

International Association of Geochemistry and Cosmochemistry: a history

BRIAN HITCHON

Alberta Geological Survey, Alberta Research Council, Terrace Plaza, 4445 Calgary Trail South,
Edmonton, Alberta, T6H 5R7, Canada

Abstract—The International Association of Geochemistry and Cosmochemistry (I.A.G.C.) was formally founded on 8 May, 1967. Prior to that time the organization of international geochemical affairs was largely carried out through the Inorganic Chemistry section of the International Union of Pure and Applied Chemistry (I.U.P.A.C.), with liaison with the International Union of Geodesy and Geophysics (I.U.G.G.) starting in 1960. However, it was at the Twenty-First International Geological Congress (I.G.C.) at Copenhagen in 1960, when the International Union of Geological Sciences (I.U.G.S.) was formally established, that geochemists formed a close bond with the world geological community. Earl Ingerson, as Chairman or Secretary to three of the then existing international geochemical organizations, coordinated a meeting of members of the committees on geochemistry of the I.G.C., I.U.G.G. and I.U.P.A.C. in New Delhi in 1964, but was himself unable to attend. This meeting, chaired by Ken Sugawara, drew up draft statutes and nominated temporary officers, with the result that in November 1965, Earl Ingerson called a meeting in Paris to name the association, complete the statutes, elect temporary officers and apply to I.U.G.S. for immediate affiliation. The first Council meeting was held on 8 May, 1967 at U.N.E.S.C.O. headquarters in Paris, presided over by Earl Ingerson.

The Association's governing body is the General Assembly which meets during each I.G.C. The main internal financial support is provided by National Members (currently 18) who vote at the General Assembly. Major outside funding comes from U.N.E.S.C.O. and I.U.G.S. Day-to-day operations between each General Assembly are carried out by a Council of five officers and eight Council members. Currently, there are nearly 450 individual members.

During its nearly 20 years of existence, I.A.G.C. has, through its various working groups and members, sponsored or co-sponsored more than 40 international meetings, which represent its main financial expenditure. Many of these meetings result from close cooperation with other associations affiliated with I.U.G.S. and I.U.G.G., as well as various international, national, provincial and academic organizations. Proceedings of these meetings are usually published, and now (1986) I.A.G.C. has launched its official journal, *Applied Geochemistry*.

HISTORICAL BACKGROUND

THE BIRTH of the first international geochemical organization may be traced back to 1951, when the International Union of Pure and Applied Chemistry (I.U.P.A.C.), at its Twelfth Conference in New York, approved a proposal for the establishment of a commission for geochemistry, with Paul Niggli (Switzerland) as Chairman and M. Fleischer (U.S.A.) as Vice-Chairman under the title Commission on the Abundance of Elements in the section on Inorganic Chemistry. Fleischer succeeded to the position of Chairman after the death of Niggli in 1953 and the Commission subsequently changed its name to Commission on Geochemistry. The Commission met occasionally to discuss such items as the compilation and publication of geochemical data, the definition and standardization of geochemical terms, the evaluation of published analytical data, and to find means of accelerating the international exchange of information and assisting in the translation of geochemical documents.

The Commission planned and conducted symposia in 1953 (Zurich), 1957 (Paris), 1959 (Munich), 1960 (Copenhagen), and 1963 (London). The 1960 sym-

posium was co-sponsored by The Geochemical Society and was held in conjunction with the Twenty-First Session of the International Geological Congress; the conference proceedings were published as a special issue of *Geochimica et Cosmochimica Acta* (G.C.A.) in August 1962. The proceedings of the London symposium were also published in G.C.A. (October 1964), again, with the cooperation of The Geochemical Society.

The position of the Commission in the structure of I.U.P.A.C. was that of a relatively small body within the large section on Inorganic Chemistry. This position did not allow sufficient independence and the smooth execution of the contemplated programs. Explorations were undertaken to examine the possibility of organizing an independent Union of Geochemistry, or of meeting with the International Geological Congress (I.G.C.), which had had a section on geochemistry at its meetings since at least as early as 1948. Another possibility was the development of a liaison with the International Union of Geodesy and Geophysics (I.U.G.G.) where a separate geochemical section might be established or a possible transformation into the International Union of Geophysics and Geochemistry.

