

by Rudolf Triimpy

# The 18th International Geological Congress, Great Britain, 1948

Allmendboden 19, CH-8700 Küsnacht, Switzerland.

## Troubled times: preparation and participation

The International Geological Congresses (IGCs) had been interrupted for nine years during World War I, between Toronto (1913) and Brussels (1922). World War II caused an even longer break of eleven years, between Moscow (1937) and London (1948).

In Moscow, the invitation of the British geologists to hold the 18th Congress in London, in the summer of 1940, had been accepted. Preparations began immediately. The first and second circulars were sent out in 1938 and 1939. But at the outbreak of war everything had to be cancelled.

At the end of 1945, and in 1946, work was taken up again. Arthur James Butler (1911–1984) and Leonard Hawkes (1891–1981) were appointed as General Secretaries. Harold H. Read (1889–1970) was elected as President Designate. A fatherly and greatly respected man, he was then President of the Geological Society. William F. P. McIntock (1887–1960), Director of the Geological Survey, became Vice-President. Thus, the two most active of the institutions involved were represented. The treasurer, Frederick N. Ashcroft (1878–1949), died shortly after the Congress. He left his accounts in perfect order and a substantial balance; this was only made possible by generous contributions from public and private sources.

Immediately after the war, optimism as to the prospects of international scientific exchange had appeared to be well founded. It could not then be foreseen that difficulties would soon arise, with the economic restraints and the austerity régime in Britain and with the onset of the Cold War, which imposed travel and currency restrictions in many countries. Even the exchange of certain scientific informations became suspect.

In spite of these obstacles, the response to the third, fourth, and fifth circulars was overwhelming. A great number of geologists, after the years of isolation, wanted to meet their colleagues again, to be informed on the development of their science, and to visit the many famous localities of the British Isles. Finally, 1778 scientists, from 84 countries and territories, registered. This was a little less than for Moscow in 1937, but the effective participation was higher than at any previous Congress: 1276 geologists and about 300

accompanying relatives were present in London. For a group photograph, see Figure 1.

The largest overseas delegation (about 220, 133 present) arrived from the US, although transatlantic voyages were still less easy than nowadays. 121 scientists from the USSR had registered, but only 9 could attend. France, with 94 registered (75 attending) was well represented, followed by Belgium, Switzerland, the Netherlands, India, Canada, Sweden, Italy, and Portugal. 16 geologists (10 attending) came from Germany, 6 (3 attending) from Austria and a single one from Japan (plus two Americans attached to the Far East General Headquarters). There were about 100 women geologists, mostly British. The membership list is also revealing for the degree of scientific emancipation of countries, or future countries, in Africa and Asia. In some of them, nationals were well represented; in others, all the names of participants sound ‘European’. All these people met on 25 August for the Opening Ceremony. Of course, there was a moving scene of recognition among old friends, with restrained “glad to see you again” and less restrained back-slapping. Younger geologists gazed at the great men whose works they had read.

The task of organizing the Congress had been a very exacting one, with all the national and international complications of the time. The British geologists had done a marvellous job. The lecture theatres were all located close to each other in South Kensington, at the Geological Survey, with its impressive Museum, and at Imperial College. The plenary sessions were held in that astounding monument of Victorian architecture, the Albert Hall. We received ample documentation, i.e. a biography of William Smith (by L. F. Cox), a handbook on the geology of eastern Ireland and a geological map of the British Isles, at the quaint scale of 1 : 584 000. A particularly precious gift from H. M. Government to the overseas participants was a new set of the eighteen Handbooks of British Regional Geology.

Even more than the perfect organization, we appreciated the warm and sincere welcome from our British colleagues. Their kind of easy-going courtesy is found nowhere else. They bore with indulgence the ungentelemanly behaviour of foreign participants. I'm afraid that many of us took time off from our scientific assignments in order to stroll through the great city of London, which still bore the scars of the wartime bombing. We tried to explore its many secrets, including the (then severely limited) opening hours of pubs. There also, we had many friendly encounters.



