

# Anniversaries

IUGS founded 60 years ago



## ORGANIZING THE GEOLOGICAL SCIENCES: RETREADING THE PATH FROM INTERNATIONAL CONGRESSES TO SCIENTIFIC UNION

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The International Union of Geological Sciences (IUGS) was formally and unanimously admitted by the International Council of Scientific Unions (ICSU) at the 9<sup>th</sup> General Assembly on 28 September 1961. The Assembly concluded that the IUGS was a direct descendant of the International Geological Congress (IGC) and therefore the normal five-year waiting period could be waived.



Fig. 1. IUGS 60<sup>th</sup> Anniversary logo.

The reasoning behind this decision was complex and underlined that one of the last scientific groups to set up a union in the 20<sup>th</sup> century had indeed already established a system of organization of their science towards the end of the 19<sup>th</sup> century through regular international scientific congresses as forums where they debated new theories, compared findings, examined specimens, displayed maps and planned future research on a global scale.

In the mid-nineteenth century geologists around the world engaged in mapping their national territories were encountering problems regarding standardization of nomenclature, terminology, map colour schemes and symbols used for rock types, stratigraphic subdivision, specific features, boundaries etc. (Bouysse 2013). Even if such problems were debated within national meetings of scientific/geological societies and associations these were mostly confined to continents such as Europe or America. In order to observe the geology of other countries individual geologists also travelled to visit colleagues with whom they corresponded and on these occasions were often invited to attend meetings of local societies where their comments, views and comparison with other areas were welcome. Being highly aware of the importance of diffusing scientific findings these societies and associations exchanged publications and issued invitations to attend their reciprocal annual meetings. Attempts to organize an international congress in France for geologists to discuss general problematic aspects of their work are recorded as early as the 1860s and again in the 1870s in Italy (Ellenberger 1978, Vai 2002).

Some comparison/discussion had been made possible through the Great Exhibitions, Universal Exposition or World Fairs such as that at the Crystal Palace in London in 1851. Many countries sent their geologists to these events to display new geological maps or minerals/fossils and resources such as iron/coal. However, a real international geological forum was lacking and divisions between European and American practises were now hindering progress in the understanding of geological features from different areas around the world.

In 1876 the International Centennial Exposition, the first official World's Fair to be held in the United States, took place from May to October in Philadelphia (Pennsylvania) to mark the 100<sup>th</sup> anniversary of the signing of the Declaration of Independence there. Contemporary to this event, the 25<sup>th</sup> annual meeting of the American Association for the Advancement of Science (AAAS) being held in Buffalo (New York State) that year began on August 23 1876. The AAAS, established in 1848 and based at the Academy of Natural Sciences in Philadelphia, had evolved from the Association of American Geologists and Naturalists (founded in 1840) and therefore included as its members many eminent geologists, who decided to take matters for organizing an international congress a step further. Present as guests on this occasion were some “foreign savants” attending the Centennial exposition, one being Thomas H. Huxley who was on his 1876 American Tour.

The Standing Committee of the AAAS resolved on the 25 August 1876

“that a committee of this association be appointed to consider the propriety of holding an International Congress of Geologists at Paris during the International Exhibition of 1878 for the purpose of getting together comparative collections, maps and sections, and for the settling of many obscure points relating to geological classification and nomenclature, and that to this committee be added our guests Dr. Otto Torell of Sweden and Dr. E. H. von Baumhauer of the Netherlands, who shall be requested to open negotiations in Europe looking to a full representation of European geologists at the proposed congress,” (Mendenhall 1877, p. 355)



Fig. 2. James Hall (USA 1811–1898). President of the Founding Committee (on left). Source: Wikimedia Commons. Thomas Sterry Hunt (Canada 1826–1892). Secretary of the Founding Committee (centre). Source: Wikimedia Commons. Edmond Hébert (France 1812–1890) President of the First IGC (Paris 1878) (on right). Source: Ellenberger (1978)

This committee later referred to as the “Philadelphia Founding Committee” was comprised of mainly American and Canadian members and three associate foreign members:

President: James Hall (USA); Secretary: Thomas Sterry Hunt (Canada).

Members: William B. Rogers (USA), John William Dawson (Canada), John S. Newberry (USA), Charles H. Hitchcock (USA), Raphael Pumpelly (USA), J. Peter Lesley (USA), Thomas H. Huxley (U.K.), Otto Torell (Sweden), Edouard H. von Baumhauer (The Netherlands).