As a reflection of all these various viewpoints, I.U.G.G. provided an arena for discussion at their Twelfth General Assembly at Helsinki, 1960, under the title *Informal Meeting on Geochemical Problems*. Among the views exchanged there, A. P. Vinogradov (U.S.S.R.), expressed the opinion that geochemistry is a discipline of chemistry and that the relations established with I.U.P.A.C. should not be loosened. K. Sugawara (Japan) agreed with Vinogradov, but noted that geochemistry is really a boundary science acting as a bridge between chemistry, geophysics and the geological sciences; thus, any international body representing geochemistry must have a foothold in the fields of chemistry, geophysics and geology. This meeting ended successfully with the formation of an "*Ad hoc* Committee on Geochemical Problems", which was largely destined to continue coordination of geochemical activities in association with I.U.G.G. The composition of the committee at the start comprised L. T. Aldrich (Chairman) with C. W. Correns, S. Epstein, F. G. Houtermans, E. Picciotto, K. Sugawara, A. I. Tugarinov, A. P. Vinogradov, and L. R. Wager as members, who were completely replaced by new ones at the Thirteenth General Assembly in Berkeley, 1963.

One month after the Helsinki meeting, the Twenty-First International Geological Congress met at Copenhagen, where the International Union of Geological Sciences (I.U.G.S.) was formally established. During the Congress, the I.U.P.A.C. Commission on Geochemistry met once again. It consisted of A. P. Vinogradov (Chairman), E. Ingerson (Vice-Chairman), L. H. Ahrens (Secretary), and M. Fornaseri, S. Landergren, A. A. Smales, K. Sugawara, J. B. Thompson Jr. and F. E. Wickman as members. At the same time, a joint meeting was held between the I.U.P.A.C. Commission, the I.U.G.G. *ad hoc* committee and the I.G.C. committee, comprising C. W. Correns (Chairman), E. Ingerson (Secretary) and P. H. Abelson, L. H. Ahrens, J. Jedwab, M. Roubault, K. Sugawara, A. P. Vinogradov, and H. V. Warren as members. The objective of the joint meeting was to attempt to reach an agreement to organize an inter-union *ad hoc* committee of geochemistry to coordinate the geochemical activities among the three different unions. The coordinating committee comprised K. Krauskopf (Chairman), E. Ingerson (Secretary) with C. W. Correns, S. Epstein, E. Picciotto, M. Roubault, K. Sugawara, A. P. Vinogradov, L. R. Wager, and J. T. Wilson, as members.

Among the various geochemical groups in existence in the early 1960s, the I.U.P.A.C. Commission continued to play a key role. A London meeting of the Commission in July 1963, unexpectedly became the last meeting of the Commission when it was reported that an independent Union of Geochemistry was not possible and that both I.U.P.A.C. and the International Council of Scientific Unions (I.C.S.U.) had both recommended against an inter-union organization for geochemistry. For the first time,

geochemists presented a unified front for the formation of a new, separate international organization of geochemistry. The Commission reported to I.U.P.A.C. its consensus that the primary association of geochemists should be with geologists (I.U.G.S.), but expressed the hope that an active commission on geochemistry would continue to be maintained within I.U.P.A.C. Plans for a broad international symposium to be held during the I.U.P.A.C. meeting in Moscow in 1965 were cancelled after I.U.P.A.C. decided to abolish the Commission, at least temporarily.

Later, in the summer of 1963, at the I.U.G.G. meeting in Berkeley, a resolution was submitted to the General Assembly expressing "its desire to set up an International Association of Geochemistry within I.U.G.G.". The General Assembly recognized the importance of geochemistry to several of its affiliated associations and encouraged them to make use of the appropriate parts of the science. However, I.U.G.G. did not wish to assume the responsibility for all of geochemistry, or to become the spokesman for all geochemists.

These facts led Earl Ingerson, as Chairman or Secretary to three of the geochemical groups, to devote himself to the hard and time-consuming task of gathering the opinions of world geochemists and attempting to formulate a basic document for the discussion of the establishment of a new international geochemical association. Finally, through negotiations with I.U.G.S., the preparatory meeting for the establishment of the new association was arranged during the first General Assembly of I.U.G.S. in New Delhi, and he circulated an invitation to the members of the committees on geochemistry of the I.G.C., I.U.G.G., I.U.P.A.C. and I.C.S.U., to attend a meeting on 12 November, 1964.