Figure 1 Photograph of some of those attending the 18th International Geological Congress (copy of photograph held in the archives of the British Geological Survey, Keyworth)

## Mid-century problems of geology: Scientific meetings

The scientific papers were published in full, or at least as abstracts (International Geological Congress, Report of the Eighteenth Session 1948, A. J. Butler, ed., London, 1950, Parts 1–14; only the part and page numbers are quoted in the following). They provide an instructive account of the problems confronting the geologists of 56 years ago. 1948 was probably not one of the great moments in the history of our science. Some subjects were leading into blind alleys; others foreshadowed the renewal of the fifties and particularly the sixties. Inevitably, some topics were of too special or too local scope for an international and multidisciplinary audience.

There were two plenary evening lectures. O. T. Jones, who had published his splendid analysis of the Early Paleozoic Welsh 'geosyncline' ten years before, talked about the structural history of England and Wales. He concluded that the Armorican (i.e. Late Paleozoic) movements closed the structural history of this region. I found his lecture less inspiring than its counterpart, by E. B. Bailey on the structural history of Scotland, which gave an excellent and lively view, not only of Caledonian structures but also of Mesozoic events and of the Tertiary volcanism.

Twelve sectional meetings, and some devoted to other 'subjects', discussed problems that were then deemed particularly relevant. I shall only mention some of them.

Section A, 'Problems of geochemistry', contained a wide array of papers, from R. W. van Bemmelen's grand views on cosmogony and geochemistry to rather conventional lists of analytical data. The importance of the phase-rule for the understanding of geochemical processes had begun to be realized (Korzhinsky, Part 2, pp. 50 and 58). Experimental petrology came into its own; N. L. Bowen and O. F. Tuttle talked about the serpentine-talc equilibria, but they published their seminal work elsewhere (Bulletin of the Geological Society of America, vol. 40, 1949, p. 439).

Section B, 'Metasomatic Processes in Metamorphism', drew a large audience. This was the time of the great 'Granite Controversy' (see Davis A. Young, *Mind over Magma: The Story of Igneous Petrology*, Princeton University Press, 2003, and bibliography therein). It was agreed that granitization, i.e. the replacement of various older rocks by 'granite' (meaning anything between tonalites and potassic leucogranite) had occurred. In some granite bodies, remnants of the former structure of the country rocks could indeed still be recognized. The question was whether these transformations involved solid-state reactions, transport of ions by circulating fluids, especially gases, or the penetration of granitic magma. The more extreme devotees of the metasomatic creed, such as Doris Reynolds or Marcel Roubault, questioned the very existence of granitic magma, thus, according to Pentti Eskola, "spilling the baby with the bath water" (Part 3, p. 11). It is true that some of them ventured pretty far out; C. Sorotchinsky (Part 3, p. 131, abstract only), having observed authigenic quartz and feldspar phenocrysts, upheld the view that granites formed by the diagenetic alteration of limestones. The granitic dykes, which to James Hutton had furnished an argument for his 'Plutonist' theory, remained a problem for the transformist school. The proceedings of this section, edited by the husband-and-wife team of Arthur Holmes and Doris Reynolds (see Cherry Lewis, *The Dating Game*, Cambridge: University Press, 2000), convey a good idea of the lively and generally, though not quite always, courteous discussion. The 'metamorphists' obviously carried the day, if only for a while.

For us young geologists, not involved in igneous petrology, it was not easy to understand what all the excitement was about. Even with our limited experience, we had seen intrusive granites and granites developing out of country rock, by way of migmatites. In Switzerland, we had witnessed the bitter feud between the magmatist Paul Niggli and the migmatist Eugène Wegmann. Together with Maurice Lugeon and August Buxtorf, Niggli controlled the country's Establishment, and he succeeded in keeping Wegmann out of it.

Wegmann retorted by dubbing Paul and Ernst Niggli the Father and the Son, while sorely regretting the absence of Holy Spirit (anecdote transmitted by Gilbert Wilson to Jean-Paul Schaer).

R. Perrin and M. Roubault (Bulletin de la Société Géologique de France, [5] 11, 1941, and [5] 15, 1945) had interpreted the post-Variscan angular unconformity in the external chains of the Alps as a 'metamorphic front'. This absurd view was criticized by Lugeon (same journal, [5] 16, 1946, p. 609) far too politely for our taste; but both Perrin and Roubault were influential people in France, and the ever-cautious Lugeon did not want to step on their toes.

