

COMMISSION DE LA CARTE GÉOLOGIQUE DU MONDE COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

The Commission for the Geological Map of the World
Genesis and development over one century of existence

By Philippe Bouysse
(Secretary General of the CGMW from 1991 to 2000)

Translation by Ana de los Ríos
Reviewed by Peter Miles (CGMW)

Supplement to BULLETIN N° 57
(2013)

Commemorative centennial issue



1913 - 2013

100 YEARS MAPPING THE WORLD

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FOREWORD

Jean-Etienne Guettard (1715-1786), with his 1746 *Carte minéralogique, Où l'on voit la Nature et la Situation des terrains qui traversent la France et l'Angleterre* (published in 1751), can be considered¹ the true pioneer of geological maps. During the subsequent decades, the geological and mineralogical sciences went through a considerable development. This was associated with the publication of numerous regional maps such as Georg Füchsel's Thuringia (1761) and Georges Cuvier and Alexandre Brongniarts' *Essai sur la géographie minéralogique des environs de Paris* (1811); the latter was considered as the «first modern geological map ever published»². The first map of a whole country – William Smith's «Big Map» at 5 miles to the inch – titled «A Geological Map of England and Wales, with part of Scotland, exhibiting...» (and around sixty more words) was published in 1815. This English map was the spur for the Inspection générale des Mines to assign André Dufrenoy and Léonce Elie de Beaumont the task of compiling the *Carte géologique de la France* in 1822, which was to be published in 1841, at the scale 1:500 000. Once the geological surveys all across the world became significantly established, the collaboration would then produce a Geological Map of the World.

FIRST ATTEMPTS

The rise of geological cartography from the beginning of the 19th century, together with the first attempts of a synthesis on a global scale, were remarkably presented by the lately lamented Michel Durand-Delga³. The first attempt can be attributed to Ami Boué with his *Essai d'une carte géologique du globe terrestre à 1:58 000 000*, presented at Graz, Austria, in 1843 (**Doc. 1**) and printed in France in 1845. A year later, the English edition was published *with Dr. Boué's corrections and additions to Sept. 1846* (**Doc. 2**). Ami Boué (1794-1881) was a true European geologist⁴: born in Hamburg from a Huguenot lineage and educated in Switzerland, he first works in Great Britain, then later lives in France, where he becomes co-founder of the Société Géologique de France in 1830. He travelled across numerous European countries and finally settles down in Austria in 1835 where he obtains the nationality. He spoke several European languages including Turkish. His attempts of synthesising mapping, in which all the emerged areas appear coloured, were quite premature considering the state of the surveys in 1843. The absence of data was compensated by simple reasoning. This is particularly striking in the mapping of Africa, which at the time was partially still *terra incognita* for geology (and even for geography).

The second attempt, much more serious, was made by Jules Marcou (1824-1898) who, almost 20 years later in 1861, published (in Winterthur) a bilingual edition (French-English) of his *Carte géologique de la Terre*, at the scale of 1:23 000 000, in 7 sheets (**Doc.3**). Marcou represented only the sufficiently surveyed regions and thereby left big blanks in his map (specially in Africa/ Arabia; Eastern Asia and Australia). Jules Marcou^{5 6}, was born in the French Jura, started to settle down in the USA in 1848, but often kept on returning to France. He was a self-taught man at the beginning, and a very good friend of Louis Pasteur's. He had a very strong personality and became a recognized geologist but his independent and critical spirit antagonized some of his colleagues, particularly in the US Geological Survey created in 1879. In the course of the Lewis and Clark expedition (1804-1806) he was the first geologist to travel across the Western USA in the 1850's. In 1853, he published *A Geological Map of the United States and the British Provinces of North America*⁷ and in 1858, a 144 page-work (edited in Zürich) dedicated to the *Geology of North America*.

FROM THE USA TO PARIS

Towards the last third of the 19th century, with the expansion of the geological surveys out of the cradle of Western Europe and within the communities of geologists in Europe and North America, there was a momentum to create an international structure that would allow the standardization of the entire geological terminology and to unify the geological representations.

Since 1867, the great Spanish geologist Juan Vilanova (1821-1892)⁸ and most of all, in 1874, the very active Giovanni Capellini (1833-1922) of the University of Bologna⁹ had «shown the urgency for a General Congress of Geologists». In 1874 Capellini had even proposed, to the authorities of the brand-new nation, which shortly before (1861) had become Italy, to organize it «inviting the most eminent geologists from the different nations to a Congress that would be held in Rome». But finally, it was on August 25, 1876 in Buffalo, New York, immediately after the Exhibition of Philadelphia, that a committee of geologists¹⁰ – named later on by the

French «*Comité fondateur de Philadelphie*» and led by James Hall (1811-1898) (paleontologist and first President of the Geological Society of America), integrated four geologists from the USA, two from Canada, (one of them Sterry Stunt, the Secretary General), one from Great Britain, a Swede and a Dutchman – to recommend that the First International Geological Congress¹¹ ought to be held in Paris on the occasion of the coming Exposition Universelle (1878) «*for the purpose of getting together comparative collections, maps and sections, and for the settling of obscure points relating to geological classification and nomenclature*» (*Am. J. Sci.*, 1876, V. XII, p.463). For this purpose, «*the Comité fondateur requests collaboration from the Société géologique de France.*»

Indeed, that first congress took place in Paris from August 29 to September 4, 1878 «gathered at the initiative of the *Comité fondateur de Philadelphie* and organized by the *Comité d'organisation de Paris*»¹². French was chosen as the main language of the Congress.

I. A MATTER OF ARCHIVES: THE COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD IN THE HISTORY OF THE INTERNATIONAL GEOLOGICAL CONGRESSES

The archives available at the CGMW in Paris exist only from 1962, starting with the publication of the mimeographed first annual Bulletin of the Commission. The only means left to try to reconstruct the prehistory of this organization was to sieve all the official documents (records of the board sessions, plenary sessions, commission sessions, appendices of minutes etc.) of the written accounts/Proceedings of the International Geological Congress' sessions (IGC) published periodically, with very few exceptions, every three years until the Congress in Pretoria (1929), then every four years but with two long interruptions (1913-1922 and 1937-1948 owing to the World Wars; **Doc.4**). It is also necessary to mention the work of Michel Durand-Delga which deals with the history of geology in the 19th and 20th centuries and particularly his article entitled *Des premières cartes géologiques du globe par Ami Boué (1843) et Jules Marcou (1861) à l'Atlas géologique du Monde de 1984* to which the present research is indebted. We will go through the information that can be drawn from the IGCs up to 1964, when the session took place in New Delhi, two years after the General Assembly of the CGMW in Paris whose essentials are written out in the chronologically first CGMW Bulletin.

A. FROM THE GEOLOGICAL MAP OF EUROPE TO THE ORIGINS OF THE GEOLOGICAL MAP OF THE WORLD

- The **inaugural IGC in Paris (1878)** that put up with the initial problems was not yet concerned with geological cartography at a small scale (continental or global). Germany had declined the official invitation – Was it because of the Franco-Prussian War in 1870? – Only 3 participants from Germany attended at their own accord. On the other hand, Alsace-Lorraine was represented as a separate entity. At the end of this meeting two international commissions were created :
 - One «*International Commission for the unification of the geological graphic representations*»,
 - One «*International Commission for the unification of the geological terminology*»
 - A 3rd Commission would be in charge of studying the rules to follow in order to establish the terminology for mineralogy and paleontological species.
- In the **2nd IGC of Bologna (1881)**, from September 26 to October 2), attended by J. Marcou, things began to become clear. To start with, we notice that Germany was officially represented¹³ by 6 attendees, among whom were Wilhelm Hauchecorne, first Director of the «Unification of the Royal Geological Survey and the Academy of Mines of Berlin»¹⁴ (created in 1873), and Heinrich Ernst Beyrich, Professor at the University of Berlin.

During this congress a task force that stemmed from the *International Commission for the unification of the geological graphic representations* named «*Commission de la Carte géologique de l'Europe*» is officially constituted. It is integrated by: Capellini, President of the Congress; Beyrich (DE), Blanford («English India»), Daubrée (FR), Delgado (PT), Dewalque (BE), Hall (US), Hughes (GB), Meneghini (IT), de Moeller (RU), Mojsisovics (AT), Renevier (CH), Schmidt (DK), Stefanescu (RO), Sterry-Hunt (CA), Szalo (HU), Torell (SE), Vilanova (ES), Zigno (IT), Zittel (DE), Vice-presidents of the Congress; de Giordano (IT), Secretary General of the Congress; de Chancourtois (FR), de Hantken (HU), Hauchecorne (DE) and Tophy (GB), members of the Board.

In the course of the Plenary Session on September 29 (p. 130 to 140), the guidelines to organize and implement the **realization of the Geological map of Europe** are set out and discussed. There is consensus regarding that this map would be made in Berlin (implying that the position of Germany was pre-eminent in the orchestration of this program), as towards the end of the 19th century the Geological Survey of Prussia was the best developed in the world to do regional geological cartography and produce coloured maps¹⁵. But differences of opinion appear: 1/ concerning the scale to adopt (1:0.5 M with 400 sheets or 1:1,5 M with 50 sheets), finally the smallest scale is chosen by the Commission; 2/ concerning the most adequate structure to manage the execution of the map. It could be an «Official International Bureau» or else an «International Committee of five members, an executive manager and the former Secretary General of the Commission of geological graphic representations» (at that time, the Swiss Renevier). The German W. Hauchecorne takes a strong stand against the first proposition that E. Renevier had hoped for with the following reasoning: «In reference to the confection of the latter it would be impossible for Germany to be part of it if the task is assigned to an International Bureau. Moreover, from many points of view it is better to leave governments out of this affair. Great interests are linked to the geology that in Prussia is directly tied up to big administrations such as Agriculture, Mines, Forests, etc. The compilation of the Geological Map depends on the Direction of Mines. The government will never agree to release a national service and submit it to an International Bureau and would refuse to provide any subsidy.»

It is clear that Germany/Prussia prefers to have free rein to make this map. The Frenchman E. Hebert, President of the 1st IGC, «understands the objections that were set forth by MM. Hauchecorne and [the Russian] de Moeller; besides, it would be necessary, in case of the nomination of an international Bureau, to consider the possibility of one or several refusals by governments [...] It would be convenient to stay away from the possibility of such complications. But, on the other hand, if the realization of the Geological Map of Europe is appointed to Germany, would the members of the International Committee enjoy total independence?»

W. Hauchecorne «assumes the responsibility and believes that Germany will be pleased with the honour bestowed by the Congress. He just wanted to draw attention to the fact that carrying out the map the way M. Renevier's paper advised was unacceptable for him. He could never agree to take part in an international Bureau whose mission would be substituted, to a certain extent, even ever so slightly, by diverse national institutions, whereas he would gladly join an international Committee created by the Congress.»

The "German" proposition is accepted unanimously minus two votes. Concerning the scale of the Map, «the consulted assembly adopts, for trial, the scale proposed by the Commission» [1:1.5 M]. Besides that, «the Assembly requests the Council Bureau to make up a list of seven members to constitute the international Committee» [for the Geological Map of Europe], which is officially presented at the following Plenary Session (September 30, p. 149) as follows:

*Upon presentation of the Bureau, the Assembly named the members of the **International Committee for the Geological Map of Europe**¹⁶ as follows:*

MM. BEYRICH and HAUCHECORNE Executive Directors having altogether one vote.