PRELIMINARY ORGANIZATIONAL MEETINGS

New Delhi Meeting

But for an unfortunate illness, Earl Ingerson was to have presided at the New Delhi meeting. He telephoned K. Sugawara to ask him to transact the business on his behalf, just as Sugawara was leaving Tokyo to attend a U.N.E.S.C.O. meeting in Paris. Having received the necessary documents in Paris, including the provisional agenda prepared by Ingerson, he flew to New Delhi to meet J. M. Harrison and T. Sorgenfrei, President and Secretary General of I.U.G.S., respectively, whose kind assistance made the meeting possible. The meeting was held on 17 December and was attended by 47 participants from 15 countries, in addition to Sorgenfrei. Having outlined the general background and situation, Sugawara expressed his preparedness to assist any proper person who might preside over the meeting, and as is common in such situations was nominated Chairman.

Ingerson's provisional agenda envisaged a three-day program, but due to the short time allocated, only three major items could be considered. These were: (1) to confirm the unanimity for the organization of an independent geochemical association; (2) to discuss the matter of the statutes of the association and the nomination of members of a committee to draft statutes; and (3) to discuss the problems of the affiliation of the association with various unions.

After exchange of views, the question of the establishment of an independent geochemical association was settled almost unanimously. A committee to draft the statutes was organized with the following members elected: A. A. Beus, M. Fornaseri, H. E. Hawkes, K. R. Mehnert, G. Mueller, M. Roubault, R. C. Sinha, K. Sugawara, E. A. Vincent, and T. Watanabe. The committee's first draft was to be forwarded to Ingerson at its earliest convenience and subsequent drafts were entrusted to Ingerson. In addition, the nomination of temporary officers of the new association was also entrusted to Ingerson; in fact, the nomination of temporary officers was made on the occasion of the first meeting of the drafting committee in Paris one year later, by those attending that meeting. Another important unanimous decision at the New Delhi meeting was that only National Members would exercise voting power.

During the discussion on the problem of affiliation with unions, J. M. Harrison gave very valuable comments based on his long career in unions and I.C.S.U., pointing out the needs for a truly international association and why it should be affiliated with a union. Both I. Hela, representing I.U.G.G., and J. M. Harrison, representing I.U.G.S., stressed the importance of close liaison with both I.U.G.S. and I.U.G.G., regardless of the decisions taken. It was agreed to delay the decision of affiliation pending further comprehensive examination and discussion.

Paris Meeting

On 15 and 16 November, 1965, Ingerson called a meeting in Paris to discuss progress in launching the new association. The meeting was attended by L. H. Ahrens, M. Fornaseri, M. Roubault, K. Sugawara, and E. A. Vincent. W. P. Van Leekwijck, Secretary General of I.U.G.S., and M. Batisse, Department of Natural Sciences, U.N.E.S.C.O., were observers advising the group.

The draft statutes were discussed and given fundamental shape whereby the basis of the nomination of officers and other council members was established. The temporary officers and council members were elected as follows: E. Ingerson (President), L. H. Ahrens (Vice-President), K. Sugawara (Secretary), E. A. Vincent (Treasurer) and Council Members A. G. Cameron, M. Fornaseri, J. F. Lovering, M. Roubault, R. C. Sinha, A. I. Tugarinov, and K. H. Wedepohl.

The name of the association was approved as the

International Association of Geochemistry and Cosmochemistry.

Another important topic was that of the problem of the affiliation of I.A.G.C. with international unions. Being aware of the friendly attitude of I.U.G.S. towards the Association and the generous nature of the constitution of I.U.G.S. with respect to allowing the constituent associations a rather free reign in their activities, it was agreed to apply to I.U.G.S. for immediate affiliation, to be considered by the Executive Meeting of the Union in Antwerp, January 1966.

To launch the Association, it was decided to organize the First International Symposium of Geochemistry and Cosmochemistry in Paris for September 1966; because of a conflict with other meetings at U.N.E.S.C.O. headquarters, however, it was necessary to postpone this symposium, which was eventually held 8–11 May, 1967, at which time, I.A.G.C. was officially created and Council held its first regular meeting.

