed greatly to promote this spirit of solidarity and certainly there are specific examples of AIPEA actions in the defense of individual freedom.

1991 was the year of the 7th Meeting of the European Clay Groups (Euro-clay Conference) that took place in Dresden (Germany) from August 26 to August 30. We certainly had a good conference and I must convey, on behalf of AIPEA, our recognition to the Organizing Committee and, in particular, to Prof. Dr. Manfred Störr for the great effort they put in the organization of the meeting. It was a success in spite of the difficult circumstances. The meeting was attended by more than 400 scientists not only from European countries but also from Australia, Brazil, Canada, China, Japan, Thailand, the USA and Vietnam. It was rewarding to verify the numerous participation of scientists from East European Countries. The proceedings were distributed at the beginning of the conference; they came out in three volumes with a total of 1216 pages. Our recognition, again, to the Organizing Committee for this excellent work. We all acknowledge the high scientific level of the contributions presented in the different sessions. A special mention deserves the work of B.B. Smollar-Zvyagina entitled "Relationship between structure parameters and chemical composition of 2:1 phyllosilicates" that was honoured with the Martin-Vivaldi Award. She made an excellent presentation and it was certainly gratifying and emotive to hear in the same meeting the contribu-
tions from members of two generation of the Zvyagin family. My sincere congratulation to both, Dr. Zvyagin and his daughter Dr. Smoliar-Zvyagina. During the Dresden meeting, Prof. Radno Kühnel from the Delft University of Technology, The Netherlands, was elected as the new President of the European Clay Group Association, replacing Prof. F. Vaniale from the University of Pavia, Italy. My sincere congratulation to Prof. Kühnel together with the offer, from the part of AIPEA, to collaborate in any action to promote clay research. It was also decided on that occasion, that the next Euroclay Conference will be held in Belgium in 1995.

Council of AIPEA met formally during the Dresden meeting on August 27, 1991. A detailed report of Council decisions is given elsewhere in the Newsletter. I will only mention the changes that have taken place recently in the AIPEA Council. Prof. S.W. Bailey resigned from the Nomenclature Committee and was replaced by Prof. S. Guggenheim who has been elected chairman of this committee. Also, Dr. C. de Kimpe resigned from the AIPEA Treasurer Office and the Council appointed Dr. S.S. Singh from the Land Resources Research Centre, Canada, as Acting Treasurer until the next business meeting in 1993. Let me express our deepest gratitude to Prof. Bailey and to Dr. C. de Kimpe for their excellent work in their respective offices. Let us also express our congratulation to our Vice-president Prof. K. Wada who has been nominated President of the Kyushu University in Japan.

We have good news from Australia. Prof. T. Eggleton distributed in Dresden the First Circular of the 10th International Clay Conference to be held in Adelaide, 18-26 July, 1993. From the lecture of its content and the explanations of Prof. Eggleton it is clear that our Australian colleagues have made the necessary arrangements to have an interesting and well organized conference. Also, Prof. Eggleton assured the Council that the 1993 Conference Proceedings will be published within a period no longer than one year after the Conference.

In July 1991 the proceedings of the 1989 International Clay Conference were published. The Proceedings include 90 papers distributed among 10 chapters and 5 volumes of the journal “Science Géologiques” edited by the “Institut de Géologie de Strasbourg”.

I must end with a very sad news. Shortly after the Dresden meeting, we learned of the dead of Prof. George Millot. His obituary will appear elsewhere in the Newsletter but I like to pay personal tribute to an eminent scientist and a good friend. He will always be in the memory of our scientific community. I also take this opportunity to express our deepest sympathy to Mme. Millot and the family as well as to his colleagues in the “Institut de Géologie de l’Université Louis Pasteur de Strasbourg”.

José M. Serratosa.
Based on the proposal of prof. J. Dixon, chairman of the teaching committee, council decides to install student travel grants to contribute to the coverage of the travel expenses to international clay conferences. The amount to be provided by AIPEA cannot be fixed at this moment because of the poor financial situation. A major fund raising campaign in 1992 must provide the necessary funds. The following conditions must be fulfilled:
- the applicant must be a Ph.D. student;
- he/she must have a submitted abstract;
- and a letter of support by his/her supervisor, who must be a member of AIPEA;
- he/she must have financial support by the national or regional clay group, if there is one.
The application must be forwarded to the national or regional clay groups. If there is no clay group in the country of the student, the application must be forwarded to the secretary-general of AIPEA. The amount provided by AIPEA cannot exceed the amount provided by the national or regional clay group and must be lower than the Bradley award ($1000,-).
The procedure is as follows:
- Ph.D. students apply to their national or regional clay groups, or to the secretary-general if no clay group exists in their country.
- The national or regional clay groups rank and select the students they will support.
- The list of selected and ranked students is transferred to the secretary-general of AIPEA by the national or regional clay groups.
- For every student this list is accompanied by
  - a submitted abstract;
  - a letter of support of their supervisor;
  - the amount of money provided by the national or regional clay group;
  - the arguments for the ranking;
  - council decides by written reply to the secretary-general.

### THE 1983 BRADLEY AWARD

The Bradley award will be presented during the 10th International Clay Conference in Adelaide. The closing date for submission of manuscripts is November 20, 1992.

The mailing address is Prof. Robert Schoonheydt, secretary-general AIPEA, Center for Surface Chemistry and Catalysis, K.U. Leuven, K. Mercierlaan 92, 3001 Heverlee, Belgium.

All AIPEA members should encourage entries of high quality. You are therefore requested to circulate the regulations and the application form among possible candidates.

### Rules:

1. The objective of this award is to offer financial assistance to the recipient to enable him or her to participate in an International Clay Conference for the purpose of presenting his or her paper.
2. Candidates must submit five copies of a paper of approximately 4000 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. The paper should be written in a format acceptable for internationals journals. 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 submission: 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 during a plenary session to be followed by the oral presentation of the winning paper. 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 (see end of newsletter). The candidates must note that the deadline will be strictly observed.
8. The winning paper must be submitted for publication in the Conference proceedings.

**REPORT OF THE AIPEA NOMENCLATURE COMMITTEE**

It was with regret that AIPEA accepted the resignation of the committee chairman, S.W. Bailey, for health reasons. We now understand that he is on the road to recovery. S. Guggenheim was elected the new Chairman. No other business was transacted. However, agenda items will be requested prior to the Adelaide meeting in July, 1993.

S. GUGGENHEIM

**REPORT OF THE AIPEA TEACHING COMMITTEE**

The Clay Minerals Society raised its level of support for the student travel grant program. Thus we anticipate that several students from the USA will have some support to participate in the 10th International Clay Conference in Australia and the field trips there and in New Zealand to enrich their professional experiences. Japan and Yugoslavia have indicated support for their students too. We hope that other national or regional clay groups will participate in this program for the benefit of their students. Students should make their plans to compete early because the competition is likely to be keen!

The following Teaching symposium is planned for the 10th ICC in Adelaide, Australia.

The Teaching symposium will be opened by a keynote address by Dr. Udo Schwertmann, a well known authority on iron oxides in soils and other natural systems. Recent advances in the structures of layer silicate minerals will be presented by Dr. Stephen Guggenheim. New methods of clay mineral analysis that are pertinent to clay mineralogy instruction will be discussed. The surface properties of clay minerals revealed by Atomic Force Microscopy will be presented by Dr. M. F. Hochella, Jr. (pending). Plans are being made for presentations on special clays in soils and sediments of New Zealand and of Australia. A presentation on professional opportunities in the clay industry, in academia and in environmental and other areas is being developed as a poster. Contributed papers for the Teaching symposium are welcome from students and senior scientists.

J. DIXON

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**10TH INTERNATIONAL CLAY CONFERENCE**

Adelaide, South Australia, 18-26 July 1993

"Clays control the environment"

**General Chairman:** Dr. Tony Eggleton  
**General Secretary:** Dr. Rob Fitzpatrick  
**10th ICC Secretariat:** Elliservice Convention Management, 60 Kensington Road, Rose Park, South Australia, Australia, 5067. Postal Address: PO Box 753 Norwood, South Australia, Australia 5067.  
Phone: 61 8 332 4068 Facsimile: 61 8 364 1968 (International).  
The 10th International Clay Conference will be held at the University of Adelaide in South Australia. The Conference is under the auspices of the Association Internationale pour l’Etude des Argiles (AIPEA) with the participation of the International Society of Soil Science (Commission VII), and will be hosted by the Australian Clay Minerals Society Incorporated. The program will include concurrent sessions, poster displays, and trade exhibitions. Before and after the conference, tours throughout Australia and New Zealand will provide opportunities for delegates to see unique scenery and clay deposits.