M. DAUBRÉE representative of France.

M. GIORDANO " of Italy,

M. DE MOELLER " of Russia,

M. DE MOJSISOVICS " of Austria-Hungary,

M. TOPLEY " of Great Britain

In addition, M. RENEVIER is attached to the Committee as former General Secretary of the International Commission for the unification of geological representations.

The Committee, on behalf of the Congress, will take the necessary steps so that the Vice-presidents that represent the diverse European countries will be enabled to address their governments in order to encourage them to participate with the required cooperation.

At the closing of the Congress, President Capellini recalls the extensive discussions dedicated to the unification of terminology and geological representations, «nevertheless, we have almost accomplished our work, voting several important resolutions and deciding the realization of the Map of Europe».

Let us remember that for the Congress of Bologna the IGC's official documentation seal (April 1879) includes the inscription: «GEOLOGORUM CONVENTUS / MENTE ET MALLEO».

- The **3rd IGC** is held in Berlin from September 28 to October 3 **1885**, one year later in relation to the three-year period established because of a severe epidemic of cholera that struck Southern Europe in 1884. Both “Executive Directors” of the Geological Map of Europe are in a position of leadership at this Congress, H.E. Beyrich as its President and W. Hauchecorne as General Secretary.

As it had been agreed in Bologne, the Commission for the Geological Map of Europe meets in Foix in 1822 and in Zürich in 1883. In the report made by Renevier (“representative of Switzerland”) in Berlin, we notice that H.E. Beyrich and W. Hauchecorne [constitute] «*the Directorium for Germany in Berlin*». In Russia, de Moeller is replaced by Karpinsky. The Directorium signed a contract with the editor D. Reimer in Berlin who begins to publish it himself at his own expense «*under the only condition that the international Commission guarantees the placement of the subscription of 900 copies, at 100 francs each copy. [...] The 8 main European states (Great Britain, France, Spain, Italy, Austria-Hungary, Germany, Scandinavia, Russia) commit themselves to buy 100 copies. The 6 small states (Belgium, the Netherlands, Denmark, Switzerland, Portugal, Rumania) share the last 100 copies.*» The Map will be divided in 49 sheets (7 x 7) 48 cm by 53 cm each (**Doc.5**). «*The geological representation will indeed be provided by the National Committees of each country, and then will be reviewed and made uniform by the Directorium, who, in addition, will have to complete it with all the available documents published and unpublished*». The compilation of the topographic base is running well with 32 sheets already accomplished and engraved. The geological work is delayed; the more advanced parts are Germany and Italy. The chromolithography will be made by the editor according to the international range established in Bologna and completed in the course of the session of this Congress. The partial maps of England and France are presented in Berlin. We learn that France has adopted the international range of colours for her 1:500 000 map in 48 sheets. Besides, a “Classification of magmatic rocks for the International Geological Map of Europe” is presented in Berlin, but it fails to be discussed because of lack of time.

- During the **4th IGC in London** (September 1888) presided by J. Prestwich (J. W. Hulke and W. Topley General Secretaries), the “Commission for the Geological Map of Europe” organized 3 working sessions in which no Frenchman participates. W. Hauchecorne submits the draft of the first sheet (C4, Berlin) of the International Geological Map of Europe to the Congress. The sheet C5 (Bern) is only roughly sketched. The Commission decides that these sheets will be published as soon as they are ready. The representatives of Great Britain hand over the complete layout of their countries but without the representation of the *Pleistocene* [“term replacing the Quaternary”].
- During **5th IGC in Washington (1891)** presided by J. Le Conte (replacing J. Newberry, due to illness), the “International Commission for the Geological Map of Europe” could not get together (perhaps because there were not enough participants owing to the price of the trip), but the Congress received a copy of a report by General Secretary E. Renevier regarding the meeting that had just taken place during August 3 in Salzburg, where A. Daubrée, representative of France, is replaced by A. Michel-Levy. There, W. Hauchecorne presents numerous attempts that had been made to represent, in the sheets of England, Scandinavia and Russia «*the sub-surface stratigraphy and the surficial formations at the same time; he presents a Prussian sheet where he was able to carry out this double representation*».

The sheet C4 (Berlin) is still not completed as Scania is missing. Three other sheets C5 (Bern), B3 (Edinburgh) and B 4 (London) «*are almost ready for the engraving and can be published next year*». The Commission decides to meet «*from now on every summer in a somewhat central place*». It would take place in Lausanne in the summer 1892.

- **1892, the first Geological Atlas of the World**

It is worth pointing out that in Germany in 1892, one year after the Congress in Washington, the 3rd edition of the *Berghaus Physikalischer Atlas* (section D) included a completely independent publication from the Geological Service of Prussia, called *Atlas der Geologie* carried out by Hermann

Berghaus (1828-1890), the nephew of the great cartographer Heinrich Berghaus¹⁷ (1797-1824) who had done the first two editions (1837-1848 and 1852) of this essentially geographical Atlas¹⁸. All these atlas were published by the world renowned cartographic publishing house, founded in 1785 by Justus Perthes (1749-1816) in Gotha (Thuringia), a city that is also known for its almanac of royal families. The Atlas of Hermann Berghaus includes a geological section of 15 plates of which 8 deal with cartography : The World – Europe – The Alps – Asia and Europe – Africa – North America – South America – Oceania. Each map is displayed on a double page format 40 cm x 2 (27 cm) (**Doc.6, 7, 8, 9**). This Atlas can be considered as the ancestor of the *Geological Atlas of the World* (**Doc.10**) carried out by the CGMW and co-published with the UNESCO and accomplished in 1981¹⁹.

- In the **6th IGC in Zürich** (August **1894**), H. Beyrich and W. Hauchecorne give account of the in-between meeting of the «Commission for the Geological Map of Europe» that had been held in Lausanne in 1892 and present the report of the Commission. The delays of the contributing countries of the regional maquettes brought about that *«it had not been possible to finish the map until now»* (that is 13 years after its starting point in Bologne). It is then decided to proceed to publish as the sets of sheets are delivered. The 1st set (A1 Isafjörður; A2 Reykjavik; B1 Scoresby Sund; B2 Akureyri; C4 Berlin; D4 Warszawa) would be published shortly afterwards. Then, the following year, a 2nd submission would be turned in (A3 Rockall; A4 Tralee; A5 La Coruña; A6 Lisboa; B3 Edinburgh; B4 London; B5 Paris, B6 Madrid; C5 Bern; C6 Roma). *«A third delivery would be published the following year and the complete fulfillment of the work would be sped up as much as possible»*.
- By the **7th IGC in St Petersburg** (August **1897**)²⁰, the former President of the “Commission for the Geological Map of Europe”, H. Beyrich had died. He was replaced by W. Hauchecorne who, in turn, gave his place as General Secretary to F. Beyschlag, who was also the scientific director of the geological mapping at the Geological Survey of Germany/Prussia. W. Hauchecorne was also ill so it is Beyschlag who turns in the report of the activities of the Commission. After the former Congress, two submissions had been published as mentioned on the lists of the previous congress, except A3, A4, B3, B4, and C5. The third would be published *«the following spring»* and would include besides the sheets mentioned above, D5 (Budapest) and D6 (Athina), altogether they would represent 18 (out of 47) published sheets.
- The 19th century ends, once again, with **Paris** as the place where the **8th IGC** (August **1900**) is held. W. Hauchecorne dies and is replaced as President of the “Commission for the International Geological Map of Europe” by F. Beyschlag (with a right to vote) and M. Schmeisser (Germany) is named member of the “Commission for the Geological Map of Europe” (with advisory status). A new series of sheets will be published at the beginning of the following year: C1 (Dorsale Mohns), C2 (Trondheim), C3 (Oslo), D2 (Haparenda), D3 (Stockholm), and E4 (Kijev). Beyschlag remarks that the printing of the maps is expensive and that to be able to pay the publishing house the completion of the Map of Europe *«he sees as very important that the Members of the Commission convince their Governments to increase the number of subscriptions»*.
- The **9th IGC is held in Vienna** (August **1903**)²¹, under the honorary sponsorship of the Austrian Eduard Suess (1831-1914), author of the very well known “*Das Antlitz der Erde*”/ *The Face of the Earth* (1885-1888-1901-1909). Regarding the Geological Map of Europe, the 4th submission that had been announced in Paris was already printed and published. Themaquettes of the sheets of North Africa, still not sufficiently explored, remained as sketches, that is, with blanks. Attention is then directed towards Russia, the Balkans and Anatolia. F. Beyschlag is particularly proud to point out that *«the central sheets of our map that include Germany, Austria-Hungary, the Alps, etc. are currently almost completely sold out even though the edition counted 2000 copies»*. Therefore, a new edition is already intended without waiting for the still missing sheets that would complete the total of 47.
- During the **10th IGC in Mexico** (**1906**), The Committee organizing the Congress declares, referring to the Commission for the Geological Map of Europe, *«what a pity it is that such an important Commission did not produce a report»*. Let’s remember that during this same Congress, the Geological Map of North America (in 4 sheets) is published (in French) in the Appendix of the Minutes.

This map, at the scale of 1:5 M, was carried out by Henry Gannet (geographer) and Bailey Willis (geologist).

- The **11th IGC in Stockholm** (August 1910) is held with a delay of one year upon the request of Sweden who asked for this time extension to prepare the Congress. This session is important because of the subject that concerns us: the **possibility of preparing a geological map of the world is, for first time, officially evoked**, under broad international cooperation. But let us go back to the Map of Europe. In its resolutions, the Commission considers *«that it will be possible to achieve a first edition in one year time [...] The publication of the map would not be complete by its first edition but the subsequent editions of the whole work or of separate sheets would be eventually done as needed.»*

In London, at an International Conference summoned by the British Foreign Office, an International Map Committee is constituted to carry out a **standard geographic map of the earth** at the scale of 1:1 M. At the same time, the American delegate urged the adoption of a resolution hoping this map would be the first of a whole series of international maps *«relating to meteorology, geology, zoology, botany, and other sciences.»* This cartographic opportunity was immediately seized by the International Director of the Geological Service of the USA, G. Otis Smith, who, in March 1910, sends the organizers of the IGC a proposition *«regarding the creation of a geological map of the world at the scale 1:1 000 000»* to be discussed in the course of the 11th session. This proposition was examined on August 20 by the *«Commission for the International Geological Map of Europe»*, presided by F. Beyschlag. He is understandably critical towards the scale that *«makes the realization of this map impossible at the present time»* and disapproves of the colour system proposed by the American Bailey Willis. In contrast, the one used for the map of Europe is considered much better and *«must serve as the basis of this new project»*. Consequently, *«the commission, [that is, the “International Commission for the Geological Map of Europe”] decides to publish [this] geological map of the world at a convenient scale and, to achieve this, it would have to be completed by representatives of non-European countries. M. Beyschlag is appointed to take care of the preliminary works»*. This resolution is officially approved on August 24 by the Congress Council that decides that in order *«to prepare the publication of the geological map of the world [...] the following will be appointed to the Commission of the Geological Map of Europe»*: MM. Brock (Canada), Smith and Willis (USA), Aguilera (México), Keidel (Argentina) and David (Australia). MM Beyschlag, G. O. Smith, Suess, Teall and Tschernyschew were put in charge of presenting *«a detailed program of this geological map of the globe»* at the following Congress. And so, this decision leads towards the widening of the *«Commission for the Geological Map of Europe»* by the nomination of geologists of other continents.