FIRST COUNCIL MEETING

Although Minutes of the first Council meeting are no longer extant, it is known that President Ingerson officially opened the meeting on 8 May, 1967 at U.N.E.S.C.O. headquarters in Paris during the sessions of the First International Symposium of Geochemistry and Cosmochemistry. Ten of the Council members listed in Table 1 were present, in addition to T. F. W. Barth, representing I.U.G.S., and M. Batisse representing U.N.E.S.C.O. Under the guidance of Ingerson, matters were discussed which related to the general health and vitality of the Association, and which were to continue to be the focus of many subsequent Council meetings. These included ways to publicize the Association and its objectives, and particularly to obtain the membership and participation of geochemical organizations representing individual national interests. The perennial problem of financing the new Association was discussed at length and, for the record, initial dues were \$30.00 U.S. for National Members and \$3.00 U.S. for individual members. With respect to the latter, individual membership in an international organization was unusual, but proved to be a particularly perceptive move in view of the special individual member subscription rates to *Applied Geochemistry* nearly two decades later. Because of the wide range of interests covered by the disciplines of geochemistry and cosmochemistry, and to vitalize the activities of the new Association, the decision was made to create a number of specialized working groups, and as future events were to show, it was the international activities of some of the working groups which provided the main focus and international exposure of the Association to the world geochemical community. Long-range plans were made for symposia to

Table 1. Officers and Council Members of I.A.G.C., 1967-1989

I.A.G.C. Executive	1967-1972*	1972-1977	1977-1980	1980-1984	1984-1989
Officers					
President	E. Ingerson (U.S.A.)	L. H. Ahrens (R.S.A.)	G. Wetherill (U.S.A.)	V. L. Barsukov (U.S.S.R.)	M. H. Grunenfelder (Switzerland)
Vice-President	L. H. Ahrens (R.S.A.)	W. V. Shcherbina (U.S.S.R.)	J. Goni (France)	M. H. Grunenfelder (Switzerland)	H. Wanke (F.R.G.)
Vice-President	A. I. Tugarinov (U.S.S.R.)	K. H. Wedepohl (F.R.G.)	Z. Pacal (Czechoslovakia)	B. Hitchon (Canada)	
Secretary	K. Sugawara (Japan)	K. Keil (U.S.A.)	G. M. Anderson (Canada)	S. Deutsch (Belgium)	B. Hitchon (Canada)
Treasurer	J. F. Lovering (Australia)	J. F. Lovering (Australia)	R. A. Binns (Australia)	E. E. Angino (U.S.A.)	E. E. Angino (U.S.A.)
Past-President		E. Ingerson (U.S.A.)	L. H. Ahrens (R.S.A.)	G. Wetherill (U.S.A.)	V. L. Barsukov (U.S.S.R.)
Council Members					
	B. Cambel (Czechoslovakia)	G. M. Brown (U.K.)	G. Bardossy (Hungary)	I. Barnes (U.S.A.)	I. Barnes (U.S.A.)
	A. G. W. Cameron (U.S.A.)	M. Ferrara (Italy)	D. S. Coombs (New Zealand)	U. Cordani (Brazil)	M. Carapezza (Italy)
	M. Fornasari (Italy)	J. Goni (France)	A. Erlank (R.S.A.)	H. Greenwood (Canada)	K. Kigoshi (Japan)
	K. S. Heier (Norway)	D. Lal (India)	M. Frey (Switzerland)	L. N. Kogarko (U.S.S.R.)	L. N. Kogarko (U.S.S.R.)
	M. Roubault (France)	D. M. Shaw (Canada)	W. S. Fyfe (Canada)	A. Masuda (Japan)	D. Lal (India)
	R. C. Sinha (India)	K. Sugawara (Japan)	K. S. Heier (Norway)	Y. Tardy (France)	S. Moorbath (U.K.)
	E. A. Vincent (U.K.)	E. Szadeczky-Kardoss (Hungary)	I. Kushiro (Japan)	S. R. Taylor (Australia)	F. Mrna (Czechoslovakia)
	K. H. Wedepohl (F.R.G.)	N. B. Vassoevich (U.S.S.R.)	I. D. Ryabchikov (U.S.S.R.)	H. Wanke (F.R.G.)	H. Sorensen (Denmark)