**SCIENTIFIC PROGRAM**

**Chairman:** Dr. Jock Churchman  
The Conference will cover all aspects of clay science including mineral properties, weathering processes, clays in geology and soils, as well as environmental aspects, engineering, mining, and industrial applications.

**THEMES AND SYMPOSIA**

**Theme A: Soil Mineralogy**  
Convenor: Dr. R.J. Gilkes  
**Theme B: Clays in Industry and the Environment**  
Convenor: Dr. A. Shayan  
**Theme C: Clays in Geology**  
Convenor: Dr. I.D.R. Mackinnon  
**Theme D: Surface and Interlayer Reactions**  
Convenor: Dr. B.K.G. Theng  
**Theme E: Structure Chemistry & Nomenclature**  
Convenor: Dr. S. Guggenheim
The 7th Meeting of the European Clay Groups was held in Dresden, Germany, from August 26th to 30th. 409 participants (367 clay scientists and students, 42 registered accompanying persons) from 32 countries met to discuss recent results of all topics of clay related research.

EUROCLAY '91, DRESDEN, AUGUST 26-30

The Scientific Programme offered 63 oral papers in 7 sessions and as many as 190 poster presentations. Extended abstracts of 237 of these 253 contributions were given to each participant upon arrival as 3 volumes of the Proceedings of EUROCLAY '91. 5 field trips with 148 participants lead to outcrops of kaolins and clays in Saxony and Thuringia.

One goal of the decision of the Seville meeting to hold EUROCLAY '91 in Dresden was to give more East European scientists the chance to attend the conference. Due to the political changes in Germany this goal was hard to meet. Nevertheless, the Organizing Committee realized support of 93 participants from Eastern Europe and Asia with sponsoring of different companies, universities and individuals. This situation helped to fulfill the scientific aim of the conference. Among the participants we met large groups from Italy (47), Spain (44), France (25), the Soviet Union (35), Poland (26) and the CSFR (23) – 101 attendees came from Germany.

That 42 students took part in EUROCLAY '91 is another sign of the success of the conference's philosophy. EUROCLAY '91 presented a broad variety of clay science! This seems to be necessary. The highlights may differ depending on the interests of the individual researcher.

However, we would like to outline one highlight. There is still a number of Proceedings of EUROCLAY '91 available! Everybody who was not able to attend our meeting or who is interested in getting additional volumes should order the 3 volumes (1218 pages) package soon (DM 175.- per package) at the address of the undersigned.

The Organizing Committee is looking forward to meet all attendees and some more in 1995 when the 8th Meeting of the European Clay Groups will be held in Belgium. Prof. R. Schoonheydt will invite the clay family then to Leuven.

MANFRED STORR, PETER ADOLPHI
Chairman and Secretary of EUROCLAY '91

NEWS FROM MEMBERS

Prof. K. WADA, vice-president of AIPEA, was elected president of Kyushu University and took office on November 7, 1991. Congratulations.
Le point de départ des recherches de Georges MILLOT fut l’étude des argiles. En 1942, quand il a commencé ses travaux en vue de la préparation de la thèse de doctorat-ès-Sciences soutenue en 1949, les mineralogistes avaient déjà défini les minéraux argileux avec précision, mais les géologues en avaient à peine entrepris l’inventaire dans les roches sédimentaires, les sédiments actuels, les altérations superficielles et les sols. C’est à cet inventaire que s’attacha d’abord Georges MILLOT.

Dans ce but, diverses techniques furent mises au point ou perfectionnées, ainsi l’extraction aux ultra-sons proposée dès 1948, l’influence du mode de séchage et de saturation dans la caractérisation des minéraux argileux par diffraction des rayons X (1964), une méthode de détermination des mélanges de minéraux argileux simples et interstratifiés (1959). Une nomenclature des textures des argiles encore utilisée actuellement fut présentée dès 1949.

Georges MILLOT ne s’arrêta pas à l’inventaire des minéraux argileux. Qui l’a bien connu sait que sa grande préoccupation a toujours été de "tirer les leçons" des faits patiemment accumulés et discutés. Et ces leçons ont été présentées dans un traité traduit en russe et en anglais, intitulé “Géologie des Argiles, Altérations, Sédimentologie, Géochimie”. Ce traité est très fréquemment cité encore actuellement dans la littérature française et étrangère, l’écorce terrestre est composée aux neuf dixièmes de roches silicatées: granites, gneiss, schistes et laves diverses. Quand toutes ces roches viennent au jour et aux intempéries, elles s’altèrent au jour et aux intempéries, elles s’altèrent: c’est la naissance des argiles. Ensuite, ces argiles sont transportées par les fleuves dans les bassins sédimentaires, lacs ou mers. Là elles se déposent avec ou sans transformation: c’est la sédimentation argileuse. Enfin, si les séries sédimentaires s’enfoncent en s’accumulant dans des zones profondes où la température et la pression s’élèvent, les argiles recristallisent en micas, puis en feldspaths et silicates de la profondeur: c’est la mort des argiles.

IN MEMORIAM GEORGES MILLOT
(24 mai 1917 - 10 septembre 1991)

Le Naissance des argiles par altération superficielle, évolution dans la sédimentation et mort par enfouissement, telle est l’histoire simplifiée des argiles, passage obligé de la matière silicatée dans le cycle géochimique”. Au cours des différentes étapes de leur histoire, les minéraux argileux ne sont pas “inertes”; ils peuvent s’y transformer, recristalliser, se néoformer, incorporer des éléments traces ou isotopes significatifs. Ils sont ainsi caractéristiques de leurs milieux de formation et constituent un outil extrême-

ment précieux pour reconstituer les paléogéographies, paléoclimats, paléoenvironnements, avec toutes sortes d’applications par exemple, en géologie pétrolière, en agronomie, en métallogénie.

Les minéraux argileux sont l’une des principales clés de la Géochimie de la Surface, terme proposé par Georges MILLOT et qui est l’intitulé au Centre CNRS de Strasbourg créé par lui en 1963. Si Georges MILLOT s’est illustré dans beaucoup d’autres domaines que celui des argiles, il n’en reste pas moins que c’est celui dans lequel il a le plus oeuvré et dont il a été le plus émerveillé. Toujours fidèle aux techniques nouvelles d’observation et d’analyse, il a développé de nouvelles méthodes de caractérisation des argiles, son ouvrage, et ainsi le message suivant: "Chaque argile, même monomina, est une population de particules différentes. Chaque particule est elle-même une population de micro-domaines. Quand l’environnement change, chaque micro-domaine et chaque particule commencent une évolution. Chacun tend, à sa vitesse propre, vers un nouvel équilibre thermodynamique: c’est une dynamique de populations. En minéralogie des Argiles, on peut donc aujourd’hui raisonner en termes de dynamique de populations”.

Georges MILLOT est l’un des instigateurs de la fondation de l’Association Internationale pour l’Etude des Argiles (AIPEA) en 1963. Il a été:
- Rédacteur en chef de la revue Bulletin du Groupe Français des Argiles de 1972 à 1975,
- Président des Groupes Européens des Argiles de 1972 à 1975,
- Président de la 2e Réunion européenne des Argiles à Strasbourg, 13-15 mars 1974,

Pionnier en France de la Géologie des Argiles, Georges MILLOT a rapidement acquis une renommée internationale dont il a bénéficié en premier chef l’Ecole de Strasbourg qu’il a créée et irriguée pendant plusieurs décennies. Mais d’autres équipes, françaises et étrangères, ont aussi poursuivi des voies de recherche et de réflexion qu’il avait ouvertes, tout en les développant et en les diversifiant. Et au nom de toutes ces équipes, le Groupe Français des Argiles se devait de rendre un vibrant hommage à Georges MILLOT pour son œuvre dans le domaine des Argiles, pour la part qu’il a pris à la vie et à l’animation du Groupe Français des Argiles et pour son rayonnement d’homme et de scientifique.