- The **12th IGC in Toronto** (August 1913)²² takes place one year before the initial hostilities of the “Great War”. It is at this 12th Congress that the modalities of organization of the Geological Map of the World are to be defined. Would it be an extension of the geological map of Europe or would it be an independent entity? At the end of the Congress this would remain unclear at least from what can be read in the official texts.

F. Beyschlag, President of the Commission for the Map of Europe and who was in charge of presenting the memorandum on the geological map of Europe in Stockholm, did not attend the Congress and was replaced by J.P. Krusch (director of one of the sections of Geological Survey of the Kingdom of Prussia). Here are, in chronological order, the outcomes of these meetings.

- On July 14, 1913, the report by the “Commission for the International Geological Map of Europe”, written down in Berlin by F. Beyschlag, P. Termier, T. Tschernyschew and E. Tietze was sent to the organization Committee of the Congress. Shortly after Stockholm, 40 sheets were published, and the sheets from G1 to G5 (from the North of the Urals to Bakou) were completed; whereas from E1 to F1 (edges of the Kara Sea) and the legend would be ready on September 1. The second edition is then on its way. It is, indeed, **in the year 1913 when the first edition of the Geological Map of Europe (at 1:1,5 M)²³ is accomplished.** (Doc. 11 et 12)
- On August 11, (Proceedings of the 14th Council session): the influential E. de Margerie, *«veteran of the international congresses for 35 years»* (as he defined himself) as one of the vice-presidents of this congress proposes that *«the Commission for the Geological Map [sic, without any further explanation] should be expanded by enlisting directors of regional geological surveys or eminent geologists, outside Europe, particularly from Asia and Africa that still do not have representatives in the*

Commission. [...] He proposes to enlist to the Commission as collaborators: J. Deprat, O.A. Derby, L.L. Fermor, L.E. Gentil, H. Hubert, W.F. Hume, K. Inouye, A. Lacroix, E. Maier, P. Marshall, E.T. Mellor, G.A.F. Molengraaff, G. Steinman. M. Steinman proposes to add up the name of M. de Margerie [good example of a return of favours]. M. Evans proposes to add up the name of M. A. E. Kitson, Director or the geological service of Gold Coast [future Ghana]». It seems that de Margerie starts to do things so that this map of the world would not be entirely under the German domain as it had happened with the map of Europe since the Congress of Bologna.

It just so happened that J.P. Krusch does not quite agree with this proposition and «demands the Council to draw its attention towards the old organization of the Commission for the Map [sic], appointed since the first congress [which is inaccurate, for it was appointed at the 2nd IGC in Bologna] and categorically emits the opinion that the Commission [and not the Council!] had to do the enlisting considered as appropriate, as it was done at the Congress of Stockholm.» He was supported by the Russian Tschernyschew for whom «the Council had no right to do any enlisting on behalf of the members of the Commission unless requested by the Commission itself». The discussion is then sent to the session of the Commission to which M. de Margerie is invited.

- On August 13 (at the session of the «Commission for the International Geological Map of Europe»), after reading the report on the Geological Map of Europe (see above), they go over «The Resolutions regarding the International Geological Map of Europe and the New Map of the World»:

«....the following resolutions concerning the re-edition of the International Geological Map of Europe and of the International Geological Map of the World». Leaving out the one which concerns the Map of Europe...

Res. 3 – (p. 142) *The drafts of the map of the world at the scale of 1:5 000 000 made in Berlin are accepted as far as the method of projection, the scale and the topographic drawing are concerned.*

Res. 4 – *Besides this decision, the Committee takes care of the proposition of M. de Margerie regarding the geological maps of the continents [probably, de Margerie has in mind a future geological map of Africa that will indeed be carried out later on under the coordination of French geologists]. The Committee emits the stipulation that all of the geological maps of the continents are to be made at the uniformed scale of 1:5 000 000, each one having a distinct center of projection, taking the geological map of North America as a model. It is decided that Europe and Asia will be considered as a geological and geographical unit.*

Res. 5 – *The Direction of the maps will take care of the execution of the task of the world map [we can imagine that the direction they are talking about is the Direction of the Map of Europe] and is encouraged to contact the most competent authors of the interested countries of the different continents.*

Res. 6 – *The Commission requests the following to become part of the Committee as well:*

<i>Afrique australe, E. T. MELLOR.</i>	<i>Indo-Chine, J. DEPRAT.</i>
<i>Afrique occidentale, H. HUBERT.</i>	<i>Indes néerlandaises, G. A. F</i>
<i>Algérie, E. FICHEUR.</i>	<i>MOLENGRAAFF.</i>
<i>Allemagne, J. P. KRUSCH.</i>	<i>Italie, V. NOVARESE et C. F</i>
<i>Brésil, O. A. DERBY.</i>	<i>PARONA.</i>
<i>Chili, E. MAIER.</i>	<i>Japon, K. INOUE.</i>
<i>Congo, J. CORNET.</i>	<i>Madagascar, A. LACROIX.</i>
<i>Côte d'Or, A. E. KITSON.</i>	<i>Maroc, L. E. GENTIL.</i>
<i>Egypte, W. F. HUME.</i>	<i>Nouvelle-Zélande, P. MARSHALL.</i>
<i>France, E. DE MARGERIE.</i>	<i>Pérou et Bolivie, G. STEINMANN.</i>
<i>Indes anglaises, L. L. FERMOR.</i>	<i>Russie, C. BOGDANOVITCH.</i>

Res. 7 – *The Commission has the right to admit the representatives of geological services that may be established before the opening of the next Congress.*

Signed by : A. Strahan (Dir. of the Geological Survey of Great Britain), G.O. Smith (Dir. of the U.S. Geol. Survey), E. Tietze (Dir. of the Imperial-Royal Austrian-Hungarian Geological Service), Th. Tschernyschew (Imperial Academy of Sciences of Russia), A. Renier (Geological Commission of Belgium), P. Krusch (Imperial German Government), R.W. Brock (Canada, Secretary

General of the Congress).

Resolutions adopted at the Council Session on August 13 and at the Plenary Session on August 14 [the proceedings only mention that «the President reads the approved report of the Geological International Maps»].

In an annex on the following page (143), we find the «*Composition of the Commission for the International Geological Map of Europe and [and not... "and of"; translated from the official French text where contrary to the English usage the "of" is compulsory] the New Map of the World*».

The formulation and the way in which the team of the members for both of the cartographic projects are presented on a chart result, to say the least, quite problematic (or was it not precise on purpose?). On the one hand, both maps are visually different, and yet they are presented as «equivalent». On the other hand, the Map of the World is not supervised by a general direction or coordination unless this is implicitly considered to be the «Directors-Managers» responsibility and that Europe is necessarily included in the map of the World.

COMPOSITION ACTUELLE DE LA COMMISSION DE LA CARTE GÉOLOGIQUE INTERNATIONALE DE L'EUROPE ET LA NOUVELLE CARTE MONDIALE.	
I. Carte Géologique Internationale de l'Europe.	
<i>Allemagne</i> , J. BEYSCHLAG, J. P. KRUSCH (Directeurs-gérants).	<i>Italie</i> , G. CAPELLINI, V. NOVARESE, C. F. PARONA.
<i>France</i> , P. M. TERMIER.	<i>Autriche-Hongrie</i> , L. V. LÓCZY, E. TIETZE.
<i>Grande Bretagne</i> , A. GEIKIE, A. STRAHAN.	<i>Russie</i> , C. BOGDANOVITCH, A. KARPINSKY, J. J. SEDERHOLM (pour Finland).
<i>Membres additionels choisis pour représenter leur pays respectifs.</i>	
<i>Belgique</i> , A. RENIER.	<i>Pays-Bas</i> , (à nommer).
<i>Danemark</i> , V. MADSEN.	<i>Portugal</i> , FERREIRA ROQUETTE.
<i>Espagne</i> , L. DE ADARO.	<i>Suède</i> , J. G. ANDERSSON.
<i>États Balkaniques</i> , L. MRÁZEC.	<i>Suisse</i> , KARL SCHMIDT.
<i>Norvège</i> , H. REUSCH.	
II. Carte Géologique Internationale du Monde.	
<i>Australie</i> , T. W. E. DAVID.	<i>États Unis</i> , G. O. SMITH, B. WILLIS.
<i>Canada</i> , R. W. BROCK.	<i>Mexique</i> , J. G. AGUILERA.
<i>États Sudaméricains</i> , H. KEIDEL.	
<i>Membres additionels choisis pour représenter leurs pays respectifs.</i>	
<i>Afrique australe</i> , E. T. MELLOR.	<i>France</i> , E. DE MARGERIE.
<i>Afrique occidentale</i> , H. HUBERT.	<i>Inde anglaise</i> , L. L. FERMOR.
<i>Algérie</i> , E. FICHEUR.	<i>Indes néerlandaises</i> , G. A. F. MOLENGRAAFF.
<i>Bolivie et Pérou</i> , L. MRÁZEC.	<i>Indo-Chine</i> , J. DEPRAT.
<i>Brésil</i> , O. A. DERBY.	<i>Japon</i> , K. INOUE.
<i>Congo</i> , J. CORNET.	<i>Madagascar</i> , A. LACROIX.
<i>Chili</i> , E. MAIER.	<i>Maroc</i> , L. E. GENTIL.
<i>Côte d'Or</i> , A. E. KITSON.	<i>Nouvelle Zélande et Tasmanie</i> , P. MARSHALL.
<i>Egypte</i> , W. F. HUME.	

We notice that France, due to its colonies (or protectorates) has 6 representatives (de Margerie, Lacroix, Deprat, Ficheur, Hubert et Gentil); also that, in relation to the list of August 11, Krusch, Bogdanovitch and Novarese are replaced in the Europe section, and that the name of Steinmann no longer appears.

In the minutes of the Congress in Toronto (published in 1914), Emmanuel de Margerie²⁴ presents quite a long article (p. 173-187) with numerous foot-notes, titled "*The Geological Map of the World*". He presents it orally in English (except for a brief introduction and the conclusion that were done in French) at a night lecture (August 7) as a "popular lecture" requested by the organizers. The subject of this presentation was very opportune, as the Congress of Toronto will, some days later, witness the unfolding of the discussions over the "new geological map of the world". His lecture was, as usual, brilliant and erudite

indeed and consisted in a very well documented inventory of the geographical, bathymetrical and geological cartography at a small scale since Ami Boué's map. He is skeptical about the immediate compilation of the (global) geological map of the world, particularly at the scale that had been proposed by the Americans at the Congress of Stockholm, and favors «as opposed to the “world system”, which I have called the “continental system”» i.e. the compilation of continental maps at the scale 1:5 M. «And I now come immediately to the plan which is my intention to develop: to prepare geological maps of those continents, each with its own projection centre, drawn on a uniform scale of 1:5,000,000, and following broadly the lines of the Geological Map of North America» (p. 178). In the same spirit, he alludes (p. 184) to that which France has started to do with her African colonies and that will indeed lead, as will be seen later on, to the publication of the first International Geological Map of Africa made under French direction including de Margerie himself (1946-1952). He concludes his presentation with these words in French: «J'ai voulu montrer, dans les pages précédentes, qu'il n'est pas chimérique de prétendre que, d'ici à un petit nombre d'années, grâce à une division du travail judicieusement établie, les professeurs et les hommes d'étude pourraient avoir entre les mains des cartes géologiques des grandes divisions de la Terre, strictement comparables entre elles comme échelles et comme tendances directrices, sinon comme détails d'exécution. [...] Je m'estimerais heureux, en ce qui me concerne, si le Congrès voulait bien prendre en considération le plan que j'ai eu l'honneur de lui soumettre, et prier l'ancienne Commission de la Carte d'Europe, dont les pouvoirs, lors de la dernière session [Stockholm, 1910] ont été étendus au globe tout entier, de choisir ce projet comme base de ses discussions.»