* During this period the Association executive included an Associate Secretary (R. M. Perhac, U.S.A.) and an Associate Treasurer (Z. Pacal, Czechoslovakia).

be run in association with activities of I.U.G.S. and U.N.E.S.C.O., both relationships proving mutually advantageous to all parties. Another association which was strengthened at that time and which was essential to the dissemination of scientific information by any international association was the decision to work with Pergamon Press Ltd. to publish the proceedings of the First International Symposium of Geochemistry and Cosmochemistry. The long association between I.A.G.C. and Pergamon Press Ltd. reached a zenith with the publication of *Applied Geochemistry*, of which this brief history of I.A.G.C. forms an integral part of the first issue.

INTERNATIONAL SYMPOSIA

Throughout its nearly 20 years of existence, I.A.G.C. has, through its various working groups and members, sponsored or co-sponsored more than forty international symposia. These are in addition to the many meetings of the working groups. A rather arbitrary selection of some of these symposia is given in Table 2 in order to demonstrate both the wide range of interests in geochemistry and cosmochemistry included within I.A.G.C., as well as the international nature of the activities of the Association. Throughout the period covered by the symposia listed in Table 2, I.A.G.C. has cooperated through co-sponsorship with many national and international

scientific organizations as well as individual governmental entities and U.N.E.S.C.O. Through symposia, the Association achieves one of its principle objectives which is to foster cooperation in, and advancement of, geochemistry and cosmochemistry in their broadest sense by working with any interested group in planning symposia and other types of meetings related to geochemistry and cosmochemistry. In the sense that the proceedings of many of the listed symposia have been published, I.A.G.C. achieves its second principle objective which is the sponsoring of publications in geochemistry and cosmochemistry of a type not normally covered by existing organizations; it must be added that this has often only been achieved with the help of significant financial support from U.N.E.S.C.O.

WORKING GROUPS

Although the records of I.A.G.C. show a plethora of commissions, working groups, study groups, and interest groups, these were simplified under Presidents V. L. Barsukov and M. H. Grunenfelder to eight active working groups. The existence of these working groups achieves the third principle objective of the association which is to study problems that require, or would profit from, international cooperation. The broad areas of interest of the existing working groups, and their respective chairmen, are