Hélène PAQUET
IN MEMORIAM GEORGES MILLOT
(May 27, 1917 - September 10, 1991)

Clay minerals were the starting point of Georges MILLOT's research. At the beginning of his Ph.D. work clay minerals were precisely defined by the mineralogists. However, the geologists were only at the beginning of their inventory of clay minerals in sedimentary rocks, in sediments and in soils. This inventory was Georges MILLOT's first task.

To achieve his goal Georges MILLOT developed new techniques and adapted others: ultrasound extraction in 1948; a method to determine mixtures of simple and interstratified clay minerals (1959). He demonstrated the influence of the mode of drying and of water saturation on the characterization of clay minerals by X-ray diffraction (1964). In 1949 he presented a nomenclature of textures of clays which is still in use.

Georges MILLOT's research did not end with the inventory of clay minerals. Those who knew him well know that his major preoccupation was always to "learn lessons" from the facts, which were patiently accumulated and thoroughly discussed. These lessons were written down in the book "Géologie des Argiles, Altérations, Sédimentologie, Géochimie", also translated in Russian and in English. It is a reference book, frequently cited in the French and other literature. The essential is the following, as written by Georges MILLOT himself."

"The terrestrial crust is composed of 90% of siliceous rocks: granites, gneiss, schists and diverse lava rocks. When these rocks come to the surface and are exposed to the environment, they are being weathered: its the birth of clay minerals. Then, these clays are transported by the rivers in sedimentary basins, lakes and seas. There, they are deposited with or without transformation: the clayish sediment is formed. Finally, if the sedimentary series are buried by accumulation of the clayish material in the deep zones, where temperature and pressure are high, the clay recrystallizes in micas, feldspaths and deep level silicates: it is the death of clays.

Birth of clays by surface weathering, evolution in the sediment and death by burial, that is the simplified history of clays, necessary passage of the siliceous material in the geochemical cycle".

In the course of their history clay minerals are not inert; they can alter, recrystallize, form again, take up trace elements or radio-isotopes. In that way they carry the characteristic properties of the medium in which they are formed; and they are an extremely valuable tool for reconstruction of paleogeographies, paleoclimates, paleoenvironments with applications in petroleum geology, in agriculture and in mining of metals;

Clay minerals are one of the most important keys of the geochemistry of the surface, a notion introduced by Georges MILLOT. It is now the name of the CNRS centre created by him in Strasbourg in 1963.

Even if Georges MILLOT was an outstanding scientist in many scientific domains, his preference went to the clay minerals. He followed with amazement the flashing progress thanks to new techniques for observation and analysis. His last public appearance on the forum of clay minerals was at the opening of the 9th International Clay Conference in Strasbourg in 1989. This was his message:

"Every clay, even mono-mineral, is composed of different particles. Each particle itself is a collection of micro-domains. When the environment changes, each micro-domain and each particle begin to change. They move towards a new thermodynamic equilibrium, each with a characteristic rate. Today one can discuss the mineralogy of clays in terms of the dynamics of populations".

Georges MILLOT is one of the founding fathers of the Association Internationale pour l'Etude des Argiles (AIPEA) in 1963. He has been:
- president of the Clay Group and of the Commission of Clays of the CNRS during 1969-1972;
- president of the European Clay Groups: 1972-1975;
- president of the second European Clay Meeting in Strasbourg, March 13-15, 1974;
- president of the honorary committee of the 9th International Clay Conference, Strasbourg, August 28 - September 2, 1989.

Pioneer of the geology of clays in France, Georges MILLOT has quickly acquired an international reputation. The school of Strasbourg, which he created and stimulated over so many years, was the primary beneficiary. But other French and foreign teams also have followed, developed and diversified the tracks opened by Georges MILLOT.

In the name of all these research teams, the Groupe Francais des Argiles has given a touching homage to Georges MILLOT for his work on clays, for his contributions to the well-being of the Groupe Français des Argiles and for his charisma as a man and as a scientist.

Hélène PAQUET
(Translated by Robert SCHOONHEYDT)
DEFINITIONS OF ALLOPHANE

Dr. Roger Parfitt
DSIR Land Resources
Private Bag, Lower Hutt, New Zealand

Round table discussions on the definition of allophane were held at the IXth International Clay Conference, Strasbourg, August 1989 and 14th International Congress of Soil Science, Kyoto, August 1990. As a focus for further discussion some definitions of allophane are listed. Under the header (A) are some definitions based on the broad concept that allophane is the name of a group of materials (Ross and Kerr, 1934; Van Olphen, 1971). Under (B) are some tentative definitions of distinct types of allophane which are becoming increasingly well defined (Yoshinaga, 1986). Comments and suggestions may be addressed to Dr. Parfitt or Dr. J. Dixon, Department of Soil & Clay Sciences, Texas A & M University, College Station Texas 77843-2474, USA.

(A) ROSS AND KERR DEFINITION 1934

“Allophane is an amorphous material that is commonly associated with halloysite. It has no crystal structure and no definite chemical composition. The name allophane should be restricted to mutual solutions of silica, alumina, water and minor amounts of bases but should include all such materials, even though the proportions of these constituents may vary”.

VAN OLPHEN DEFINITION 1971

“Allophane is a group name for non-crystalline clay minerals consisting of silica, alumina and water in chemical combination. The range of chemical composition given by Yoshinaga (1986) for naturally occurring allophane is Al2O3 = 35-42%, SiO2 = 31-41%, H2O = 14-19%. Soil samples examined by Parfitt and Kimble (1989) had a wider range of composition. Broad characteristic X-ray bands occur near 3.5, 2.2 and 1.4Å.

(B) 1. PROTO-IMOGOLITE ALLOPHANE (IMOGOLITE-LIKE ALLOPHANE)

An allophane with a structure close to that of imogolite (OH)3Al2O3SiOH but not having the crystal order of imogolite. The chemical formula is Al2O3.O.6-1.0 SiO2, 2.5-3.0 H2O. Powder X-ray diffraction data compared with imogolite is as follows:

WADA 1989

Allophane is a group name of hydrous aluminosilicates consisting of hollow, irregularly spherical particles with diameters of 3.5 to 5 nm, and with a molar Si/Al ratio typically of 1:2 to 1:1. A member or mixture of allophanes is referred to by its Si/Al ratio.

PARFITT DEFINITION 1990

Allophane is the name of a group of clay-size minerals with short-range order which contain silica, alumina and water in chemical combination.

KYOTO DRAFT DEFINITION 1990

Allophane is the name for the group of hydrous alumino-silicate clay minerals which are non-crystalline.

Notes on Kyoto Definition

Bailey (1980) states that “clay mineral” is the common name for the hydrous layer silicates, part of the larger family of phyllosilicates. Short-range-order materials have long range disorder, and Brindley (1980) gives muscovite and glass as two examples. Since the term “short-range order” has been used for such a wide range of crystallinity, it would be confusing to use the term in the definition of allophane. For allophane both X-ray diffraction and electron diffraction data indicate no repeat of structural units in any of the three dimensions of space. Therefore “non crystalline” is more appropriate than “short-range order” in the definition of allophane. The range of chemical composition given by Yoshinaga (1986) for naturally occurring allophane is Al2O3 = 35-42%, SiO2 = 31-41%, H2O = 14-19%. Soil samples examined by Parfitt and Kimble (1989) had a wider range of composition. Broad characteristic X-ray bands occur near 3.5, 2.2 and 1.4Å.
Proto-imogolite allophane

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Natural samples have the morphology of hollow spherules, 35-50 Å outside diameter. NMR and infrared spectra are similar to those of imogolite. First reported Farmer et al., (1977).

References to names and properties are Farmer et al. (1978), Parfitt (1990).

2. HYDROUS-FELDSPATHOID ALLOPHANE

An allophane with Al-for-Si substitution of up to approximately 1:3. Analysis gave Al₂O₃ 35-45%, SiO₂ 34-39%, H₂O 20-24%

The chemical formula is: 1.1-1.7 Al₂O₃, SiO₂, 1.6-2.3 H₂O

Powder X-ray diffraction data is as follows:

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Formed at pH near 6 and above where (Al(OH))₄⁺ is the dominant species in solution. First reported Wells et al., (1977).

References to name and properties are Farmer et al. (1979), Childs et al. (1990).