(“I wanted to demonstrate in the previous pages that it is not utopian to pretend, that in a few years time, thanks to a division of work sensibly established, the professors and scholars will be able to actually hold the geological maps of the great divisions of the earth, strictly sharing scales and directive tendencies if not the details of execution. [...] As far as I am concerned, it would make me very happy to see the Congress closely considering the project that I have had the honor to submit, and I request the **old Commission for the Map of Europe – whose faculties** at the last session [Stockholm 1919] **were expanded to the entire globe** – to choose this project as the basis of its discussions”)

B. THE PERIOD BETWEEN WARS

Less than a year after the Congress in Toronto, World War I breaks out profoundly disrupting the whole European scenery, especially with the fall of the central empires. It is only after a 9-year gap that the sessions of the International Geological Congresses take place again.

- **In the 13th IGC in Brussels** (August 1922; scheduled in Toronto for 1916), the international community of geologists meets again after the cataclysm of the war, but there is no German or Austrian delegate at all. Whereas there is a crowded French delegation (E. de Margerie, A. Lacroix, C. Depéret, E. Haug, C.W. Kilian, L. Cayeux, P. Theilhard, P. Termier, etc., and the representatives of Algeria, Tunisia and from Indochina with Ch. Jacob, replacing J. Deprat). It is during this session that the famous *Carte Tectonique de l'Asie* (at 1:60 M) by the Swiss Émile Argand (1879-1940)²⁵ is presented. This map was inspired, in part, by the mobilist theory of Alfred Wegener (1880-1930) who had developed it since 1912 in the first publication of *Die Entstehung der Kontinente* (*The creation of continents*).

Due to the circumstances we observe a complete “blank” in what concerns the geological maps of Europe and the World. Whereas in the session on August 16, under the Presidency of A. Lacroix (p. 91 and 126-127), E. de Margerie presents the project of a **General Geological Map of Africa** at 1:5 M, in 4 or 8 sheets. «It is proceeded to nominate a Commission that will study the practical means to publish a geological map of Africa. The Commission is constituted as follows»:

Il est procédé à la nomination d'une Commission chargée d'étudier les moyens pratiques de publication d'une carte géologique de l'Afrique. Cette Commission est ainsi composée :

Algérie	MM. F. EHRMANN.
Belgique	J. CORNET, M. LOHEST.
Côte d'Or.....	A. E. KITSON.
Egypte.....	O. H. LITTLE.
Espagne	F. NAVARRO, C. RUBIO
France.....	L. GENTIL, A. LACROIX, E. de MARGERIE.
Grande Bretagne .	J. W. EVANS.
Italie	G. AICHINO, A. BIBOLINI, Ch. de STEFANI, G. STEFANINI.
Portugal	E. FLEURY.
Soudan	G. W. GRABHAM

The «Executive Committee in charge of preparing the map to be presented at the next IGC [in Madrid] was appointed». It is constituted by A. Lacroix, E. de Margerie and J.W Evans. It is defined (p. 141-142) that the «Commission for Studies in charge of the Geological Map of Africa» proposes the Executive Committee «to make a provisional minute at the scale of five millionths, with the aid of documents that will be requested from the geological surveys functioning in that continent or else, assisted by competent specialists. **Once centralized in Paris, these documents will be used to establish the minute of the map, which will then be submitted at the next Congress**». This proposition was adopted in the general session on August 19.

The movement is launched; France has started to “take charge of” the geological map of Africa.

- The **14th IGC in Madrid** (May 1926) has again an important German representation, led by an official delegation that includes Johann Paul Krusch, who became the President of the Geological Survey of Prussia (Berlin) and Walter Schriel, “State geologist” from the same Service.

The French presence is also strong: the hard-wearing E. de Margerie²⁶ is part of the official delegation and also, for the first time **Fernand Blondel**,²⁷ recently nominated Chief of the Geological Survey of Indochina (Direction of Mines, Hanoi), who will play an outstanding role in the evolution towards the CGMW in the upcoming decades.

During the second Council session (May 26), the “Geheimrat” (Private counsellor) Krusch shows great displeasure with what was said in 1922 at the session in Brussels, probably regarding Germany and the Great War; «Although the German delegates do not personally share the same opinion as the prevailing one in the present session, regarding the International Geological Congress held in Brussels, they waive the right to question the propositions set forth, in consideration of the organizers of the Geological Congress in Madrid and in behalf of working together to achieve beneficial results.» (p.129).

The sort of entanglement in the relationships between the Commissions for the Maps of Europe and the World at the IGC in Toronto in 1913 is now solved, as in the Council session on May 27 it is stipulated that both commissions will become a single one with J.P. Krusch as Director- Manager (p. 131-132) :

«The Geheimrat Krusch (Germany), when referring to the Commissions, one for the Map of Europe and another for the Map of the World, states that, despite the best good will, we cannot find the means that allow us to work on several great works at the same time, and **he requests to join the two commissions in one, under the same name**. We then proceed to constitute the single commission as follows»:

COMMISSION DE LA CARTE GÉOLOGIQUE INTERNATIONALE DU MONDE	
Allemagne	MM. KRUSCH, Directeur-Gérant.
Australie.....	J. W. GREGORY.
Canada.....	E. R. FARIBAULT.
Etats de l'Amérique du Sud...	G. STEINMANN.
Etats de l'Amérique du Nord..	G. O. SMITH ET J. F. KEMP.
Mexique	R. AGUILAR-SANTILLÁN.
MEMBRES ADDITIONNELS POUR REPRÉSENTER LEURS PAYS RESPECTIFS	
Afrique Australe.....	MM. A. L. HALL.
Afrique Occidentale.....	M. H. HUBERT.
Algérie.....	DUSSET.
Argentine.....	J. M. SOBRAL.
Autriche.....	C. DIENER.
Belgique.....	A. RENIER.
Chili.....	BRÜGGEN.
Chine.....	I. C. SUN.
Congo.....	P. F. J. FOURMARIER.
Côte de l'Or.....	SIR A. E. KITSON.
Danemark.....	V. MADSEN.
Égypte.....	W. F. HUME.
Espagne.....	V. KINDELÁN ET A. MARIN.
France.....	E. MARGERIE ET P. M. TERMIER.
Grande-Bretagne.....	SIR J. S. FLETT.
Hongrie.....	BARON F. NOPCSA.
Indes Anglaises.....	L. L. FERMOR.
Indes Hollandaises.....	G. A. F. MOLENGRAAFF.
Indo-Chine.....	F. BLONDEL.
Italie.....	NOVARESE.
Japon.....	K. INOUE.
Madagascar.....	A. LACROIX.
Maroc.....	P. DESPUJOLS ET A. MARIN.
Norvège.....	O. HOLTEDAHL.
Nouvelle Zélande et Tasmanie.	P. MARSHALL.
Pays-Bas.....	P. TESCH.
Pologne.....	J. MOROZEWICZ.
Portugal.....	F. D'OLIVEIRA MOUTA.

<i>Rhodésie</i>	H. B. MAUFE.
<i>Roumanie</i>	L. MRAZEC.
<i>Russie</i>	D. MOUCHKÉTOFF.
<i>Soudan</i>	G. W. GRABHAM.
<i>Sibérie</i>	W. OBROUTCHEFF.
<i>Suède</i>	A. GAVELIN.
<i>Suisse</i>	M. LUGEON.
<i>Tchécoslovaquie</i>	C. PURKYNE.

At this session, Germany reinforces its historical position, however, seven French representatives are members of the Commission, and two of them are the «politicians», i.e., E. de Margerie and F. Blondel.

- At the session of May 29, E. de Margerie, Secretary to the Commission, presents the «*Report in behalf of the International Geological Map of Africa*» (p. 135 and 181-182). «*The Commission appointed in 1922 [...] struggled to gather the necessary materials for this task and, when they were non-existent, to facilitate the updating.*» A certain number of documents regarding mainly the South African Union were received («*in comparison, the most beautiful document in the whole African domain, available at the Service*»), but also of Egypt, the Belgian Congo, the French North Africa, the North of the Sahara (from Conrad Kilian, future promoter of the oil exploration in the Sahara), Senegal and Guinea, a great part of the African territories dependent on the Colonial Office in London. On the other hand, A. Lacroix obtained a subsidy (5000 francs) from the Académie des Sciences (Paris) in order to provide for the initial expenses of the Secretariat and the drafts. Finally, the Belgian King authorized the Military Cartographic Institute «*to take full charge of the drafting, engraving and publishing of the International Geological Map of Africa, under the responsibility of the Commission.*»
- Finally, Walter Schriel makes a presentation in German «*On a new Geological Map of Europe at the scale of 1:10.000.000 and a Geological Map of the Earth at the scale of 1:15.000.000 with a map of ore deposits foreseen at the IGC in Madrid 1926.*» This text appears in the Tome IV (p. 1957-1960) of the Minutes of that Congress. We hereby summarize the content.

W. Schriel recalls the expectations at the Congress in Stockholm (1910) where F. Beyschlag, after the achievement of the Geological Map of Europe, was to take full charge of the project of the *Geological Map of the World* at the scale 1:5 M, not in Mercator projection but in stereographic projection, distributed in 2 hemispheres, in 80 sheets total. The Great War put off Beyschlag's pursuit of his works. At the end of the war it became clear that it was impossible to continue the project according to the framework defined before, not only from a realistic financial point of view, but also due to «*the psychological disposition of the peoples with a post-war psychosis background*». The official attempts could not lead elsewhere than to a halt. As the President of the Geological Survey of Prussia suggested, «*non-official, private work*» («*als inoffizielle, private Arbeit*») is pursued in order to make, in a certain way, a sort of sketch at the scale 1:15 M and always in stereographic projection of the official map (1:5 M). So, W. Schriel presents a first draft, a reduced version of this map, requesting from the assembly constructive critiques, moreover, a partial collaboration on certain sectors. The map is to be printed, via a subscription to the editor Gebrüder Bornträger in Berlin, at an average of 3 deliveries of 4 sheets each. The first delivery should take place at the end of 1926 and the other two before the end of 1927 [actually, in 1932]. Schriel insists, once again, **that the project is not official but private**²⁸.

The existence of a «*small Geological Map of Europe*» at 1:10 M²⁹ initiated by F. Beyschlag, recently published by the Geological Service of Prussia, is mentioned in this presentation. In Schriel's opinion, this map is not only a simple reduction of the first edition of the Map at 1:1,5 M; but it is indeed an innovative representation of main structural traits of Europe that benefits from the experience acquired by the authors that had produced the *Map of the Earth* at 1:15 M.