The controversy was indeed fraught with national resentments, as Davis Young has suggested, not so much in Britain as in France. During the war, François Ellenberger and his fellow-officers (Ellenberger et al., *Comptes-rendus sommaires, Société Géologique de France*, 1946, p. 12, and Ellenberger et al., *Annales Science Franche-Comte* [Besançon], 3, 1948) had explored the grounds of their prisoner-of-war camp in Bohemia and found evidence of metasomatic processes in the basement rocks, thus scoring a point against their 'Germanic', i.e. magmatist, guardians.

Section C was devoted to 'Rhythm in Sedimentation'. It contains well-documented papers on the cyclothem of the central US (Raymond Moore, Harold Wanless) and on similar sequences in England, Sweden, and Switzerland. The causes behind these regular successions remained unresolved; sea-level fluctuations, climatic changes, episodic subsidence of basins and episodic uplift of the detritus-furnishing source areas were all invoked. Glacio-eustatic sea level changes were considered as unlikely, as they would have implied the occurrence of at least fifty Late Paleozoic glaciations. Sequence stratigraphy was still in its diapers.

In Section D, 'The Geological Results of Applied Geophysics', we note that seismic data were still rare, or, more probably, still in the strongholds of oil companies. Most of the papers dealt with 'cheap' geophysics, such as gravity measurements, magnetics, and various electrical methods.

In the 'Geology of Petroleum' (Section B), the discussion on the tectonics of the Zagros front in Iran and Iraq was noteworthy. G. M. Lees (Part 6, p. 26) and C. A. E. O'Brien (Part 6, p. 45) showed that surface structures could not simply be extrapolated downwards, because of the intervening thick incompetent salt formation of the Lower Fars. This led to comparisons with the classical, but rather different, fold-belt of the Jura Mountains.

Section F, on lead and zinc ores, was outside of my field. In 1948, it was apparently feared that the proven reserves of Pb and especially Zn ores might soon be running out.

In section G, on 'The Geology of Sea and Ocean Floors', the attendants hoped to hear about the explorations sponsored by the US Navy, which had opened new perspectives on the major part of the planet's surface. They were partly disappointed; much remained among classified files. R. D. Russell (Part 8, p. 63) presented more about methods than results. However, he provided a useful list of the papers published until then. Research on the Bikini Atoll nuclear test-site furnished valuable information on the internal structure of intra-oceanic coral reefs and made us admire, once again, the prophetic insights of Charles Darwin.

Philip H. Kuenen (Part 8, p. 44) talked about turbidity currents of high density, based on his experiments. He demonstrated that these currents could indeed transport sand and even boulders for long distances down little-inclined slopes. This suggested a new and highly plausible mechanism for the origin of deep-sea sands, which had baffled earlier geologists. Russell asked whether turbidity currents might have cut or merely kept open submarine canyons; Kuenen replied that the second hypothesis was more probable. Carlo I. Migliorini drew attention to his earlier publication (Bollettino della Società Geologica Italiana, 58, 1944, p. 48) on the deposition of the Macigno (flysch) sediments in the Apennines. This encounter between the Dutch professor and the Italian gentiluomo may have led to their joint publication (*Journal of Geology*, 58, 1950, p. 81), which really opened the way for a new understanding of recent and fossil sediments. F. N. Gallitelli (Part 8, p. 30) also advanced arguments for a deep-sea origin of the argille scagliose in the same

region. Previously, a fashion had prevailed to assign almost all ancient marine sediments to shallow-water environments. It is amusing to note that D. J. Doeglas (Part 8, p. 16) still upheld that “sands ... indicate deposition near the coast or on the continents”.

The proceedings of Sections H (‘The Plio–Pleistocene Boundary’), J (‘Faunal and Floral Facies and Zonal Correlation’), and K (‘The Correlation of Continental Vertebrate-bearing Rocks’) were mainly of interest to specialists.