3. “DEFECT KAOLIN ALLOPHANE” OR “HALLOYSITE LIKE ALLOPHANE”

This allophane has a formula close to 0.5 Al₂O₃, SiO₂, 1.4 H₂O. The silicate is polymerised (NMR, infrared spectra). The aluminium is largely in octahedral sites. It is not clear if samples can be obtained that are free of proto-imogolite allophane and hydrous-feldspathoid allophane.

Powder X-ray diffraction data is as follows:

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Natural samples have the morphology of hollow spherules, 35-50 Å outside diameter. (Wada, 1979; Parfitt et al., 1980).

Names are discussed by Yoshinaga (1986), Parfitt (1990).

REFERENCES


THE B-BERM APPROACH:

BORDERS, BOUNDARIES, EDGES, RIMS AND MARGINS – A CONCEPTUAL METHODOLOGY FOR LOOKING AT ROCKS, AND AT LIFE IN GENERAL

By Dr. Murray Felsher
President, Associated Technical Consultants,
P.O. Box 20, Germantown MD 20875, 301-428-0557

Ladies and Gentlemen, a theme session at a national G.S.A. meeting whose aim is to relate the Earth Sciences to the whole of our intellectual experiences has been long overdue and is most welcome. Too often our geological training, (mirrored as it is in all other fields as well), serves no other purpose than to provide us with continuously increasing expertise in incrementally diminishing fields. We get to know more and more about less and less, approaching asymptotically a state of bliss where we would know everything about nothing. This ever-increasing packing density, carrying with it a corresponding decrease in signal-to-noise ratio, causes us to isolate both our expertise and ourselves. We speak with greater and greater authority to fewer and fewer people. Even more distressing, note that as the volume of our envelope of expertise shrinks, the virtual margins between fields of endeavor are distanced further and further apart. It becomes even more difficult, then, to integrate information, then knowledge, and finally understanding, across the erosional vacancy of disinterest and ignorance that marks the unnatural discontinuity that separates our world of ideas.

Jerome Bruner perhaps stated it best in his book published last month entitled, Acts of Meaning. He says that at this time his own "... science has become fragmented as never before in its history. It risks losing the cohesion needed to assure the internal exchange that might justify a division of labor between its parts. And the parts, each with its own organizational identity, its own theoretical apparatus, and often its own journals, have become specialties whose products become less and less exportable. Too often they seal themselves within their own rhetoric and within their own parish of authorities. This self-sealing risks making each part ever more remote from other inquiries..." And elsewhere he notes, "The wider intellectual community comes increasingly to ignore our journals, which seem to outsiders principally to contain intellectually unsuitated little studies, each a response to a handful of like little studies." Bruner here speaks to his own field, which is Psychology. But I ask you to consider those words as applying with equal force to our own science, as well. I expect that each of us can relate to these observations. Enter any department at your university, or industrial organization, or government agency, and you will soon appreciate the universality of these words.

Let us accept for the moment that this situation indeed marks the natural order for academic research, for institutional infrastructures, and for industrial R&D. Must it then be taken as given that, entropy-like, some physical-sociological law does exist that requires our mode of inquiry to follow the strange path that leads to intellectual isolation? If true, should one expend his efforts, and his career, in trying to buck the system? And if indeed one should, then why should that one be a geologist? Having asked the question, I find that I have no qualms in suggesting an answer. My answer is, yes, buck the system... and yes, it's up to a geologist to do so. It is incumbent upon us, as earth scientists, to provide a breadth of understanding and knowledge that bridges the whole spectrum of human endeavors. In fact it is essential that we do so. And in truth, it is our primary business. Specifically, it is the business of the earth scientist to serve as an information integrator – in the largest sense and for the greatest good. But why our profession? Why should this burden fall on the shoulders of the geologist – the earth scientist? To answer that question I must ask you to consider what I have called the "Academic Pecking Order". Though rarely discussed openly and in polite company, we all will admit in private that all scientific disciplines are not really equal. There really exists an academic pecking order, and it operates kind of like Moh's Scale of Hardness. By that I mean as follows: At any university, a mathematics professor, say, can be promoted, accepted by his peers, and progress gently along his tenure track, from Assistant Professor to Full Professor, to Emeritus, without ever knowing anything at all about, in turn, physics, chemistry, biology, or geology. However, occupying the nest rung down the pecking order, the physicist, in order to secure his own promotion, recognition, and success, must know more and more about less and less in physics. And although he must know mathematics, he need have had no exposure to, in turn, chemistry, biology, or geology. Likewise, a good chemist must know physics and mathematics, but need not trifle with biology or geology. And so, as we drop, precipitously, down the academic pecking order, the physicist, in order to secure his own promotion, recognition, and success, must know more and more about less and less in physics. And although he must know mathematics, he need have had no exposure to, in turn, biology, chemistry, or geology. Likewise, a good chemist must know physics and mathematics, but need not trifle with biology or geology. And so, as we drop, precipitously, down the academic pecking order, we note that each scientist must be competent only in his own discipline and the disciplines above him in the pecking order. Our poor geologist, however, peering up from the bottom, must be competent not only in his own field, but he must also be well-versed in biology, chemistry, physics, and mathematics. This, by the way, explains why there is nothing better then well-schooled geologists, trained as they are as natural integrators across disci-
plines... (and parenthetically, it also explains why there is nothing worse than a poorly-trained geologist).

But note that the massive global environmental concerns that we face today are surely interdisciplinary and multidisciplined in their aspects. Each begs for the intellectual crossfertilization and problem-solving capabilities of a well-trained geologist. Acid precipitation, deep-well injection, ground-water contamination, oil pollution, global warming, stratospheric ozone depletion, deforestation, desertification, coastal zone management, land use planning, toxic waste containment, radioactive waste disposal, and on and on. Though each carries components of many disciplines, a comprehensive technical understanding of the problem and its ultimate abatement depend on a capability that transcends specific discipline expertise. We have also had brought home to us the message that Mother Nature Carries The Ultimate Big Stick. Global environmental awareness has never been acute as it is today. And who but the geologist, trained in all the sciences of the Earth, is better qualified or suited to cross the barriers established by traditional technical disciplines.

That is, if the geologist is allowed to do so. Will the recognition, promotions, and awards still be forthcoming if, (as an example that can be extended to all geological sub-disciplines), a geologist has to go beyond getting a Masters degree by mapping the eastern half of the northern half of some 7-1/2 minute quad, and then mapping in more detail, the southern half of the eastern half of the northern half of the same quad as a Ph.D. dissertation?

Undoubtedly, some geologists will break through. They will find that it is to their professional advantage to reverse the trend of compressing intellectual endeavor by pursuing the major environmental problems that face us today. But what methodology will be used? At this point I refer you do the published abstract of my talk. I speak of borders, boundaries, edges, rims, and margins. These are the key words. Indeed, the action is at the edges of the envelope. The concentration of creative stamina and sagacious fortitude at the center of a discipline serves the noble purpose of fine-tuning that discipline, and I suspect most scholars will continue that effort. But for the reasons I have stated both in the abstract and earlier this morning, it is my hope that more of us will look to the boundaries.

And note that we speak of boundaries both in their temporal and spatial domains. As an example in the temporal sense, we are still arguing whether or not a thin layer of iridium at the Cretaceous – Tertiary boundary could represent a geologically instantaneous deposit indicative of a cyclic disturbance of the Oort Cloud. As an example in the spatial sense, studies reported two months ago supported by the National Institute of General Medical Sciences, part of the National Institutes of Health, have indicated that the terminal regions of chromosomes, which are called telomeres, might actually be an enzymatic RNA that could possibly lead to protein synthesis, and eventually lead to the earliest beginnings of life on Earth. This bit of paleo-geo-bio-chemistry emanating out of the Department of Health and Human Services, no less...

The only way to expand our ever-shrinking individual envelopes of research and competence is to push out at the envelope boundaries. As individuals, the effort can only succeed if it is based on choice. As geologists, the only way in which the biostratigrapher and the aqueous geochemist will understand the impact of their own work upon the other is an effort that enlarges both their respective areas of competence. As scientists, the only hope of ever having the organic chemist talking to the atmospheric physicist is by convincing them to intersect their edges of interest. This is beginning to happen in still small, but meaningful ways. A day after tomorrow, for three days in November in Irvine CA, the National Academy of Sciences is sponsoring a Frontiers of Science Symposium. This invitational event is bringing together some 100 outstanding scientists aged 30-45 from different disciplines to discuss recent advances and opportunities in their respective fields. The program is organized as ten symposium sessions – astrophysics, atmospheric science, computation, dynamical systems, gene regulation, geology, neural networks, nuclear magnetic imaging, photosynthesis, and physics – with ample time between sessions for personal interaction. Presentations at the symposia are geared toward fellow scientists who are not specialists in the field.