- The **15th IGC in Pretoria** (July-August 1929) is the first Congress held in Africa.³⁰ Three important members of the Commissions for the Maps of Europe and the World are absent due to illness: F. Beyschlag, E. de Margerie and P. Termier.

On August 3, a great meeting concerning the geological maps of Europe and the World was held with P. Krusch as President and with the relevant attendance of W. Schriel and F. Blondel – who had recently left the direction of the Geological Survey of Indochina³¹. There had been a small preparatory meeting organized in Berlin in February of the same year to deal with problems of

representation (formations, symbols and colors to be used in these two maps). The launching of the 2nd edition of the *International Map of Europe at 1:500.000* under the coordination and printing of the Geological Service of Prussia is confirmed and the maquettes of two sheets are shown. It is foreseen that, every year, two more sheets are to be done.

The composition of the members of this Commission is updated. A reinforcement of the German leadership with the trio Krusch, Fliegel and Schriel is noticed.

CARTE DE L'EUROPE:—	
<i>Directeur Gérant:</i> DR. P. KRUSCH (Berlin).	
<i>Vice Directeur Gérant:</i> PROF. DR. FLIEGEL (Berlin).	
<i>General Secretary:</i> DR. W. SCHRIEL (Berlin).	
MEMBERS:	
France	PROF. P. M. TERMIER
Great Britain	SIR JOHN FLETT.
U.S.S.R.	DR. D. MUSHKETOV.
Finland	DR. J. J. SEDERHOLM.
Belgium	DR. A. RENIER.
Denmark	DR. V. MADSEN.
Spain	DR. J. GARCIA SENERIZ.
Roumania.	PROF. L. MRAZEC.
Norway	PROF. O. HOLTEDAH.
Portugal	PROF. OLIVEIRA MACHADO E COSTA.
Sweden	DR. A. GAVELIN.
Switzerland	PROF. P. ARBENZ; PROF. A. BUXTORF.
Italy	PROF. M. GORTANI.
Holland	DR. P. TESCH AND PROF. G. A. MOLENGRAAFF.
Czechoslovakia	DR. R. J. C. PURKYNE.
Poland	PROF. J. MOROZEWICZ.
Austria	DR. W. HAMMER.
Hungary	PROF. C. DE PAPP.
Irish Free State	T. HALLISSY

Regarding the *International Map of the World at 1:5,000,000*, J.P. Krusch reminds that the publication of this map had been decided at the Congress in Stockholm in 1910. An updating of the composition of this Commission is voted and the same German trio keeps the leadership again:

CARTE DE LA TERRE:—	
<i>Directeur Gérant:</i> DR. P. KRUSCH.	
<i>Vice Directeur Gérant:</i> PROF. DR. O. FLIEGEL.	
<i>General Secretary:</i> DR. W. SCHRIEL.	
MEMBERS:	
Canada	DR. W. H. COLLINS.
United States of America	DR. G. O. OTIS SMITH.
Mexico	DR. AQUILAR SANTILLON.
South America	DR. G. STEINMANN.
Union of South Africa.	DR. A. W. ROGERS.
Algiers	DR. T. SAVORNIN
Congo	PROF. P. F. J. FOURMARIER.
Egypt	DR. O. H. LITTLE.
India	DR. L. L. FERMOR.
Indo-China	DR. F. BLONDEL.
Madagascar	PROF. A. LACROIX.
New Zealand	PROF. J. HENDERSON.
Australia	PROF. H. C. RICHARDS.
Rhodesia	H. B. MAUFE.
West Africa	DR. H. HUBERT.
Argentina	DR. J. M. SOBRAL.
China	W. H. WONG.
Gold Coast.	SIR A. E. KITSON.
France	PROF. E. DE MARGERIE.
Dutch East Indies	E. C. DE JONGH.
Japan	PROF. KANEHARA.
French Morocco	DR. L. L. C. NELTNER.
Sudan	DR. G. W. GRABHAM.

U.S.S.R.	DR. D. MUSHKETOV.
Tunis	DR. M. SOLIGNAC.
Brazil	E. DE OLIVEIRA.
Spanish Morocco	PROF. MARIN.
Nyasaland	DR. F. DIXEY.
Uganda	E. J. WAYLAND.
Tanganyika	DR. E. O. TEALE.

Seven French representatives are on the list, including de Margerie and Blondel. The Geological Survey of Prussia is in charge of the ultimate preparation and printing of the map and will also cover the expenses. The preparation of several sheets of North America is planned for the upcoming Congress (Washington 1933). The data regarding the sheets of South Africa were submitted at the Pretoria Congress. It can be observed that this Commission for the Geological Map of the World roughly sets off the activities of the program by preparing some sheets at 1:5M from different parts of North America and Africa, without considering the map of Europe whose second edition was on the making.

The printing of Beyschlag and Schriel's «non-official» **Geological Map of the Earth at 1:15 M**, started in 1929, as we can recall, is presented «*in an almost complete condition*» in Pretoria (**Doc.13, 14**). J.P. Krusch announces, in the same session August 3 (p. 213), that this map shall be used as background to be placed on a geographic globe (diameter 80 cm, circumference 251 cm). The realization of this geological globe would be made by the firm Dietrich Reimer of Berlin for 800 DM if the order were of 300 copies. Was it done? We do not know.

For the Geological Map of Africa launched in Brussels in 1922, the session in Pretoria is quite relevant (p. 185). «*The presence at this session of representatives of practically every country maintaining some form of geological survey in Africa led to a strong desire to make use of the unique opportunity afforded by the present Congress of establishing closer co-operation among African Surveys*». Hence, a «**Sub-commission for the African [geological] Surveys**», future **ASGA**, is created. But from the very beginning there are problems between this sub-commission and the «*International Commission for the Map of Africa*» whose President de Margerie is absent from Pretoria. «*... attention was called to the danger of a possible overlapping of effort in view of the fact that a map of Africa was already covered by the International Commission on the map of the World, while a second map was in preparation by the Commission on the map of Africa, recommended at the Brussels Congress in 1922. It was however made clear to the Council that there was no intention of producing a third map of Africa.*» Never better expressed!

On August 7, at the last session of the Sub-Commission, whose president is G.A. Molengraaff from the Netherlands (and J. Lombard from France as Secretary), it is pointed out that «*Dr. J. W. Evans, British delegate to the International Commission for the Map of Africa was agreed as a member of the Sub-Commission. The President suggested that the Sub-Commission should notify its constitution to all African Governments, and Mons. de Margerie, President of the International Commission of the Map of Africa, should be informed of the aims of the Sub-Commission, those aims consisting chiefly in collecting accurate material for the Map*» (p. 191). This proposition is adopted.

The structure and composition of the Sub-commission [from the IGC] is defined. Jean Lombard from France is the Secretary.

INTERNATIONAL MAP OF AFRICA:—	
(See C.R. XIII Session, Belgium, 1922, Vol. I, p. 91.)	
MEMBERS:	
Algeria	F. EHLMANN.
Belgium	PROF. J. CORNET.
Gold Coast	PROF. M. LOHEST.
Egypt	SIR A. E. KITSON.
Spain	DR. O. H. LITTLE
	F. NAVARRO.
	C. RUBIO.
France	PROF. L. GENTIL.
	PROF. A. LACROIX.
	PROF. E. DE MARGERIE.
Great Britain	DR. J. W. EVANS.
Italy.	G. AICHINO.
	PROF. BIBOLINI.
	PROF. G. STEFANINI.
Portugal	PROF. E. FLEURY.

Sudan	DR. G. W. GRABHAM.
SUB-COMMISSION OF AFRICAN SURVEYS:—	
<i>Hon. President:</i>	DR. A. W. ROGERS (Pretoria).
<i>President:</i>	PROF. G. A. F. MOLENGRAAFF (Delft).
<i>Secretary:</i>	L. LOMBARD (Paris).
<i>Members:</i>	
(a)	Chiefs of Geological Surveys in Africa, or their representatives.
(b)	Chiefs of existing unofficial Surveys, or their representatives.
(c)	Dr. J. W. Evans, and others, whom the Sub-Commission may co-opt.

With de Margerie being absent from Pretoria, the “*Commission for the International Map of Africa*” does not submit any report. One of its members, J.W. Evans, presents a «*colored scheme*». The composition of this commission is, in the minutes of Pretoria, exactly the same as the one published in Brussels. We notice that de Margerie (France), Little, (Egypt), Lacroix (Madagascar) and Kitson (Gold Coast) appear in the two «contesting» commissions, the one for the World and the one for Africa.

- The 16th IGC is held in **Washington** in **1933** (for the second time, 42 years after the 5th session). E. de Margerie (“Académie des Sciences”) is registered but absent. F. Blondel is registered and attends as delegate of «*The Government of the French West Africa, the Government of Tunisia, the Tunisia Geological and Mines Survey, the Bureau of Geological Mining and Colonial Studies*». On January 30, 1933, Hitler comes into power and Germany withdraws from the Societes de Nations (SDN). Otto Schindewolf (without any particular title) attends this Congress as representative of the Geological Survey of Prussia, but none of its former important members are present . Nevertheless, J.P. Krusch sends a report and «*as the Commissions on Geologic Map of the World and the Geological Map of Europe had the same president, [...] he submitted a combined report of them, the reports of their Washington meetings and the report of their president are presented together here.*» The report by the *Commission for the Geological Map of the World* is delivered July 25 by O. Schindewolf, in front of 14 representatives from which 5 are French including F. Blondel. Four sheets concerning the South of Africa at 1:5 M (scale validated in Pretoria) are presented.³² (**Doc.15**) A question is put forth: why didn’t you start the Map of the World in America? Schindewolf’s answer is that, given the fact that the material from Africa is available, it would be convenient to concentrate efforts on that task first and take care of the map of America later on. The minutes of the Congress in Washington published 3 years afterwards (1936) update the composition of the Commission for the Map of the World. There is a record regarding a letter by Krusch (March 1935) where he informs the IGC of his withdrawal as President of the Geological Survey of Prussia (he died in 1939) and that he has requested his colleague von Seidlitz to replace him as President of both Commissions.

As far as the *Commission for the Map of Europe* is concerned, O. Schindewolf presents the first delivery of the second edition that includes the sheets C4 (Berlin), C5 (Bern), D4 (Warszawa), D5 (Budapest). The following is the updated composition of the two Commissions.

Geologic Map of Europe:	
President: Wilfried von Seidlitz ²	Germany.
Vice President: Gotthard Fliegel	Germany.
Secretary: W. Schriel	Germany.
Members: Austria	Wilhelm Hammer.
Belgium	Armand Renier.
Czechoslovakia	Radim Kettner.
Denmark	Victor C. Madsen.
Egypt	O. H. Little.
Finland	J. J. Sederholm.
France	Louis de Launay.
Greece	Konstantin Ktenas.
Hungary	Karl von Papp.
Irish Free State	T. Hallissy.
Italy	Michele Gortani.
Norway	Olaf Holtedahl.
Poland	Jozef Morozewicz.
Portugal	Oliveira Machado e Costa.
Rumania	Ludvig Mrazec.
Spain	José García Sñeriz.
Sweden	Axel Gavelin.
Switzerland	August Buxtorf.
Union of Soviet Socialist Republics	N. I. Svitalsky.