Section L had as theme ‘Earth Movements and Organic Evolution’. The Chairman, H. L. Hawkins from Reading, stated the problem very neatly in his opening remarks (Part 12, p. 5). It was well known that there had been times in Earth history, e.g. at the turn from the Permian to the Triassic or from the Cretaceous to the Paleocene, when evolution had proceeded at an accelerated rate, through the extinction of numerous groups and the diversification of the survivors. It was reasonable to assume that global environmental upheavals might, in some way or another, be responsible for these biological crises. At the time of the London Congress, pulses of mountain-building seemed to be the most likely causes for such events. Many geologists, the most eloquent spokesman of whom was Hans Stille, thought that they had been both short-lived and world-wide. This attempted correlation between orogenic phases and biological turnovers was a red herring. Environmental factors do indeed play a large part in mass extinctions, but they are not directly connected with mountain-building processes. As one might expect, the few papers presented in this section failed to give an answer to the questions raised.

Among the topics which were not discussed in the section meetings, we may mention geochronology and continental drift. An exception was Arthur Holmes’s presentation of U–Pb apparent ages of African Precambrian rocks (Part 14, p. 254, and discussion, p. 7). Some members of colonial surveys remained skeptical, as these data contradicted their own version of local Precambrian stratigraphy. Holmes remarked that these determinations “will test the Continental Drift Hypothesis”.

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## High politics: Council and General Assembly

More than 400 official delegates, from governments, institutions and societies, had been appointed; they constituted the Council of the Congress. It was an unwieldy body, covering a wide spectrum of scientific competence and of weight with their governments. It was perhaps fortunate that not all delegates attended all Council sessions.

An informative set of documents had been prepared. They contained the reports of the Congress Commissions, who had worked on their own, as far as at all possible, during the eleven years which had elapsed since the Moscow session. Much, of course, had changed. The two representatives of the Commission on the Gondwana System noted that all its members named at the 17th Congress were deceased. It was proposed that the work of the ‘Commission on the Determination of Geological Age by Radiometric Methods’ be discontinued, in view of the “international restrictions with regard to information on subjects dealing with radiological activity”. The dating of rocks apparently was of tremendous strategic importance.

Everybody agreed that Russian should be declared as an official Congress language, along with French, English, German, Italian, and Spanish. Spokesman for the Soviet delegation was Vladimir V. Belousov. Born in 1907, he was relatively young by the gerontocratic standards of his time and country; but he apparently enjoyed the confidence of his fellow-delegates and of the powers-that-were.

Invitations for the 19th Congress Session had been received from France (for Algeria) and from India. The first was preferred and the second warmly appreciated. Most of Council’s debates concerned the proposal to create an International Union of Geological Sciences (IUGS). It had first been raised and rejected at the Brussels Congress of 1922. At that time, most of the major unions, such as the International Union of Geodesy and Geophysics (IUGG) had

been constituted and grouped under the International Council of Scientific Unions (ICSU). The geologists had been among the first to establish regular International Congresses, way back in 1878, with a Bureau attending to matters between sessions, and they considered that these provided a sufficient vehicle for fostering and coordinating international science. It is no coincidence that they were eventually among the last to form an international union, in 1960.

As far as can be gleaned from the minutes, opinions ran high during the Council meetings. The usefulness of a permanent body, acting between Congresses, was noted by many. Others, e.g. McLintock from the Geological Survey, fiercely defended the national responsibility and prerogatives of the Congress organizers, and suspected that a future IUGS might interfere with the autonomy of the Congresses. UNESCO dangled the lure of financial contributions, through ICSU.

The chairman, H. H. Read, noted that there were two camps: one for the establishment of a Union and one for postponing the matter to the next session of the Congress. The second group accepted that the IGC Bureau “should be willing to advise UNESCO on geological matters”. The Soviet delegation objected to this part of the statement, fearing that the Bureau would lose its independence by having too close relations with UNESCO (of which the USSR then was not yet a member country). Belousov’s proposal to omit the reference to UNESCO was rejected by the tiny margin of 65 to 64 votes.