We must point out that it will be most important to have the non-scientist understand and appreciate what it is that the scientist is relating. NASA's Earth Observing System due to fly at the end of this decade will mount a suite of Earth-viewing sensors aboard a polar-orbiting platform. It will downlink data to us at a bitstream rate that exceeds the contents of a Library of Congress – per day. How will we handle these data? How will we transform these data into information that is accessible to an end user, to a researcher, to the public, and to an agency decision-maker? How will the transfer be made from space-acquired data to ground-informed politician and bureaucrat? And make no mistake — the best science, the most elegant minds, and the noblest intentions are all immaterial and wasted if the end result is not an implemented policy. What then should be the role of the private scientist in the halls of public government? Again, and for the reasons discussed earlier, it falls to the earth scientist to provide the administration, the congress, and local government an overall systematic base of reference. In that connection I point out to you a book published just last week by Sheila Jasanoff, entitled “The Fifth Branch: Science Advisors as Policy Makers”, which speaks to the challenge faced by the scientific
community in serving as technical advisors to the higher reaches of the Federal establishment.

My plea, in conclusion, is for just some of you, and for just some of your students to change your way of doing your life's work. An arrogant plea, I know. Again, traditionally you have been trained, and train others, to look harder at things closer to you, and hope to add on to your knowledge base an increment of meaning. I ask you to look harder at things further from you, and know that you will add on to your knowledge base a sweep of understanding. Push against the edges of your own learning and experience. You may be bucking the trend, but remember Trend is not Destiny. Your destiny, at any age, is determined by what you alone do — today.

And remember, as you soar away from someone permanently implanted neck-deep in the tiny world that comprises his own particular technical speciality, he may claim that it is you who are getting smaller and smaller. But he is wrong. Have a happy flight!

NATIONAL CLAY GROUPS

AUSTRALIAN CLAY MINERALS SOCIETY

10th ICC

The first circular gives an outline of the Technical Program and proposed Field Trips (see separate announcement in this newsletter). Meetings of the National Committee in Ballarat were followed by a meeting of the Adelaide Committee to finalize the First Circular and to draft a letter seeking support for the Conference. The 10th ICC will also be the 13th ACMS Conference. The General Meeting elected the 10th ICC Adelaide Committee as the next ACMS Council. Please send your ideas and offers of support for the International Conference to:

Dr. Bob Fitzpatrick, General Secretary 10th ICC, CSIRO Division of Soils, Private Bag #2 Glen Osmond, South Australia, 5064.

Money can be sent to Dr. Reg Taylor, Treasurer, 10th ICC at the same address.

For the ICC it is hoped that a ceramic art exhibition can be mounted in parallel with the Conference in the Art Gallery of SA, and that the SA Museum also prepare an exhibition on clay in technology/industry. These will need money, and we will be seeking sponsorship. We also hope to hold a public forum, using the Conference theme “Clays control the environment” as the topic. Ideas for speakers and aspects could be sent to me or Rob Fitzpatrick.

Ballarat Conference
4-7 February 1991, Ballarat University College

Ross Ramsay, Head of Geology at the Ballarat University College, was our local member of the ACMS Council, and he organized a problem-free 4 days for the 80 of us. The rather full two days of technical sessions and meetings was complemented by two excellent days in the field, well led by Peter Dahlhaus and Phil Kinghorn. To all three go the ACMS Council's thanks.

Publicity

The Ballarat press noticed our presence, and gave us a two minute segment on VIC TV, as well as a para in the Ballarat Courier.

Honorary Life Members

At the dinner (a fine feast at Sovereign Hill), Reg Taylor sketched the early history of the Society, emphasising the roles of George Walker (decd), Fred Loughman, Jim Quirk, and Keith Norrish in founding the Society in the 1960-s, and Bill Cole in resurrecting it in 1980. Cole, Loughnan, Norrish and Quirk were elected Honoray Life Members by acclamation.

12TH BIENNIAL CONFERENCE PROGRAM

Ballarat February 3-7, 1991

List of lectures

SESSION 1: TECHNIQUES AND APPLICATIONS
CHAIR: Dr. ALAN CHivas

Low temperature thin-film elemental analysis of kaolinites.

Ian D.R. Mackinnon, Stacy A. Kaser & Philippa J.R. Uwins

FT-Raman and infra-red analysis of clay minerals.

Ray L. Frost & Peter M. Fredericks
The origin and significance of clay microstructures
*R.S. Murray* and *J. P. Quirk*
Three-dimensional imaging of clay mineral cores using computer assisted
tomography applied to gamma-ray attenuation
*L. A. G. Aylmore.*

SESSION 2: KAOLINS
CHAIR: PROF. FRED LOUGHNAN

Micropores in halloysites.
Morphology and formation of halloysite.
*P.G. Self, G.J. Churchman and J.L. Keeling*
Particle size, shape, and crystallinity relationships in the size fractionated
kaolinites.
*Phillipa J.R. Uwins & Ian D.R. Mackinnon*
Alteration of platy kaolinite to tubular halloysite.
*Balbir Singh & R.J. Gilkes*
High cation exchange capacity kaolinite revisited.
*Tony Eggleton, Graham Taylor and Pat Walker.*

SESSION 3 SOILS
CHAIR: DR PAT WALKER

Properties of kaolinite from lateritic soils of Western Australia.
*Balwant Singh & R.J. Gilkes.*
Some mineralogical and chemical features of soils derived from serpentinite
in a humid sub-tropical environment and the role of chromium in their
formation.
*J.C. Hughes.*
The clay mineralogy of some soils from Johore, Malaysia.
*Anizan Isahak.*
The physical, chemical, and mineralogical properties of andosols from
western Indonesia.
*S. Sjarif and R. J. Gilkes.*
Distribution and origin of red soils in part of the Yilgarn Block of Western
Australia.

SESSION 4: FE OXYHYDROXIDES
CHAIR: DR REG TAYLOR

Poorly crystalline iron oxyhydroxides and oxyhydroxysulphates in weathe-
ring environments in south Australia: observations on occurrence, genesis,
properties and biomineralization.
*R.W. Fitzpatrick, P. G. Self and R. Naidu.*
An X-ray powder diffraction study of heated synthetic aluminium-substitu-
ted goethite.
*H.D. Ruan & R.J. Gilkes.*
An X-ray diffraction study of synthetic metal-substituted goethite and hema-
tite.
*M.A. Wells, R.J. Gilkes & R.W. Fitzpatrick.*

SESSION 5: GEOLOGY AND CLAY DEPOSITS
CHAIR: MR. AERT DRIESSEN

Weathering and alteration at the Panglo gold deposit, Western Australia.
F. Ivor Roberts
Secondary clay minerals of some Victorian basalts and their influence on
some aggregate properties.
*G.W. Quick & A. Shayan.*
Hisingerite: a weathering product of olivine
*Maité Le Gleuher & Tony Eggleton.*
Ballarat industrial clay resources.
*Peter Dahlaus.*
The Mount Hope kaolin deposit, Eyre Peninsula, South Australia.
*J.L. Keeling & M.D. Raven.*
Alumino-silicate minerals suitable for high grade refractories.
*M. G. Lines.*
Thermal histories and illite growth in sedimentary basins.
*P.J. Hamilton, M. Giles & P. Ainsworth.*
Palaeohydrological significance of authigenic kaolinite in the Aldebaran
Sandstone, Denison trough, east-central Queensland.
*Julian C. Baker & Suzanne D. Golding.*
SESSION 6: CLAYS IN THE ENVIRONMENT
CHAIR: DR. TONY EGGLETON

Applications of oxygen isotope geochronology to the Australian regolith.
A.R. Chivas & M.I. Bird.

Clays and Toxic Waste Disposal.
O.G. Ingles.

Bauxitization: temperate and intertemperate.
Bird, M.I., Chivas, A.R., & Longstaffe, F.J.

SESSION 7: INTERCALATES AND PROCESSING
CHAIR: DR. IAN MACKINNON

Viscosity and settlement of tailings.
W.W. Emerson & D. Weissmann.