It can be observed that France is represented in the Commission for the Geological Map of the World by seven persons, Blondel and de Margerie among them.

Geologic Map of the World:	
President: Wilfried von Seidlitz ³	Germany.
Vice-president: Gotthard Fliegel.....	Germany.
General secretary: W. Schriel.....	Germany.
Members: Algeria.....	Gaston Bétier.
Argentina.....	C. A. Marelli.
Australia.....	H. C. Richards.
Brazil.....	E. de Oliveira.
Canada.....	W. H. Collins.
China.....	W. H. Wong.
Congo.....	P. F. J. Fourmarier.
Dutch East Indies.....	A. C. de Jongh.
Ecuador.....	Joseph Sinclair.
Egypt.....	O. H. Little.
France.....	Emmanuel de Margerie.
French Morocco.....	L. L. C. Neltner.
Gold Coast.....	N. R. Junner.
India.....	L. L. Fermor.
Indochina.....	F. A. J. Blondel.
Italy.....	Giuseppe Stefanini.
Japan.....	Yoshinosuke Chitani.
Madagascar.....	Alfred Lacroix.
Mexico.....	Rafael Aguilar-Santillán.
New Zealand.....	John Henderson.
Portuguese colonies in Africa.....	F. Mouta.
Rhodesia.....	H. B. Maufe.
South America.....	J. T. Singewald, Jr.
Spanish Morocco.....	Agustín Marín.
Sudan.....	G. W. Grabham.
Tanganyika.....	E. O. Teale.
Tunis.....	Marcel Solignac.
Uganda.....	E. J. Wayland.
Union of South Africa.....	A. W. Rogers.
Union of Soviet Socialist Republics.....	I. M. Gubkin.
United States.....	W. C. Mendenhall.
West Africa.....	Henry Hubert.

Only 7 persons : Blondel ("French Colonies"), Du Toit (South Africa), Fallot (France), Hall (South Africa), Mouta (Angola) and Stefanini (Italy) met at the session of the Commission for the Map of Africa (July 27) under the Presidency of Renier (Belgium). The Congress is informed of the report sent by E. de Margerie where he explains the progress of the works (without any more elaboration) and approves the appointment of new members. It is stated that «E. de Margerie will be the General Secretary» assisted by «B. Choubert engineer and geologist, as draftsman .[...] The Bureau of the Commission for the Map of Africa and Mr de Margerie decide to *entrust*, under their high scientific direction, **the Bureau of Geological and Colonial Mining Studies, directed by Mr. F. Blondel, with the execution of the map.** The work progresses rapidly. On the other hand, the French government agrees to allot this enterprise a subsidy of 100.000 francs.» The composition of the Commission for the International Geological Map of Africa includes 15 members, 5 of them French (1for Algeria, 3 for France including de Margerie, and 1 for the «French colonies» Blondel).

In 1933, Germany had lost its African colonies (Togo, Cameroon, South West Africa, Tanganyika) 15 years before, and, as previously mentioned, this is the year when Hitler comes into power. It is clear then, that there is a great problem with the Geological Map of Africa, as there are two different commissions in Washington, stemmed from the IGC, and which present two different reports of the same continent.

The *Sub-Commission for African Geological Surveys*, presided by the South African A.L. Hall, held a meeting on July 25 gathering 9 persons, among others, G. Bétier (Algeria), H. Hubert (AOF) and more importantly F. Blondel who delivered the report and was there in representation of J. Lombard, the Secretary to this Sub-commission. It is also specified that the Association of the African Geological Surveys is indeed «a Sub-commission of the Geological Congress created in Pretoria». The post of President was vacant since 1931, owing to Molengraaff 's resignation due to an overload of activities. A meeting in Kigma (Tanganyika) in 1931 had gathered the suitable material that could lead to a geological and mining map synthesizing the sub-equatorial zone. Another meeting regarding the Lower Congo took place in Paris in 1933. It was proposed to subdivide the Sub-commission in four sub-sections: south and south equatorial, west, east, and north. If the work progresses as expected, it is foreseen that the representatives of these four sub-sections may organize a general meeting under the presidency of the Secretary General (E. de Margerie) of the *Commission for the Geological Map of Africa* at the end of 1935.

International Geologic Map of Africa:	
Members: Algeria.....	Gaston Bétier.
Belgium.....	Armand Renier.
Belgium.....	P. F. J. Fourmarier.
Gold Coast.....	N. R. Junner.
Egypt.....	E. O. Little.
France.....	Emmanuel de Margerie.
France.....	Alfred Lacroix.
France.....	Edouard Roch.
French colonies.....	F. Blondel
Italy.....	Giuseppe Stefanini.
Portugal.....	Fernando Mouta.
Spain.....	Agustín Marín.
Spain.....	A. del Valle.
Sudan.....	G. W. Grabham.
Union of South Africa.....	A. L. Hall.
Subcommission of African Surveys:	
Honorary President: A. W. Rogers.....	Union of South Africa.
President: [?]	
Secretary: L. Lombard.....	France.
Members: (a) Chiefs of geological surveys in Africa, or their representatives.	
(b) Chiefs of existing unofficial surveys, or their representatives.	
(c) Others whom the subcommission may co-opt.	

— The 17th IGC is held in Moscow (July 1937), which had become the capital of the USSR after the preceding Congress of St. Petersburg (1897). One can hardly forget that 1937 is the climax of the “Great Terror” of the Stalinist purges that had prevented several Soviet geologists from attending the Congress. Obviously no German delegation attended the Congress, except for a couple of “individuals”, one of them from the Hamburg “oil industry”. F. Blondel was there occupying several representative positions for the: «*Geological Society of France, Bureau of Geological and Colonial Mining Studies, Commission for the Geological Map of the World, Commission for the International Geological Map of Africa, Sub-commission of African Geological Surveys*». E. de Margerie was not there. Concerning the two commissions we are interested in (Europe and World), the «*Report of the XVII Session*” very well illustrates the confusion and/or tensions prevailing at the time. On the one hand, the composition of the Commissions for Europe (p.106) and the World (p. 107) shows that the German “executive committee” is still present, except that von Seidlitz was replaced by Versé as President of the two Commissions, which now, as a novelty, count with a vice-president each. In this case, both posts were covered by the same person, Fliegel.

Geological Map of Europe	
President: M. Versé — Germany.	
Vice-President: G. Fliegel — Germany	
Secretary: W. Schriël — Germany	
Members: Austria — W. Hammer.	
Belgium — A. Renier.	
Czechoslovakia — R. Kettner.	
Denmark — V. C. Madsen.	
Egypt — O. H. Little.	
France — L. de Launay.	
Greece — K. Ktenas.	
Hungary — K. von Papp.	
Irish Free State — T. Hallissy.	
Italy — M. Gortani.	
Norway — O. Holtedahl.	
Poland — J. Morozewicz.	
Portugal — O. Machado e Costa.	
Rumania — L. Mrazec.	
Spain — E. Dupuy de Lôme.	
Sweden — A. Gavelin.	
Switzerland — A. Buxtorf.	
U. S. S. R. — A. D. Arkhanguelsky	
U. S. S. R. — <u>I. M. Goubkin.</u>	
Geological Map of the World	
President: M. Versé — Germany.	
Vice-President: G. Fliegel — Germany.	
Secretary: W. Schriël — Germany.	
Members: Algeria — G. Bétier.	
Argentina — C. A. Marelli.	
Australia — H. C. Richards.	
Brazil — E. de Oliveira.	
Canada — W. H. Collins.	
China — W. H. Wong.	
Congo — P. Fourmarier.	
Dutch East Indies — A. C. de Jongh.	
Ecuador — J. Sinclair.	
Egypt — O. H. Little.	
France — E. de Margerie.	
French Morocco — L. Neltner.	
Gold Coast — N. R. Junner.	
India — L. L. Fermor.	
Indochina — F. Blondel.	
Italy — <u>G. Stefanini.</u>	
Japan — Yoshinosuke Chitani.	
Madagascar — A. Lacroix.	
Mexico — R. Aguilar y Santillan.	
New Zealand — J. Henderson.	
Portuguese Colonies in Africa — F. Mouta.	
Rhodesia — H. B. Maufe.	
South America — J. T. Singewald.	
Spanish Morocco — E. Dupuy de Lôme.	
Sudan — G. W. Grabham.	
Tanganyika — E. O. Teale.	
Tunis — M. Salignac.	
Uganda — E. J. Wayland.	
Union of South Africa — A. W. Rogers	
U. S. S. R. — A. D. Arkhanguelsky	
U. S. S. R. — <u>I. M. Goubkin.</u>	
U. S. A. — W. C. Mendenhall.	
West Africa — H. Hubert.	

On the other hand, in the session July 26 (p. 120), F. Blondel, appearing as "*Vice President of the Map of the World*", submits on behalf of President Versé, a very brief report appearing in the proceedings as follows:

<i>XVII International Geological Congress</i>	
COMMISSIONS DE LA CARTE GEOLOGIQUE DE L'EUROPE ET DE LA CARTE GEOLOGIQUE DU MONDE	
<i>Séance du 26 juillet, 1937</i>	
Les deux Commissions de la Carte géologique de l'Europe et de la Carte géologique du Monde ont tenu une réunion commune, à Moscou le 26 juillet, 1937, à 16 hrs. 30, sous la présidence de F. Blondel, vice-président de la Carte du Monde.	
Etaient présents:	
MM. H. G. Backlund — Suède, G. Bétier — Algérie, F. Blondel — France et possessions françaises, W. H. Bucher — U. S. A., S. Czarnocki — Pologne, P. Fourmarier — Belgique, A. Guillaumont — Afrique occidentale française, Togo, Cameroun, Afrique équatoriale française, A. O. Hayes — U. S. A. — Canada, A. Heim — Suisse, F. E. Hopkins — Canada, O. B. Hopkins — Canada, N. R. Junner — Gold Coast, Q. Singewald — Amérique du Sud, J. M. Solignac — Tunisie, E. Teale — Tanganyika, F. Ulrich — Tchécoslovaquie, W. H. Wong — Chine.	
M. Blondel expose qu'il a été chargé par le président des deux Commissions, le Dr. Versé, de rendre compte de l'état des travaux qui se poursuivent normalement et conformément au programme prévu dont le détail a été donné dans le compte rendu des séances tenues à Berlin en septembre, 1936.	
Les délégués présents sont unanimes pour constater qu'un grand nombre de membres des Commissions, tels qu'ils ont été désignés par le précédent Congrès, sont absents de Moscou. En conséquence, il ne paraît pas possible d'engager utilement la discussion sur les travaux en cours; cette discussion est renvoyée à la prochaine réunion des Commissions.	
La séance est levée à 17 heures.	

On this report made by F. Blondel, we can see that a meeting concerning the double commission, but from which no report is available, was held in Berlin in 1936. The following meeting of the Commission will take place in London as voted at the Moscow session but...11 years afterwards! Meanwhile, F. Blondel reinforces his position at the Geological Map of the World.