All this strikes a familiar chord, also concerning the inequilateral triangle IGC–IUGS (as member of ICSU)–UNESCO. Of course, I was not a member of the Council, and I certainly did not suspect that I was to serve the still unborn IUGS, in different functions, during twenty years of my life.

The General Assembly gathered on three occasions in the Royal Albert Hall. The Opening Ceremony brought formal speeches. The R. H. John Anderson, Viscount Waverley (1882–1958), conveyed the welcome by H. M. Government. K. C. (later Sir Kingsley) Dunham played the organ.

At its business meeting, the General Assembly endorsed the proposals of the Council. The decision of creating an International Union was postponed. V. V. Belousov reiterated the Soviet delegation’s objection against the Congress Bureau “giving advice and supplying information to UNESCO or any other political organization”. This view was duly recorded. Then H. H. Read thanked the General Assembly and acknowledged that, during this meeting, he might occasionally have acted like a steamroller. “But even a steamroller may have a kind heart”.

The final meeting, on 1 September, began with the award of the Spendiarov Prize. It went to Lawrence R. Wager (1904–1965), whose geological and petrological work in the Himalayas and in Greenland, often together with W. A. Deer, we greatly admired.

The President thanked the overseas visitors for their contributions. He mentioned the increasing specialization of the science and hinted that “we shall be required soon to establish specialists in generalization”. He then called upon the representatives of the national delegations.

Eliot Blackwelder, from the US, made a short and thoughtful speech. He praised the work of the British amateur geologists, and recalled the 1903 Congress in Vienna, when scientists could travel, without passports, all over Europe. He said that “Science . . . can really prosper only in an atmosphere of complete freedom of inquiry, communication and publication”. Belousov’s address, for the USSR delegation, was remarkably curt.

Delegates then spoke in turn. Paul Fourmarier struck a similar note to Blackwelder, when he remembered the 1922 Congress, when the future had appeared bright indeed (*l’avenir tout baigné de lumière*). All speakers thanked the organizers, particularly Arthur Butler, who had borne the heaviest burden, and their British colleagues, whose competence and friendliness they had come to appreciate. Their vote was certainly sincere; the 1948 Congress had been a great success and had opened the way for more intensive cooperation and better understanding among the geologists worldwide.

Finally, Léon Lutaud, from France, invited the participants to the 19th International Geological Congress, to be held in the late summer of 1952 in Algiers.

## The Busman's Memorable Holiday: Excursions

The long excursions, before and after the London meeting, led to all parts of England, Wales and Scotland, from Cornwall to East Anglia and from the Isle of Wight to Durness, in the Northwest Highlands. Some of them were of general character, e.g. circuits through England and Wales, or through Scotland; others were devoted to a special problem or to a particularly interesting region (e.g. mineralogy of Devon and Cornwall; geomorphology; hydrogeology; vertebrate paleontology; petrology of Mull and Ardnamurchan; Carboniferous stratigraphy in the Pennines; excursions commemorating William Smith around Bath, or the Murchison/Sedgwick controversy in Wales and Shropshire). A wide choice of short, day, or half-day trips starting from London was also offered.

Organizing the field trips had been an arduous task for our colleagues. Many hotels had been destroyed, were overbooked, or had been converted to other purposes, and the transport system still had gaps. We did not suffer at all from these restrictions. At the utmost, the lunchtime sandwiches may have been a trifle austere; but we were amply rewarded by the pleasant custom of five o'clock tea. This provided an excellent occasion for talking about the rocks we had seen or about other matters, even if it meant that we had to leave fascinating outcrops while the sun was still shining. The scientific preparation was outstanding.

I had registered for two long excursions, to the Jurassic section of the Dorset coast and to the Highlands around Ben Nevis. The Dorset excursion was led by Peter C. Sylvester Bradley (1913–1978) from Sheffield. He had been obliged to step in at short notice for the leader originally designated. His earnestness contrasted with the joyous character of the excursion's secretary, Richard V. Melville (1914–1993). On my birthday, Melville offered me a cigar, which I smoked while swimming (backstroke, obviously) off Weymouth. The weather must have been fine and the sea very calm on that morning. The outcrops were marvellous; the most knowledgeable specialists were called in to explain us 'their' part of the section.