Phenomenological distinction between pillared clays and related structures.
T.W. Turney.

Formation of β'-sialon ceramic from a montmorillonite-carbon nanocomposite by carbo-thermal reduction.

The role of sodium ions in the ion exchange of montmorillonite gel with partly hydrolysed solutions of aluminium chloride.
P.A. Corrigan & T.W. Turney.

POSTERS

1. Illite-smectite rims in the early Permian Aldebaran sandstone, Denison Trough, East-Central Queensland-composition, Palaeo-hydrological significance and influence on reservoir quality.

2. Hydrocracking and isomerisation of n-octane and 2,2,4-trimethylpentane over a Pt/alumina-pillared clay.


4. The application of clay minerals to organic geochemical studies.
   D.C. Carmichael & P.J. Hawkins.

5. Mineralogical and magnetic susceptibility changes caused by long-term farming at six sites in South Australia.

6. Pedogenic barite in Australian duripans (red-brown hardpans)
   M.I. Wright and A.R. Milnes.

7. Weathering in the South Island high country: Key factors. A clay mineralogical approach.
   G.J. Churchman.

   John G. Thompson, Ian D.R. Mackinnon & Philippa J.R. Uwins.

BRAZIL

The majority of the results of clay research was presented at the meetings of the Brazilian Societies of Geology; Soil Science and Ceramics. Two international congresses happened in 1991: 3rd Iberoamerican Congress of Ceramics, Glass and Refractories and 1st Congress of Geochemistry of Countries of Portuguese Language; also there was the 5th Brazilian Conference on Industrial Uses of Talc; all published Proceedings contain a significant number of papers on Brazilian clays and laterites. A dozen of Master's and Ph.D.'s theses on clays were completed during the year at the Universities. A review paper on industrial clays of Brazil was presented at the 2nd World Non-Metallic Mineral Congress in Beijing, China, in 1989; an enlarged 2nd edition of the book Clay Technology Applied to Brazilian Clays was published in 1991.

Commercial new calcium bentonite deposits covering the gypsum deposits in the Santana Formation, state of Pernambuco and palygorskite deposits in Nova Guadalupe, state of Piaui and in Riachão, state of Maranhão, were recently investigated. A renewal of interest in the kaolin (china clay) deposits in the Amazon Region existed in 90/91. A ball clay deposit of sanitaryware was developed at Tijucas do Sul, state of Paraná.

PERSIO DE SOUZA SANTOS

CHINA

1991 is the end of seventh “Five-Year Plan” and the beginning of Eighth Five-Year Plan of the People's Republic of China. A National Symposium on the Achievements in Scientific Research of “Seventh Five-Year” was held in Beijing on 15-21 April 1991. The Symposium was organized by the Geological Society of China. About 250 participants attended the meeting. Many
interesting papers, concerning clays and clay minerals were presented. Such as:
- CAO Zunchen: Kaolin, Vermiculite, Bentonite, and Saponite of northern Xinjiang province.
- SUN Qi: Sepiolite Used as Rubbing Material.
- LU Zhanxiang: Middle Proterozoic Sedimentary Sepiolite in eastern Hebei province.
- ZHAO Lianqiang: Rectorite Clay in Zhongxiang, Hubei province.

A National Symposium on “Filling Materials” will be held in October 1992. Clays, which are used as filling materials in paper, rubber and plastic industries, will be discussed.

ZHENG Zhi

CZECHOSLOVAKIA

On March 20, 1991 the Czechoslovak National Clay Group was registered as independent scientific society. Up to this time its activity was executed within the Czechoslovak Society for Mineralogy and Geology of the Czechoslovak Academy of Science. Dr. K. Melka, President and Prof. Dr. I. Kraus, Vice-President, are the heads of the Society for the following years.

The Spring meeting of the Group was held on May 30 and was hosted by the Geological Survey in Prague. The following lectures were presented:
- K. Melka: Modulated sheet silicates.
- V. Sucha: Illite-smectite mixed layer structures used for the study of diagenetic processes.
- B. Bezvodova: Trace elements in soils.
- G. Lagaly: Organic complexes between silicate layers.

The Autumn meeting took place at the Mining Institute of the Czechoslovak Academy of Science in Ostrava on December 3. The following contributions were presented:
- Z. Weiss: X-ray diffractograms of chlorites in dependence on their chemical composition.
- P. Martinec: The classification of argillized tuffaceous rocks.
- M. Chmielova: Mineralogy of tonsteins.
- J. Horak and V. Sykora: Argillized tuffs in Ostrava-Karviná basin.
- Z. Klika: Geochemistry of various beds in Ostrava-Karviná basin.

DAVID HARMSON

FRANCE 1991 Meeting

The Spring meeting of the “Groupe” was held on March 21 in Paris. The morning session was devoted to “Uses of Clay Minerals”. The following papers were presented:
- Use of phyllosilicates in cosmetics: J.F. Tranchont.
- Use and industrial processing of smectites: M. Guittard.
- Palygorskite and sepiolite: deposits and use: Champreux.
- Organo-mineral complex for making-up and rehabilitation of soils: Jacquinet.

The afternoon session was devoted to presentation of 7 papers on current research.

Field Trip

Linked to the spring meeting, a field trip was organised by Médard Thiry on March 20 to the “Argiles Plastiques” from the Paris region. This thick

J. Brus, K. Lach, P. Kula and Z. Weiss: Contamination of Odra river sediments by heavy metals and by PCBs.

The 12th Conference on Clay Mineralogy and Petrology will be held from August 31 to September 4, 1992 in Bratislava. Main topics of the conference: Geological, mineralogical and chemical aspects of clay and zeolite research and its applications. English will be the working language. For further details contact: Dr. V. Sucha, Geological Institute of Slovak Academy of Sciences, Dúbravská cesta 9, 84226 Bratislava, Czechoslovakia.

JIRI SINDELAR

DAVID HARMSON
clay formation displays an unique suite of interstratified kaolinitesmectite minerals, with the entire progression from the smectite end member through kaolinite/smectite to the kaolinite end member. That allows to follow "step by step" the transformations which lead from smectite to kaolinite. The geological setting and the mineralogical aspects were reported in a comprehensive 47 pages field guide.

Committee

The following executive council for the 1991-1993 period was elected at the Annual General Meeting:
- President: Médard Thiry (Ecole des Mines de Paris)
- Vice-President: Alain Decarreau (Univ. de Poitiers)
- Secretary: Sabine Petit (Univ. de Poitiers)

Future Meetings

The 1992 spring meeting of the French Group will be held in Paris and devoted to "Organic matter-clay minerals interactions". The Group is also involved in organising a symposium on "Growth and alteration of clay minerals" during the annual meeting of the French Mineralogical and Crystallographical Society which will be held on September 7-9 in Orléans (chairmen A. Decarreau, J. Srodon). A second meeting will be held in Paris during the autumn with a special attention to "young researchers".

MEDARD THIRY

HUNGARY

The following sessions were held in Budapest in the Clay Minerals Group of the Hungarian Geological Society:

February 18:
A report was given on the 11th Czecho-Slovakian Conference on Clay Mineralogy and Petrology held in Ostrava, August 1990 by I. Viczián. Mrs. M. Földvári gave a review of the activity of the Group in the last five years. In this session new officers of the Clay Minerals Group were elected for the next 4 years.

November 18:
Stefanovits, P.: Dynamic processes in main soil types as characterized by the clay mineral composition of soils.

May 17:
Viczián, I.: Effect of paleogeographic conditions on mineralogical composition in Neogene sequences of the Pannonian Basin.

June 10:
Viczián, I.: Sedimentary petrographic analysis of Middle Triassic evaporitic and carbonate rocks, bore hole Pécs IX., Mecsek Mts.

Programme for 1992:
A one-day excursion is planned to bentonite, clay and bauxite deposits of western Hungary on September 4, 1992. The excursion joins the 12th Conference on Clay Mineralogy and Petrology to be held in Bratislava, Czecho-Slovakia. Details will be included in the Circular of this conference.

ISTVAN VICZIAN

ISRAEL

I would like to inform you that The Israeli Society of Clay Research held its annual meeting on October 8-9, 1991 in Mitzpe Rimon. The meeting was in honour of Prof. Lisa Heller-Kallai, acknowledging her important contribution to the study of clays.
A keynote address was presented by Prof. E. Mazor of the Weizmann Institute of Science on the geology of Machtesh Rimon and its clay deposits. Among the other lectures presented were:

The effect of tetrahedral substitution of Si by Al on surface acidity of clays — S. Yariv.