Concerning the *Geological Map of Africa* according with the decisions taken at the IGC in Washington, things follow their course. The structure and composition of the Commission (p. 108) includes A. Lacroix as President, E. de Margerie as Secretary General and F. Blondel as Attached Secretary General:

<i>XVII International Geological Congress</i>	
International Geological Map of Africa	
President: A. Lacroix — France.	
Vice-Presidents: E. B. Bailey — England and P. Fourmarier — Belgium.	
General Secretary: E. de Margerie — France.	
Assistant General Secretary: F. Blondel — France.	
Members:	
British properties:	
Anglo-Egyptian Sudan — G. W. Grabham.	
Gold Coast — N. R. Junner.	
Nigeria — R. Ch. Wilson.	
Nyasaland — F. Dixey.	
South Rhodesia — E. Lightfoot.	
Tanganyika — F. B. Wade.	
Uganda — E. J. Wayland.	
Union of South Africa — S. H. Haughton.	
French properties:	
Algeria — G. Bétier.	
French West Africa (Togo, Cameroon, French Equatorial Africa) — A. Guillaumont.	
Madagascar — H. Besairie.	
Morocco — H. Termier.	
Tunis — M. Solignac.	
Belgian properties — A. Renier, P. Fourmarier.	
Italian properties — M. Gortani, <u>G. Stefanini.</u>	
Spanish properties — J. L. Pastora.	
Portuguese properties — F. Mouta.	
Egypt — O. H. Little.	

Subcommission of African Surveys	
Honorary President:	A. W. Rogers — Union of South Africa:
Members:	(a) Chiefs of Geological Surveys in Africa, or their representatives.
	(b) Chiefs of existing unofficial surveys, or their representatives.
	(c) Others whom the Subcommission may co-opt.
Secretary:	F. Blondel — France.

The report of this Commission written by E. de Margerie in Paris July 13 is read in the July 23 session by F. Blondel who is in charge of the execution of the Map³³, as part of his functions as Chief of the *Bureau of Geological and mining Colonial Studies*. A definite project of legend is precisely elaborated, enabling the graphic work on the sheet 1 (NW corner) to be started. This sheet had been «submitted in the printed minute of the Geological Map of the World at the Berlin September 2, 1936 session», and was definitely printed and put on sale in Paris April 1937. The written minutes of sheets 2 and 3 were also presented at the session. At this point, it is possible to look forward to have a complete edition of the Map at the 18th IGC! It is important to notice the subject that particularly concerns us in the following paragraph:

«As one of the highest points addressed at the session in Berlin, the Commission for the Map of the World and the Commission for the Map of Africa reached a complete agreement stipulating that the Commission for the Map of the World would wait until the general map of Africa would be finished to publish its sheets of Africa. This agreement is celebrated and the courtesy of the members of the Geological Survey of Berlin is acknowledged.»

It is now clear that there is a contest between the two Geological Maps of Africa. Only the Blondel one will be eventually published in its entirety in 1952. The other was doomed to failure due to the World War II disaster.

The Sub-Commission for African Geological Surveys met on July 21. Its Secretariat, of which J. Lombard had been hereto its Secretary, was transferred on the beginning of 1937 to the “*Bureau of Geological and Mining Colonial Studies*” of F. Blondel who publishes monthly updates on news about the works of the Sub-commission at the “*Chronicle of Colonial Mines*”. It is reminded that the main purpose of the Sub-commission is to facilitate the coordination among the diverse African Geological Surveys, especially because the relationships «were so difficult to be established within the African Continent».

C. THE POST-WORLD-WAR-II PERIOD AND THE “SECOND LIFE” OF THE COMMISSION OF THE GEOLOGICAL MAP OF THE WORLD

The interim period between the two World Wars was scarcely 20 years. The meeting of the ICG that would follow the one in Moscow was scheduled in London 1940 but finally took place in 1948

- The **18th IGC is held in London** (August-September 1948). The French representation is important (106 persons) including a strong delegation of Algeria (17 persons) as Algiers will be officially chosen to host the following Congress. Indeed, Fernand Blondel is present and Jean Marçais (who will become the president of the CGMW in the future) represents the Geological Service of Rabat. E. de Margerie is registered but absent. Germany participated with 10 attendees including Alfred Bentz from the *Reichsamt für Bodenforschung* (temporarily established in Celle), Wilhelm Kegel (registered only with his address in Düsseldorf) and O. H. Schindewolf, whom we already mentioned as the single representative of the Geological Service of Prussia at the IGC in Washington. At that time Germany was in full reorganization, a great part of Prussia is under the USSR control and the Federal Republic of Germany will be officially established on May 1949. The West-Germany Geological Service will be definitely set up in Hannover in 1950, under different designations³⁴. This Congress is indeed a pivotal moment for the future of the two Commissions that concern us. The Commission for the Map of the World under the impetus of F. Blondel will experience a boom³⁵.

On August 26 there is a preliminary general meeting, gathering all of the Commissions attending the IGC to sort out the calendar of work meetings and we notice (p. 184) certain interesting details:

Regarding the “Geological Map of Europe”, its President (not mentioned by name but we know it is W.Kegel) says «how difficult it is to see how progress could be made in current times regarding the preparation of the geological map of Europe.» And, in his opinion, «the best way to do so is to postpone the reactivation of the Commission until the following session and meanwhile to request the Bureau to promote and support

the work of preparation and publication of the maps before the session, if conditions permit.» The Belgian A. Renier says that «it would be a great pity to let this Commission die. It is the oldest in the Congress as it began its existence before 1900 [...].» He thinks that «the German geologists attending the Congress may, perhaps be able to continue the work.»

Regarding the «Geological Map of the World», «Mr. F. Blondel says that just as in the case of the Geological Map of Europe, the work on the Geological Map of the World was made in Berlin but it was altogether impossible to present a report at the 17th Congress in Moscow. **He strongly wishes there were a meeting with the remaining members of this Commission in order to reorganize it** as many of them had died. He proposes to schedule this meeting on August 30 at 2:30 p.m.»

In the composition of the “permanent commissions of the Congress” officiated in London, W. Kegel appears as the President of the “Geological Map of Europe”. The Vice-president is no longer German (replaced by an Italian and a Swede) but the Secretary is still H.R.von Gärtner (absent from the Congress).

GEOLOGICAL MAP OF EUROPE—					
President	...	...	...	...	W. Kegel (Germany)
Vice-Presidents	...	...	...	...	M. Gortani (Italy). Per A. Geijer (Sweden)
Secretary	...	...	...	...	H. R. von Gaertner (Germany)
Geological Map of Europe—continued.					
Members—					
Austria	...	...	...	...	G. Götzinger
Belgium	...	...	...	...	A. Grosjean
Czechoslovakia	...	...	...	...	R. Kettner
Denmark	...	...	...	...	H. Ödum
France	...	...	...	...	E. Raguin
Great Britain	...	...	...	...	W. F. P. McLintock
Greece	...	...	...	...	} To be nominated by the national Geological Surveys
Hungary	...	...	...	...
Italy	...	...	...	...	M. Gortani
Norway	...	...	...	...	C. Bugge
Poland	...	...	...	...	J. Czarnowski
Portugal	...	...	...	...	A. Viana
Roumania	...	...	...	...	G. Macovei
Spain	...	...	...	...	J. G. Siñeriz
Sweden	...	...	...	...	Per A. Geijer
Switzerland	...	...	...	...	R. Buxtorf
U.S.S.R.	...	...	...	...	I. I. Gorsky D. V. Nalivkin

The report of this Commission (p. 188-189) indicates that the 2nd edition of the Map of Europe is pursued. After the session in Moscow (1937) a meeting was held in Stockholm January 1939. Besides the 4 sheets released for the Congress in Washington (C4, D4, C5, D5), are now published: sheets A4 (Tralee), B4 (London), A5 (La Coruña), B5 (Marseille). It is therefore noticed that «this 2nd edition would not cover the South and would not include a part of Africa whose own 3 sheets map have been already published.»

We now reach the core of the problem with the *Commission of the geological map of the World* that has been left in suspense since Moscow (1937). The proceedings of this Commission are exhibited on August 30. This report is divided in two parts: 1) A «*Note on the work carried out on the International Map of the Geological Map of the World, scale 1:5,000,000*» (p. 191-192) signed W. Kegel. 2) A «*Report of Commission de la Carte géologique du Monde*» (p. 190-191) signed «F. Blondel, Vice-President». On this report, Kegel states what we had already learned in Moscow, that is, that the publication of the new sheets of the map of Africa was at a halt. Instead, he extends over the details of the program for the *Geological Map of North America* at 1:5 M.

Blondel's text is brief but consistent. He thinks it is convenient to put off the nomination of the President of the Commission for the Map of the World until the next Congress that will be held at Algiers, that is, in a French environment. The whole text and the official organization chart of the Commission for the Congress in London is as follows:

Report of Commission de la Carte géologique du Monde

La Commission s'est réunie le lundi 30 août à 14 hrs. 30; étaient présents:—
F. Blondel (France), *Vice-Président*.

Membres: G. Castany (Tunisie)
L. L. Fermor (Grande Bretagne)
P. F. J. Fourmarier (Belgique)
M. Gortani (Italie)
S. H. Haughton (Afrique du Sud)
T. K. Huang (Chine)
H. R. Junner (Grande Bretagne)
W. Kegel (Allemagne)
F. R. Vilaplana (Espagne)

Le Vice-Président explique que la Commission s'est réunie pour la dernière fois à Berlin les 28 et 29 septembre, 1938.

Après un échange de vues, les membres présents recommandent au Conseil et l'Assemblée les propositions suivantes qui tiennent compte des grandes difficultés actuelles:

1. Conformément au vœu exprimé par la Commission en septembre, 1938, il est proposé que les membres de la Commission ne soient plus en principe, désignés nominativement. La Commission comprendrait donc les directeurs des Services géologiques des différents pays du monde. Cependant la Commission s'adjoindrait certaines personnalités qu'elle choisirait elle-même en raison de leur compétence spéciale.

2. Il ne semble pas souhaitable de nommer actuellement un nouveau Président.

3. Le Vice-Président en exercice aura la charge de réunir la Commission dès que les circonstances paraîtront plus favorables. Pour cette première réunion, le Vice-Président invitera lui-même, après consultations convenables, les personnalités autres que les directeurs des Services géologiques.

4. Lors de cette prochaine réunion, la Commission examinera les possibilités et les moyens de reprendre activement les travaux antérieurs.

F. BLONDEL, *Vice-Président*.

GEOLOGICAL MAP OF THE WORLD—

<i>President</i>	...	...	...	...	...	—
<i>Vice-President</i>	...	...	...	...	...	F. Blondel (France)
<i>Members—</i>						
Directors of Geological Surveys						
U.S.S.R.	...	...	...	...	...	I. I. Gorsky
						D. V. Nalivkin

Regarding the *Commission for the Map of Africa*, E. de Margerie replaced A. Lacroix (who resigned) as president and F. Blondel appears as Secretary General. Concerning *The Association of African Geological Services*, Dixey (Great Britain) became the President and Blondel remained as Secretary.

INTERNATIONAL GEOLOGICAL MAP OF AFRICA—

<i>President</i>	...	...	...	...	...	E. de Margerie (France)
<i>Vice-Presidents</i>	...	...	...	...	...	E. B. Bailey (Great Britain)
						P. F. J. Fourmarier (Belgium)
<i>Secretary-General</i>	...	...	...	...	...	F. Blondel (France)
<i>Members—</i>						
Directors of Geological Surveys of African territories.						