Table 2. Selected symposia organized or co-sponsored by I.A.G.C., 1967–1985

Title	Location	Date	Major Co-sponsor(s)
First International Symposium on the Origin and Distribution of the Elements	Paris, France	May 1967	I.U.G.S.; U.N.E.S.C.O.
Meteorite Research	Vienna, Austria	August 1968	International Atomic Energy Agency
The Chemistry and Mineralogy of Meteorites	London, England	April 1970	Mineralogical Society; The Meteoritical Society
Genesis of Precambrian Iron and Manganese Deposits	Kiev, U.S.S.R.	August 1970	Ukrainian Academy of Sciences; U.N.E.S.C.O.
Activation Analysis in Geochemistry and Cosmochemistry	Kjeller, Norway	September 1970	NATO Advanced Study Institute; Netherlands–Norwegian Reactor School
Symposium on Hydrogeochemistry and Biogeochemistry	Tokyo, Japan	September 1970	Science Council of Japan; N.S.F.; U.N.E.S.C.O.
First International Geochemical Congress (Geochemistry of Geologic Processes)	Moscow, U.S.S.R.	July 1971	Akademiya Nauk SSSR; U.N.E.S.C.O.
Symposium on Cosmochemistry	Cambridge, U.S.A.	August 1972	U.N.E.S.C.O.
24th International Geological Congress (Section 10—Geochemistry: Atmospheric Carbon Dioxide)	Montreal, Canada	August 1972	I.U.G.S.; U.N.E.S.C.O.
First International Conference on Kimberlites	Cape Town, R.S.A.	September 1973	
First International Symposium on Water–Rock Interaction	Prague, Czechoslovakia	September 1974	Geological Survey, Prague; U.N.E.S.C.O.
International Symposium on the Role of Genesis in Prospecting for Ore Deposits	Varna, Bulgaria	September 1974	I.A.G.O.D.
Second International Symposium on Environmental Biogeochemistry	Hamilton, Canada	April 1975	The Geochemical Society; Canadian Society of Microbiologists; U.N.E.S.C.O.
First International Symposium on the Geochemistry of Natural Waters	Burlington, Canada	August 1975	Canada Centre for Inland Waters; I.A.H.; U.S. Geological Survey
International Symposium on Interaction Between Water and Living Matter	Odessa, U.S.S.R.	October 1975	Akademiya Nauk SSSR; Akademiya Nauk UkSSR; U.N.E.S.C.O.
International Symposium on Carbonatites	Pocos de Caldas, Brazil	June 1976	Sociedade Brasileira de Geologia; Brazilian Academy of Sciences; CNPq; U.N.E.S.C.O.
Second International Symposium on the Origin and Distribution of the Elements	Paris, France	May 1977	U.N.E.S.C.O.
Second International Symposium on Water–Rock Interaction	Strasbourg, France	August 1977	Institut de Géologie, Université Louis Pasteur; C.N.R.S.
Second International Kimberlite Conference	Santa Fe, U.S.A.	October 1977	
The Elements and Their Isotopes in the Universe	Liege, Belgium	June 1978	
International Symposium on Geochemical Prospecting Methods	Ostrava, Czechoslovakia	September 1979	Czech Geological Office; U.N.E.S.C.O.
26th International Geological Congress (Section 10—Geochemistry)	Paris, France	July 1980	I.U.G.S.
Third International Symposium on Water–Rock Interaction	Edmonton, Canada	July 1980	Alberta Research Council
Second International Symposium on Methods of Applied Geochemistry	Irkutsk, U.S.S.R.	September 1981	
Second International Symposium on the Geochemistry of Natural Waters	Rostov-on-Don, U.S.S.R.	May 1982	
Fifth International Conference on Geochronology, Cosmochronology and Isotope Geology	Nikko, Japan	June 1982	I.A.V.C.E.I.; U.N.E.S.C.O.
Second International Symposium on Laterites and Lateritization	Sao Paulo, Brazil	July 1982	French Ministry of Foreign Affairs; U.N.E.S.C.O.

(continued overleaf)

Table 2. Continued

Title	Location	Date	Major Co-sponsor(s)
Generation of Major Basalt Types	Reykjavik, Iceland	August 1982	I.A.V.C.E.I.; U.N.E.S.C.O.
Third International Conference on Kimberlites	Clermont-Ferand, France	September 1982	
Third Symposium on Methods of Applied Geochemistry	Helsinki, Finland	August 1983	Association of Exploration Geochemists
Fourth International Symposium on Water-Rock Interaction	Misasa, Japan	September 1983	Geochemical Society of Japan;
From Asteroids to Meteorites	Mainz, F.R.G.	September 1983	Meteoritical Society; U.N.E.S.C.O.
27th International Geological Congress (Section 11— Geochemistry and Cosmo- chemistry)	Moscow, U.S.S.R.	August 1984	I.U.G.S.
Workshop on Antarctic Meteorites	Mainz, F.R.G.	July 1985	
Second International Symposium on Hydrothermal Reactions	University Park, U.S.A.	August 1985	
Symposium on Mediterranean Volcanism: Geophysical and Petrological Constraints to Magma Generation	Catania, Italy	September 1985	I.A.V.C.E.I.

as follows: Geochemical Prospecting (L. V. Tauson); Water-Rock Interaction (B. Hitchon); Interaction—Water and Living Matter (A. M. Nikanorov); Cosmochemistry (H. Wanke); Weathering, Sedimentary and Diagenetic Processes (Y. Tardy); Thermodynamics of Natural Processes (I. L. Khodakovsky); Cooperation in Applied Geochemistry (J. Goni); and Health and Disease (I. Thornton). About half the symposia listed in Table 2 were the direct result of the activities of the working groups.