A circular printed in English, French and German was distributed worldwide but mainly within the various learned societies calling for contributions of rocks, fossils, geological maps and sections to the Universal Exhibition in Paris. Through its Geological Society France offered to organize the congress and two circulars were sent out asking interested parties to submit topics for debate and outlines of proposed papers. Edmond Hébert was chairman of the organizing committee (Ellenberger 1978; for details on individual geologists refer to Sarjeant 1980).



Fig. 3. The Universal Exhibition of 1878: Les Palais des Fêtes at Trocadéro, site of the First International Geological Congress in 1878. Source: Ellenberger (1978)

The First International Geological Congress took place in 1878 in Paris and was in session from the 29 August to 4 September. The venue was the Congress and Conference wing of the Trocadéro Palace at the Universal Exhibition. The presiding council was formed of members of the Founding Committee, members of the French organizing committee as well as the Chairmen of various national geological societies and major geological surveys with Edmond Hébert as the President and E. Jannetaz as Secretary-General of the first IGC. There were 312 participants mainly from France or members of the French Geological Society. Organization was foremost and at the first session the board of the congress was elected: it consisted of the organizing committee as well as 14 Vice-Chairmen from countries such as Canada, USA and the major European Countries. A 154-page catalogue was published of the geological exhibits that were on display: *Geologist's Guide to the Universal Exhibition of 1878 and to the Public and Private collections of Paris*. The scientific program listed the following topics for debate:

1. Standardization of geologic maps and reports with regard to nomenclature and symbols
2. Discussion of the boundaries and characteristics of certain rock systems
3. Representation and coordination of linear features (faults and veins)
4. Respective importance of fauna and flora in the delineation of rock systems and
5. Importance of the mineralogy and texture of rocks in terms of their origin and age

A 277-page proceedings volume was printed by the National press of France. An important outcome was the establishment of two International Commissions for the standardization of nomenclature and symbols which started a procedure for organization that would endure into the 20<sup>th</sup> century and be adopted by the IUGS. A detailed account of the congress, its achievements and outcomes may be found in Ellenberger (1978).

A total of 11 IGCs were organized regularly every 3-4 years prior to the outbreak of WWI (Bologna, Berlin, London, Washington, Zurich, St. Petersburg, Paris, Vienna, Mexico City, Stockholm, Toronto). Participants were numerous, debates centred on new theories and were reinforced or rejected based on comparative findings from across the globe, international commissions were set up to deal with specific questions and most importantly excursions within the host territories now allowed direct observations in the field by international experts. Publication of detailed accounts of the congresses were given in the *Compte Rendu* which now together with the excursion guidebooks form important historical sources for studies on the history of the geological sciences and the IGCs, such as those published in the journal *Episodes*.

The question of forming or not a union was first put forward when the congress reconvened in Brussels in 1922 after a lapse of nine years due to the war. However, the delegates at the 13<sup>th</sup> IGC voted against this proposal as they considered that the IGC already constituted an international organization for geology (Le Vigouroux, in review). The subject was again raised at the first congress held after WWII in 1948 in London (Trümpy 2004). By this time UNESCO had been founded in 1945 as a specialized agency of the United Nations (Petitjean et al. 2006). By coincidence its first Director-General was Julian S. Huxley, grandson of Thomas H. Huxley of the Philadelphia Founding Committee.

UNESCO strongly supported the idea of a union in order to have a direct link with geologists for furthering their initiatives for environmental sciences and development activities regarding water resources, hydrogeological projects, and education. UNESCO science delegate, biochemist and historian of science Joseph Needham, spoke to the IGC council and participants in London emphasizing these aspects, but to no avail. The main arguments were that the geologists were already organized on an international level, had their own funds through support from national institutions, societies and associations, IGC national committees and congress fees for running the IGC regularly and had a system of governance in the form of the council and bureau. They did not see what could be gained by becoming a union, rather they considered they would lose their autonomy (Harrison 1978). Similar arguments were used for a no-vote at the IGCs in Algiers in 1952 (Durand-Delga 2005) and in Mexico in 1956 (Mazadiego Martínez & Puche Riart 2009).

However, things had changed by 1960 and the stalemate that had kept the geologists from forming their own union was finally broken at the 21<sup>st</sup> IGC held by the Nordic Countries in Copenhagen (Sørensen 2007). The successful International Geophysical Year and start of the Upper Mantle Project that both lacked a formal geological participation caused concern as it demonstrated the IGCs inability to act effectively between congresses thus swaying opinions. Various decisive proposals were made to the IGC Bureau and Council by Switzerland, Holland and the United Kingdom (with draft statutes), a working committee was established, and finally, a vote to form a union was passed (Accounts are given in Harrison 1978, Schneer 1995).