Structure formation in chrysotile asbestos suspensions — J. Berkovich.

Possible effect of volatiles and condensates from clays on geochemical process — I. Miloslavsky and L. Heller-Kallai.

Magnetic methods in the study of soil formation — P. Fine.

Perlite and vermiculite — properties and applications in the Israeli economy — I. Lin.

Clay deposits from the La Rioja region in Argentina — B. Shilman.

Catalytic reactions on clay surfaces — U. Shuali.


The second day of the meeting was devoted to a field trip to the clay deposits of Machtesh Rimon.

Dr. Yoetz Deutsch, of the Israeli Institute of Geology, was elected as the next president of the Israeli Society of Clay Research.

**PROF. U. MINGELGRIN**

**JAPAN**

**A. Annual Meeting (1991)**

The 35th annual general meeting of the Clay Society of Japan (1991) was held from October 16 to 18 at the conference hall of Geological Survey of Japan, Tsukuba City, Japan.

1. Special Lecture:
   - Ooyagi, N. (National Research Institute for Earth Sciences and Disaster Prevention): “Natural disaster in the world”.
   - Kamitani, M. (Geological Survey of Japan): “Main mineral resources for ceramics in East Asia”.

2. Symposium: “Earth environments and clays” Ichikuni, M., Fukuhara, M., Tanaka, K., Mizuno, K. and Matsuda, T.

3. Oral Session; 31 papers; Poster Session; 30 papers.

**B. Committee**

The executive and council members for the year 1991 were elected at the Annual General Meeting:

- President: Otsuka, N. (Nishitokyo Univ.)

**C. Publication**

The following issues were published: Nendo Kagaku (Journal of the Clay Society of Japan): Vol. 30 no. 3, 4; Vol. 31, no. 1, 2. Clay Science: Vol. 8, no. 1, 2.

**D. The IGC (International Geological Congress)**

Will be held during August 24-September 3, 1992, in Kyoto International Conference Hall, Japan. We are preparing some sessions related to clay science.

Special Symposium A: History of the Earth with special Emphasis on the Evolution of Arcs;

A6-Origin of life and evolution of the biosphere

Symposium I, I-3: Multidisciplinary Symposium

49 Environmental mineralogy in relation to human health and activities. Disciplinary Session 15; Clay Geosciences

15-1. Formation of clay minerals during weathering, diagenesis, and hydrothermal alteration

15-2. Characterization of clay and fine particles using new techniques


A workshop will be held at Nagoya City during IGC conference. The title is “Clay minerals, their natural resources and uses.”

We hope that many clay researchers will attend this conference. You will get more information from Prof. Sato, M (Gumma Univ.) or Prof. Watanabe, T. (Joetsu Univ. of Education). The 3rd Circular of IGC will be prepared in the beginning of 1992.
CLAY STUDIES GROUP OF KOREA

The meeting of the Clay Studies Group of Korea took place jointly with the Annual Meeting of the Mineralogical Society of Korea on May 31, 1990. The papers delivered at the meeting were:
- Hwang, J.Y., “Sepiolite and stevensite from serpentine mine, Ulsan”.
- Lee, D.J. and Lee, S.R., “Mineralogical characters of feldspars, aluminous shale and porcelaine stone in the Kyeonggi area”.
- Jeong, G.Y. and Kim, S.J., “Halloysitization of anorthosite and the resulting boxworks structure in the Sancheong area”.
- Jeong, G.Y. and Kim, S.J., “Kaolitization of anorthosite in the Sancheong area”.
- Noh, J.H., “Synthesis of Na-P, Na-X and Na-A zeolites from the glassy rocks”.

POLAND

The new chairperson of the Clay Minerals Section of the Polish Mineralogical Society is:
Prof. E. HELIOS-RYBICKA
Academy of Mining and Metallurgy
30-059 Krakow
Al Mickiewicza 30
Poland

SOUTH AFRICA

There are 17 Geology departments at 17 universities in South Africa but none of these departments offers a comprehensive course in clay mineralogy. Therefore members of the Clay Interest Group of the Mineralogical Society have offered a CLING WORKSHOP '91 at the Geological Survey, Pretoria – Silverton, from the 11 - 13th March 1991, related to the following three subjects:
1. The phyllosilicates of clays and their X-ray identification by D. Bühmann.
2. The physical properties of clay materials by R.O. Heckroodt.
Since this workshop was well attended and considered successful it will be repeated slightly modified during the first week of February 1992.
Two CLING members were fortunate in attending the European Clay Conference '91 in Dresden.

D. BÜHMANN

SPANISH CLAY SOCIETY

The Annual Meeting of the Society was held on April 11-12 at the Salon de Grados de la Facultad de Geología, Universidad Complutense, Madrid. This meeting was dedicated to Prof. Serratosa, as a tribute for his vast contribution to Clay science. The following lectures were presented:
- “Achievements of Professor Serratosa in the research of clay minerals”, by Prof. Dr. J.A. Rausell-Colom (CSIC, Madrid).
- “Kaolin preparation for the paper industry. Improvement of properties by delamination”, by Prof. Dr. C.S.F. Gomes (University of Aveiro, Portugal).
- “Pillaring, deformation and rupture in smectitic clays”, by Prof. dr. H. Van Damme (CNRS Orleans, France).
- “Types of transport and sedimentation of phyllosilicates in rivers”, by Prof. Dr. J. Konta (University of Praha, Czechoslovakia).

During the meeting four outstanding scientists were awarded an honorary membership of the Spanish Clay Society: J.A. Rausell-Colom, J. Konta, C.S.F. Gomes and H. Van Damme.
The composition of the New Council was approved by the General Assembly, as follows:
President: Prof. Dr. F. López Aguayo
Past-President: Prof. Dr. E. Galán
Vice-President: Prof. Dr. J. Cornejo
Secretary: Prof. Dr. I. González Diez
Treasurer: Dr. A. Justo
Members: Dr. J.M. Martín Pozas
Dr. A. López Galindo
Dr. A. Gallego de Torres
Dr. M. Caramés Lorite
Dr. J. Aróstegui García
Dr. J.L. Martín de Vivales
Dr. E. Ruiz Hitzky
Dr. J. Soriano Carrillo.
The Spanish Clay Society collaborates with the Italian and French Clay Societies to prepare The Mediterranean Clay Meeting, that will be held on 27-30 Sept. 1992 in Lipari-Italy.
B.B. Smoliar-Zviagin was honoured with the Martin-Vivaldi-Award.

DR. J.L. PEREZ RODRIGUEZ

CLAY MINERAL SOCIETY REPORT (UNITED STATES)

A major effort was made this past year to find a permanent editor of Clays and Clay Minerals to replace Ken Towe, the Interim Editor. It was announced at the Annual Meeting that Prof. Ray E. Ferrell, Jr. of Louisiana State University, Baton Rouge, LA, will be the new editor effective on 1 January 1992.
The Clay Mineral Society's annual meeting was held in Houston, Texas from 7-10 October 1991 with 289 in attendance. The meeting was hosted by The Lunar and Planetary Institute and NASA Johnson Space Center. J.B. Dixon, T.J. Pinnavaia and C.E. Weaver were honored as CMS Distinguished Member, the G.W. Brindley Lecturer, and the Pioneer in Clay Science Lecturer, respectively. In addition to the General Sessions, other sessions included Surface Chemistry, The Extraterrestrial Connections, Geothermometers and Geochronometers, and Soils and Clays in Environmental Research. The field trip examined the underlying clays and soils of Houston, the spectacular (and unfortunate) effects of subsidence in the area, and current techniques of disposing of toxic wastes in clay-and-plastic-lined land fills. The highlight of the field trip, however, was a special tour of the NASA facilities. The field activities were followed by a splendid barbecue on the beach in Galveston. Although unusual for early October, the weather was cool and dry for the entire meeting.
The pre-meeting workshop on Mossbauer Spectroscopy was well-attended with 58 participants. The day-long session covered basic principles of the method, instrumentation, and data reduction in the morning and applications to silicates, oxides, phyllosilicates, and planetary materials in the afternoon. Speakers included L.H. Bowen, D.G. Agresti, D.G. Rancourt, R.G. Burns, E. Murad and R.V. Morris.
The next annual meeting will be jointly held in Minneapolis, Minnesota with the Soil Science Society of America. The planned workshop will be on the determination of layer charge.