MEMBERSHIP OF THE ASSOCIATION

There are four classes of members, of which only the National Members are entitled to vote in the General Assembly; such a policy is consistent with the international associational status of I.A.G.C. National Members may comprise organizations such as committees, societies or academies that have been designated by the Council of the Association as the official representative of the geochemists of their particular countries. National Members are the main internal financial supporters of I.A.G.C. and currently include Australia, Canada, The People's Republic of China, Czechoslovakia, France, the German Democratic Republic, the Federal Republic of Germany, Hungary, Italy, Japan, New Zealand, Norway, The Netherlands, The Republic of South Africa, Switzerland, The United Kingdom, U.S.A., and the U.S.S.R. Unlike many international organizations, I.A.G.C. has provision for individual membership to anyone interested in geochemistry or cosmochemistry; currently there are nearly 450 individual members. There is provision in the statutes for sustaining members although no individual or organization has applied. From time to time Council, subject to ratification by the General Assembly of the

Association, may nominate individuals as Honorary Fellows. Among those distinguished in this manner for their contributions to geochemistry or cosmochemistry have been Academician A. P. Vinogradov (U.S.S.R.), Professor Tom F. W. Barth (Norway), Academician A. I. Tugarinov (U.S.S.R.), Dr. K. Sugawara (Japan), and Professor E. Ingerson (U.S.A.) to whom the first three issues of *Applied Geochemistry* are dedicated. Special provision has been made by I.A.G.C. for international, regional, or national scientific societies, other than those designated as National Members, to be affiliated with I.A.G.C. as Associated Societies; The Geochemical Society has long been the only associated society.

INTERNAL ORGANIZATION

Final authority for the affairs of the Association rests with the General Assembly, which comprises delegates from the National Members, whose voting power is proportional to the number of geochemists represented within their individual countries. The General Assembly convenes during meetings of the International Geological Congress, and may be attended by other members of the Association although they have no vote. Responsibility for supervising the activities, conducting the business, and achieving the objectives of the Association rests with the Council, which currently consists of the President, the Vice-President, the Secretary, the Treasurer, the Past-President, and eight ordinary Council members. At least during the presidencies of G. Wetherill, V. L. Barsukov and M. H. Grunfelder, the Council has met annually, usually at the same time as one of the symposia organized or co-sponsored by the Association. The nomination of officers and Council members is made through a Nominating Committee appointed by Council with the election

being by majority vote of the General Assembly. In effect, the Council acts for the General Assembly between meetings of the latter. The main income of the Association is derived from dues of the National Members and individual members, with major contributions from U.N.E.S.C.O. and I.U.G.S. Major expenditures relate to support of symposia. In addition, the Association administers a bequest from Earl Ingerson which supports the Earl Ingerson Distinguished Lectureship Series.

EXTERNAL RELATIONS

I.U.G.S.

I.A.G.C. is one of 23 organizations affiliated with I.U.G.S. Although relations between I.A.G.C. and I.U.G.S. are not strictly external, it may be of interest to provide some background on I.U.G.S. The international importance of geology has been recognized for many years. To foster international cooperation on a more formal basis, a group of geologists led by James Hall (U.S.A.) and T. H. Huxley (U.K.) founded the International Geological Congress which was to become the most authoritative international forum for geologists. The Congress met for the first time in Paris in 1878 and then, with the exception of the periods during the two World Wars, at intervals of 3 to 4 years in various cities in all parts of the world. In the early 1950s it was felt that the I.G.C., in spite of its outstanding usefulness, was not the most suitable body for taking action on international geological questions and for giving guidance for coordination of international research programs in the field of the geosciences. This feeling stemmed from the fact that, effectively, I.G.C. existed only for about ten days every 3 or 4 years. This resulted at the 1960 session of the I.G.C. in Copenhagen in a number of recommendations from various delegations (British, Dutch and Swiss) for creating an International Union of Geological Sciences. I.U.G.S. was founded at a special meeting held the following year (1961) at the U.N.E.S.C.O. house in Paris, and once the statutes were accepted and the officers nominated, a formal application was sent to the International Council of Scientific Unions (I.C.S.U.) asking that I.U.G.S. be admitted as a general union at I.C.S.U.'s Ninth General Assembly on 24–28 September, 1961. The Assembly concluded that I.U.G.S. was a direct descendant of the International Geological Congress, and that the normal 5-year waiting period could therefore be waived. I.U.G.S. was then unanimously admitted to I.C.S.U. I.U.G.S. is now one of the largest and most active non-governmental scientific organizations in the world, with 93 adhering member countries. It promotes and encourages the study of geological problems, especially those of world-wide significance. I.U.G.S. supports and facilitates international and inter-

disciplinary cooperation in the geosciences and sponsors the quadrennial International Geological Congress, the International Geological Correlation Program (with U.N.E.S.C.O.) and the International Lithosphere Program (with I.U.G.G. and I.C.S.U.).