Fig. 4. Joseph Needham (U.K. 1900–1995). Source: Wikimedia commons



Fig. 5. Some of the “founding fathers” gathered in front of UNESCO headquarters in Paris during the March 1961 “founding” meeting of the Union. In front, left to right: N. Beliaevsky (USSR), W.P. van Leckwijck (Belgium), I. Gorsky (USSR), F. Prantle (Czechoslovakia), J. Lombard (France), M. Batisse (UNESCO), H.M.E. Scharmann (Netherlands), G. Castany (Tunisia), A. Codarcea (Roumania), A. Thiadens (Netherlands), Piret (USA), M. Collignon (Madagascar). At back, left to right: L. Vonderschmidt (Switzerland), standing far back row: J.A. Dons (Norway), C.H.R. von Koenigswald (Netherlands), H. Kupper (Austria), H.J. Martini (Federal Republic of Germany), K.A. Lindbergson (Sweden), L. Hawkes (U.K.), S. Hori (Japan). Source: Harrison (1978). The names of those who were members of the First IUGS Executive Council are underlined.



An application to the International Council of Scientific Unions (ICSU) was swiftly arranged and the Organizing Committee of the Union (reformed from the working committee established in Copenhagen) was charged with preparing draft statutes which would be submitted for approval to the IGC National Committees. Time was of the essence in order to meet the May 15<sup>th</sup>, 1961 deadline for submitting a formal application to the ICSU in order to be considered for membership at the ICSU's General Assembly in September 1961. A series of meetings were held in Finland and Stockholm (December 1960) in order to finalise drafting of the union's statutes, aims and objectives and generalities regarding organization. As the President of the Norden 21<sup>st</sup> IGC Arne Noe Nygaard had stated in his opening address that geology represented a broad spectrum of sciences the new union was called The International Union of Geological Sciences.

By early March 1961 the statutes had been circulated, approved and 30 countries had applied for membership. UNESCO provided both financial and logistical support for the final stages of preparing the formal application and hosted a meeting on 2-3 March 1961 in Paris for the members of the Organizing Committee, representatives of the ICSU and UNESCO (Fig. 5). The statutes were given final approval and the officers of the new Union were elected; thus, the application could now be formally submitted requesting that the IUGS be admitted as a general Union at the ICSU's 9<sup>th</sup> General Assembly in September 1961. Having considered the application and the role of the IGCs the IUGS was unanimously admitted to the ICSU by the Assembly on September 28 1961 (Harrison 1978).



Fig. 6. (left to right); James M. Harrison, Arne Noe-Nygaard, Theodor Sorgenfrei, Teiichi Kobayashi, Bhabesh C. Roy, Alberto R. Lamego. Source: Harrison 1978 and personal biographies.

#### First Executive Council 1961–1964

President: James M. Harrison (Canada 1915–1990)

Past President: Arne Noe-Nygaard (Denmark 1908–1991)

Secretary General: Theodor Sorgenfrei (Denmark 1915–1972)

Treasurer: Johannes A. Dons (Norway 1920–2009)

Vice Presidents: Jean Lombard (France 1895–1983), Bhabesh C. Roy (India 1907–1984), Teiichi Kobayashi (Japan 1901–1996), Leonard Hawkes (U.K. 1891–1981), Ivan I. Gorsky (U.S.S.R. 1893–1975), Alberto R. Lamego (Brazil 1896–1985).

Chairman of the Constitutive Assembly: A. Noe-Nygaard (Denmark)

The initial Executive council comprised ten men (Figs 5–6): it would be nearly two decades later before the first woman joined the Executive in 1980 (see Turner, in prep.)

New statutes for the IGC were now also needed and the first formal meeting of the new IUGS executive council was held in Rome on 14-15 October 1963 where decisions regarding the bylaws and organization of the Union were taken and given as a report at the first joint IUGS/IGC meeting at the 22<sup>nd</sup> IGC held in New Delhi in 1964. (Harrison 1978; Murty & Oldroyd 2011; IUGS Book of facts 2012).

## Further Reading

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- A comprehensive list of papers published in Episodes on the Histories of the International Geological Congresses (1878-2000) may be found on the IUGS International Commission on the History of Geological Sciences (INHIGEO) website  
<https://www.inhigeo.com/publications.html#Classic2>

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