S. GUGGENHEIM

USSR
- An all-union conference on diffraction studies of minerals will be held in Sochi, April 1992.

B. ZVYAGIN

MEETINGS

29th INTERNATIONAL GEOLOGICAL CONGRESS
Kyoto, Japan, August 24 - September 3, 1992

Address for registration:
29th IGC
Kasho Building 2F, 2-14-9
Nihonbashi, Chuo-ku, Tokyo 103
Japan
Phone: 81-3-3272-7981
fax: 81-3-3272-2445

Address for correspondence
29th IGC
P.O. Box 5
Tsukuba, Ibaraki 305 Japan
phone: 81-298-54-3627
fax: 81-298-54-3629

Clay Geosciences Symposium
- Eberl D. and Inoue A.
  Formation of clay minerals during weathering, diagenesis and hydrothermal alteration.
- Altaner S., Sato M. and Watanabe T.
  Characterization of clay and fine particles using new techniques.
Aoki S. and Chamley H.
Origin and geological significance of clay minerals in marine sediments.

Workshop: Clay Minerals, their Natural Resources and Uses

There are many kinds of clays e.g. kaolin, ball clay and bentonite in many parts of the world. They have various modes of formation and various industrial and environmental applications. Discussions will include geology and mineralogy of various clay deposits, the process of their formation and the use of clays. A trip to a clay deposit, a processing plant and a ceramic factory around Nagoya is also planned.
Maximum enrollment: 45
Costs: 10 000 yens
The second circular of the 29th IGC and the official European travel programme are available from the secretary-general’s office.

10th INDUSTRIAL MINERALS INTERNATIONAL CONGRESS
The 10th Industrial Minerals International Congress will take place in San Francisco, California in May 1992.
The full three day programme comprises some 25 papers from an international line up of expert speakers.
Topics to be covered include: fluor spar, refractories, kaolin, titanium dioxide, perlite, graphite, glass raw materials and a lot more.
In recognition of the importance of the USA as both producer and consumer of minerals there will also be several presentations on the industrial minerals of North America. Emphasis will also be put on the development of Asian minerals production and trade.
The formal programme will be complemented by three parallel breakout sessions covering fluor spar, mineral sands processing and developments in industrial minerals processing.
There will also be an exhibition of products and services for the minerals field during all three days, and four field excursions are planned for the two days after the close of the meeting. These will take in various mineral operations in the western USA.
As usual the 10th IM Congress offers delegates an ideal opportunity to catch up on developments in their area of industrial minerals activity whilst renewing contact with old friends and establishing new business contacts.

Addresses for more information:
Industrial Minerals
Park House, Park Terrace
Worcester Park
Survey KT4 7HY
England
phone: 44-81-330-4311
fax: 44-81-337-8943

12th CONFERENCE ON CLAY MINERALOGY AND PETROLOGY
Topic: Geological, mineralogical and chemical aspects of clay and zeolite research and its applications.
Excursion to Hungary: basalt bentonite deposit
brick clay deposit
bauxite deposit

Correspondence: Vladimir Sucha
Geological Institute
Slovak Academy of Sciences
Dubravská cesta 9
842 26 Bratislava
CSFR

INTERNATIONAL SYMPOSIUM ON THE GEOLOGY OF THE BLACK SEA REGION.
Ankara, Turkiye, September 7-11, 1992
Organizers:
General Directorate of Mineral Research and Exploration of Turkiye
TMMOB Chamber of Geological Engineers.

Objectives:
- form an organization for periodical meetings on the geology of the Black Sea Countries
- forum for exchange of ideas on geological problems of Black Sea and surrounding countries;
- to increase knowledge on natural resources
- to prepare joint projects among Black Sea countries

Correspondence address
ISGB
Karadeniz Bolgesi Jeolojisi
Ulusalazavi sempazyum Sekreterliyi
MTA Genel Mudurlugu
06520 Ankara Turkiye

6th CONGRESS OF THE GEOLOGICAL SOCIETY OF GREECE

Topic: Geology of Greece with emphasis on the geology of the Aegean.

Correspondence
Prof. D. Papanikolaou
Department of Geology
University of Athens
Panepistimioupoli, Zagrafou
157 84 Athens, Greece.

Field trips to Samos Island, Peloponnese and Parnassus Mountains, Chios and Levos Islands, Milos Islands.

PUBLICATIONS

1. Industrial Minerals is a monthly journal on non-metallic minerals, annual subscription £120.


2. The 1992 Publication Catalogue of the Geological Society is available. For information contact the Geological Society Publishing House, Unit 7 Brassmill Enterprise Centre, Brassmill Lane, Bath BA1 3JN, United Kingdom. Tel.: 44-225-445046; fax: 44-225-442836.

3. Marine Geological Data include reports, well logs, seafloor photos etc. Contact Dr. Robin Warnken, National Geophysical Data Center, 325 Broadway E/GC3, Boulder CO 80303-3328; fax: 1-303-497-6513.

4. Petroconsultants (P.O. Box 228, 1211 Geneva 6, Switzerland) has the following products available:
- Maps of worldwide sedimentary basins and of rift-related basins and major tectonic alignments of the world;
- Digital Cartography;
- Worldwide petroleum statistics.

5. Technical reports of the Institute for the Study of the Earth’s Interior are available from ISEI, Okayama University, Misasa, Tottori-ken 682-02, Japan.

6. DATABASE GEOMARK is the first commercially available geological database of the USSR. It is a unique database of unpublished records of Soviet technology, know-how and exploration results in geology oil, gas, mining and waters.

Geomark also contains 500 addresses of companies involved in geology and mineral industries. Contact Dr. A. Monfor, Geomark Private Cy, 6, Parus street, 123364 Moscow, Russia. Fax: 7-95-332-85-41.

7. National Geophysical Data Center, NOAA, Code E/GC1, 325 Broadway, Boulder CO 80303-USA has:
- Geological Hazards Slide Sets;
- The DNAG Project (Decade of North America Geology).

8. The Clay Minerals Society Workshop Lectures:
- Electron-optical methods in clay science, J.D.R. Mackinon and F.A. Mumpton, eds.

9. Proceedings of the 7th EUROCLAY Conference DRESDEN '91
Edited by M. STORR, K.-H. HENNING and P. ADOLPHI
3 Volumes, 1218 pages, Ernst-Moritz-Arndt-Universität Greifswald, 1991
ISBN-No 3-86006-036-8
Contents: 237 Extended Abstracts (up to 6 pages) of EUROCLAY '91
DM 175,- excluding shipping and handling.
Address for orders:
Manfred Störr
Mehringstr. 48
D-O-2200 Greifswald
GERMANY

The book includes a Chapter on “Clay Mineralogy and Applied Geology”.
There are other papers dealing with petrographic and physico-chemical problems of clay minerals (Földvári, Stoch).

THE W.F. BRADLEY AWARD
APPLICATION FROM

1. I have read the regulations governing the above Award and in conformity therewith I herewith submit a paper entitled:

The book includes a Chapter on “Clay Mineralogy and Applied Geology”.
There are other papers dealing with petrographic and physico-chemical problems of clay minerals (Földvári, Stoch).

2. My date of birth is ........................................ (day-month-year)

3. My submission is supported by:

(a) NAME ..............................................................
Signature ..............................................................

(b) NAME ..............................................................
Signature ..............................................................

who are both members of AIPEA.

4. I agree to abide by the rules governing the Award and accept that the examiners' decision is final.

Date: ................................................ Signature: ........................................

N.B.

1) If the candidate is not the sole author of the paper, a statement from the co-author(s) is required specifying the candidate's contribution of the paper.

2) No letter of recommendation of any kind will be entertained.
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3. Make check or money order payable to AIPEA and mail to:
   Dr. C. DEKIMPE
   AIPEA Treasurer
   Agriculture Canada
   Room 725, Sir John Carling Building
   Ottawa, Ontario K1A OCS (Canada)

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for ........................................... years
Type of membership: .....................................................
If you are an individual member of an Affiliated Society, give the name of the Society:

Date: ..............................................................................

Signature: ........................................................................

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