I.U.G.G.

As noted earlier, I.U.G.G. provided an arena of discussion at a critical time when the world geochemical community was seeking means of a formal international association. Between the Paris meeting of November 1965 (when the name of the Association was decided, draft statutes were discussed, and temporary officers and Council members were elected) and the first Council meeting in Paris in May 1967, K. Sugawara appealed to a special I.U.G.G. meeting in January 1966 to give due consideration to the matter of geochemistry and particularly to the relationship of the newly founded I.A.G.C. with I.U.G.G. One of the conclusions that the I.U.G.G. discussion group reached, however, was to establish the International Association of Volcanology and Chemistry of the Earth's Interior (I.A.V.C.E.I.) to unify physical volcanology and the chemistry of the earth's interior. Naturally, there came out of this decision the question of the relationship between I.A.G.C. and I.A.V.C.E.I. Earl Ingerson participated in the *ad hoc* committee for the organization of I.A.V.C.E.I. and through his efforts and those of H. Kuno (President of the International Association of Volcanology) it was agreed, in the autumn of 1966, that not only would the new executive committee of I.A.V.C.E.I. include two members of the Council of I.A.G.C. (E. Ingerson and E. A. Vincent), but also that I.A.V.C.E.I. would co-sponsor two planned symposia being organized by I.A.G.C. This close cooperation continues to the present day, as evidenced by some of the symposia cited in Table 2.

It should also be noted that I.U.G.G. has recognized the importance of geochemistry in sessions of various groups other than I.A.V.C.E.I. These include the former International Association of Physical Oceanography (I.A.P.O.) which subsequently changed its name to the International Association of Physical Sciences of the Ocean (I.A.P.S.O.), as well as the International Association of Scientific Hydrology (I.A.S.H.). At various times, I.A.G.C. has cooperated with all these affiliated associations of I.U.G.G., to the benefit of both organizations.

I.U.P.A.C.

There is little doubt that it was the friendly framework provided by I.U.P.A.C. which first gave geochemistry a truly international form, from which finally emerged an independent body, I.A.G.C.

Although some geochemists may still argue, even categorically, that geochemistry is one branch of chemistry, in truth, geochemistry is an interdisciplinary science that events have proved rose most healthily at the crossroads of chemistry, physics and the geological sciences. It is for this reason that I.A.G.C. has long been an associated organization of I.U.P.A.C. and reports regularly on its activities to their General Assemblies.

U.N.E.S.C.O.

At the time I.A.G.C. was organized, perhaps the strongest single factor influencing the decision to go ahead was the fact that U.N.E.S.C.O. was receiving an increasing number of enquiries about geochemical matters, and no international organization concerned with the whole field of geochemistry existed to which the enquiries could be referred. I.A.G.C. has attempted to fill this need, for example, by providing information and advice on geochemical matters to such groups as Man and the Biosphere, and the International Geological Correlation Program. However, it is clear that any value that the advice of I.A.G.C. may have been to U.N.E.S.C.O. has been more than compensated for by the very generous financial support and publishing facilities that U.N.E.S.C.O. has made available to the Association. Although the United Nations University in Japan is not presently involved in geochemistry as an academic subject, it is clear that the universal nature of geochemistry as a natural science can play a linking role in some of the projects already launched. In this regard, I.A.G.C. may well play a pivotal role in the future.

SUMMARY AND CONCLUSIONS

During the 34 years covered by this historical review, the sometimes incomplete records suggest periods of comparative inactivity and certainly frustration on the part of the world geochemical community. Yet those of us who have started organizations or publications, or who have been actively involved in the affairs of scientific societies know that it is through the constant, intense, and dedicated efforts of a limited number of individuals that organizations such as the International Association of Geochemistry and Cosmochemistry get started and flourish. It must be quite clear to the perceptive reader that Earl Ingerson was the prime mover of events that led up to the foundation of I.A.G.C., and that it was his hand that guided the Association in its first formative decade. Subsequent events have vindicated his foresight and it is now up to the members of the Association to ensure that I.A.G.C. remains one of the preeminent international geochemical and cosmochemical organizations.

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