There was ample opportunity to collect fossils, without too bad a conscience, as the next winter storms would expose fresh ones. A highlight was a cruise, in D-day landing boats, into Lulworth Cove. I was (and still am) intrigued to see the evidence of strong compressive Tertiary deformations so far away from my native Alps (see Figure 2)

The excursion to the Scottish Highlands, after the Congress, was even more exciting. Our headquarters were Fort William and Ballachulish. We learned a lot about the Moine–Dalradian succession, about the use of bedding criteria for unravelling the structure of unfossiliferous rocks, about lags (flat-lying normal faults), about calderas, about flinty crush-rock, about the Great Glen Fault, about the Parallel Roads of Glen Roy (see Figure 3), about the Massacre of



Figure 2 Stair Hole and Lulworth Cove, Dorset, on the South Coast of England, from the west. Folded Purbeck Beds in the foreground; tilted Cretaceous formations beyond Lulworth Cove. From: C. T. Chatwyn, 1948. *British Regional Geology: The Hampshire Basin, 2nd edition, Her Majesty's Stationery Office, London, Plate VI.* (Reproduced by courtesy of the British Geological Survey, Permit No. IPR/52-038C).



Figure 3 The Parallel Roads of Glen Roy: shore terraces of ice-dammed lakes at 1149, 1068, and 857 feet above sea-level. From: H. H. Read and A. G. Macgregor, 1948. *British Regional Geology, The Grampian Highlands, 2nd edition, Her Majesty's Stationery Office, London, Plate IX.* (Reproduced by courtesy of the British Geological Survey, Permit No. IPR/52-038C).

Glen Coe, and about the distilling of whisky. The September weather was varied. We never made it to the top of Ben Nevis, because of rain, fog, and the incident mentioned in Figure 4. On the other hand, we had a fine afternoon when John Tuzo Wilson and I made a side-trip to Bidean nam Bian. There I tried, without any success, to persuade my companion to accept the possibility of continental drift, specifically between Scotland and East Greenland (I had learned a little about Greenland geology from my elder fellow-students, who had taken part in Lauge Koch's expeditions).

Our field leader was Sir Edward Bailey (1881–1965), one of the greatest and one of the toughest geologists of his time. Stories were told about his riding down a Scandinavian waterfall with floating logs (Holtedahl, Part 1, p. 255). In the Highlands, he wore sandals, which was quite sensible: our feet would get wet anyhow, and the peat water ran out of his sandals while it remained, happily gurgling, in our mountain boots. Every morning, he went for a swim in the loch (brr), clad in the scantiest of all possible garbs. Members of our party overheard an elderly lady complaining about these awful geologists. She had even taken out her field glasses in order to make sure of Sir Edward's scandalous demeanour.

At the time of the Congress, I was 27—not quite as young as the school-boy Emmanuel de Margerie had been, when he listened to the proceedings of the very first IGC, in 1878. Salaries for junior academic staff were on the modest side; at Lausanne, I earned the number of the Beast of the Apocalypse (666), in Swiss francs, per month. I could only attend the Congress thanks to a gift from my father, Daniel. It was a great experience, and it got me away from regional and disciplinary prejudices. I hope that many young geologists, at one or the other of the International Geological Congresses, have had the same opportunity.

## Nevis rescue by excursion

An "excursion" party of international geologists stumbled on an injured climber 2,500ft. up Ben Nevis yesterday. And for five hours they struggled through a rainstorm taking turns to carry him down.

The climber, Michael Steane, of Furness-road, Fallowfield, Manchester, had been to the top of the mountain and was on his way down when he slipped on a scree and wrenched his ankle.

As he lay on the mountainside in great pain a party from the International Geologists' Conference in London arrived. Their Scottish hosts were showing them the Ben Nevis rock formations when they saw Steane.

Some of them hurried to the base at Achinlee to phone Fort William for help. But by the time the stretcher party arrived the others had got Steane down to 1,500ft. The geologists were from Switzerland, Canada, the United States and India.

Figure 4 An adventure on Ben Nevis. From: *The Daily Graphic*, 8 September, 1948.

## Acknowledgements

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