ASSOCIATION OF AFRICAN GEOLOGICAL SURVEYS—

<i>Honorary President</i>	...	...	...	...	...	E. B. Bailey (Great Britain)
<i>President</i>	...	...	...	...	...	F. Dixey (Great Britain)
<i>Secretary</i>	...	...	...	...	...	F. Blondel (France)
<i>Members—</i>						
Directors of Geological Surveys of African territories.						

F. Blondel reports on the Map of Africa, detailing that this project was decided and approved at the Congress in Brussels (1922), hence nullifying the old formula regarding the Geological Map of the World, that is, the one organized in Berlin in which the African cartography had been very partially made. He also reminds, as we have already seen, that this map was entrusted to the "*Bureau of Geological and Colonial and Mining Studies*" (under Blondel's direction, too), in close collaboration with the *Association of African Geological Services*. The stock of sheet 1 that had been published by Masson (1937) was destroyed during the war and a 2nd edition was published in 1946; Sheet 2 (Center-North) was published in 1948, and sheet 3 in 1947. Sheets 4, 5 and 9 are practically ready for printing. Sheet 7 is still to be prepared (general legend) as well as sheets 6 (East, East of Africa) and 8 (Center-South, South Africa). The completed map should be finished for the following Congress in Algiers.

A problem that had already been discussed (and rejected) in Brussels in 1922 comes up again in London, that is, whether or not it would be appropriate to create an “*International Union of Geology*” within the *International Council of Scientific Unions* (ICSU), as it had, long ago, been done by other scientific unions as *The International Union of Geodesy and Geophysics* (IUGG) and taking into consideration the recent fact that the UNESCO, (created in November 1945) had passed an agreement with the ICSU and its affiliated unions to be able to take advantage of their scientific advice. This proposition was extensively discussed and finally put off until the next Congress.

- The **19th IGC** is held in **Algiers** (September 1952). This is the second session in Africa and the third in French territory. France is obviously strongly represented. E. de Margerie, absent (he would die the following year), is named Honorary President of the Congress. Among the participants there are 3 persons that will successively occupy the presidency of the “new” CGMW: Fernand Blondel (1952 - 1964), Jean Marçais (1964- 1980); at the time, Director of the Geological Service of “French” Morocco, Jean Aubouin (1980-1992). Indeed, the geologists of the “Union française”, created in 1946 to replace the “French Colonial Empire “, are quite numerous, especially those from the North of Africa. Germany (Federal Republic) constitute a group of over 60 persons from which two are of the highest rank: A. Bentz, who became Director of the Federal Service in Hannover replacing W. Kegel; and one of his collaborators, H.R. von Gärtner who was appointed Secretary General of the «Commission for the Map of Europe» in London.

The Congress in Algiers is of utmost importance for the CGMW because it is there where the game is officially modified, and **the two commissions for the Map of Europe and the Map of the World end up clearly separated**. The former under German direction (in Hannover), the latter in Blondel’s hands. It can be said that it is in Algiers where the new or real –depending on view points– CGMW is born after arduous labour, that is, 4 decades after the “annunciation” in Stockholm in 1910.

The report by the President of the «Commission for the Geological Map of Europe», A. Bentz, is brief: 3 new sheets from the 2nd edition were printed (A6 Lisboa, B6 Madrid, C6 Rome). If financial means are gathered 5 more sheets will be prepared for the making (D6 Athinai, A3 Rockall, B3 Edinburgh, C3 Oslo, D3 Stockholm).

COMMISSION DE LA CARTE GÉOLOGIQUE DE L'EUROPE	
Compte rendu.	
Président :	M. le Professeur BENTZ.
Secrétaire général :	M. von GÄRTNER.
Liste des membres présents :	
Ancien président :	M. le Professeur KEGEL (Brésl).
Allemagne :	MM. BENTZ, MICHEL, RAAB, von GÄRTNER.
Belgique :	M. GROSFRAN.
Eire :	M. O'BRYEN.
Espagne :	MM. ALONSO, GARCIA SANCHEZ, RIOS, TALAUE.
Finlande :	J. L. LAKKARI, MAARIO.
France :	M. AUBOUIN.
Grande-Bretagne :	M. PUGH.
Italie :	MM. ETZNER, SCARABELLA, GOTTARDI.
Moroc espagnol :	M. MALIN.
Moroc français :	MM. MARÇAIS, CHOUKERT.
Norvège :	M. GLEDITSCH.
Pays-Bas :	M. PANNEKOK.
Portugal :	MM. CASTELLO BRANCO, ZWISZEWSKI.
Suède :	M. MAGNUSON.
Tunisie :	M. GASTANY.
Turquie :	M. BAYKAT.
Yougoslavie :	MM. PAVLOVIC, PETROVIC.
A l'ouverture de la séance, le président, en accord avec les membres présents, confirme que tous les chefs des services géologiques de l'Europe et des pays adjacents sont membres de la commission.	
Le président de la commission, M. le Professeur BENTZ, remplaçant le Professeur KEGEL, le secrétaire de la commission, M. von GÄRTNER, donne un compte rendu du travail accompli dans les quatre dernières années.	
Grâce à une importante subvention du Wirtschaftsministerium de la République Fédérale allemande, les trois feuilles A6, B6, C6 ont pu être imprimées. Les épreuves en couleurs de ces trois feuilles sont présentées aux membres de la commission pour corrections éventuelles.	
Le Président BENTZ suggère à la commission de continuer le travail par la feuille D6 et la rangée A3 à D3. Il ne peut cependant donner aucune assurance pour la réalisation de ce travail aussi longtemps que les moyens financiers nécessaires ne sont pas mis à sa disposition.	
La commission remercie très vivement le Professeur BENTZ et M. von GÄRTNER du travail réalisé et approuve chaleureusement les propositions formulées, en chargeant le président de les transmettre à l'assemblée générale.	
Le secrétaire général, von GÄRTNER.	

Getting back to the «Commission for the Geological Map of the World» the works of the September 10 session are summarized (p. 288-289) by «F. Blondel, President». One can observe then that the “acting vice-president” has just been officially appointed as President of the CGMW.

COMMISSION DE LA CARTE GÉOLOGIQUE DU MONDE

La commission de la carte géologique du monde s'est réunie à Alger, le mercredi 10 septembre 1952, à 10 h 30.

33 pays étaient représentés, savoir :

Afrique : Maroc espagnol, Maroc français, Union de l'Afrique du Sud, Tunisie.
Amérique du Nord : États-Unis.
Amérique du Centre et du Sud : Brésil, Cuba, Équateur, Venezuela.
Asie : Aden, Birmanie, Inde, Indochine, Israël, Japon, Pakistan, Philippines, Thaïlande, Turquie.
Europe : Allemagne, Belgique, Eire, Espagne, Finlande, France, Grande-Bretagne, Italie, Norvège, Pays-Bas, Portugal, Suède, Yougoslavie.
Océanie : Indonésie.

Le Commonwealth britannique avait envoyé un agent de liaison.
Le vice-président en exercice rappelle brièvement l'histoire de la commission depuis le congrès de Washington en 1933 et les difficultés rencontrées.

La commission élit alors son bureau :

Président : M. F. BLONDEL.
Vice-présidents (un pour chaque ensemble territorial) :
Afrique : D^r DIXIE, président de l'association des services géologiques africains.
Amérique du Nord (à désigner ultérieurement).
Amérique du Sud : M. A. R. LAMEGO, directeur du Service géologique du Brésil.
Amérique centrale (à désigner ultérieurement).
Asie : D^r KRISHNAN, chef du Service géologique de l'Inde.
Europe : Professeur BENTZ, président de la commission de la carte géologique de l'Europe.
Océanie (à désigner ultérieurement).
U. R. S. S. (à désigner ultérieurement).

Conformément aux décisions précédentes de Londres, la commission confirme que tous les pays sont invités à désigner un représentant dans la commission ; dans toute la mesure du possible, cette représentation ne doit pas être faite par une personne, mais par un organisme qualifié, de préférence le service géologique du pays en question. Sauf cas particulier, la correspondance entre le bureau ⁽¹⁾ et les membres sera adressée impersonnellement à l'organisme ainsi désigné. Le bureau est prié de mettre à jour une liste précise de ces correspondants et de la communiquer aux membres de la commission.

Le président donne ensuite lecture d'un rapport qu'il a préparé après diverses consultations écrites depuis le congrès de Londres. Ce rapport est donné en annexe (annexe A).

La commission approuve unanimement les propositions contenues dans le rapport et prie le président et le bureau de mettre à exécution les diverses propositions.

Au rapport était jointe une liste des cartes géologiques d'ensemble les plus récentes. Cette liste, mise au point par les membres de la commission, est également annexée au présent compte rendu (annexe B).

La commission souhaite que, lors du prochain congrès géologique international, elle soit chargée d'organiser une section du congrès, entièrement consacrée à la présentation de cartes géologiques nouvelles, dont la belle exposition réalisée à Alger et la présentation des cartes par l'Association des services géologiques africains constituent une première réalisation dans le congrès actuel.

F. BLONDEL,
Président.

(1) Adresse du président : M. F. BLONDEL, 12, rue de Bourgogne, Paris (7*), (France).

We can observe that this Commission now includes a Bureau where the vice-presidents are the representatives of each continent or sub-continent. The General Board of the CGMW organization so constituted, with the required ongoing additions according to the circumstances and evolution of the geological sciences, is the one of the present CGMW. We can also observe that the vice-presidents for Europe and Africa are, on the one hand, Bentz, the president and, on the other hand, Dixie, the vice-president, of the two commissions of the IGC, respectively, the *Commission for Geological Map of Europe* and the *Commission for Geological Map of Africa*. These commissions are then still formally independent from the CGMW, but eventually, they will be completely joined and renamed *Sub-Commissions of the CGMW*.

In the Annexe A (p. 290-291 of the fascicule XXII, published in 1956) of the “19th session (Algiers) proceedings” there is the complete report by F. Blondel presented at the Congress before his election to the presidency of the CGMW, titled “*Rapport sur l'activité de la Commission de la Carte Géologique Internationale du Monde (1949-1952)*” (*Report on the activity of the Commission for the International Geological Map of the World: 1949-1952*). It is worth pointing out that the official name of the CGMW still included the adjective *international* which will disappear onwards. One of the main conclusions is the following:

«It does not seem feasible that a sole organization, such as the *commission for the geological map of the world used to be*, should take upon itself to issue a homogenous map of the world. Such heavy and costly work

should be carried out by the great territorial areas (for example, Africa, North America, South America, Europe, the USSR, Asia outside the USSR, Oceania). It would be desirable, instead, to accomplish a certain harmony among these works. **This harmonization could be, from now on, the goal of the commission for the map of the world.**»

Hence, Blondel, who keeps the 1:5 M as the fundamental cartographic scale, introduces some flexibility when organizing the Commission for the Map of the World in Sub-commissions representing great geographical areas. Eventually, we will see that the need to add more sub-commissions by theme will be felt. The new President of the CGMW had foreseen this in his conclusion: «*besides, [the commission] will be able to study the harmonization of general **structural maps** of extended areas* »

The Annex B (p. 291-296) includes the inventory of the “General Geological Maps” (by extended regional areas plus the one of the World by Beyschlag at 1:15 M that we mentioned earlier. cf. note 28).

In the Congress of Algiers the Association of African Geological Services and the Commission for the Geological Map of Africa worked together during several sessions

ASSOCIATION DES SERVICES GÉOLOGiques AFRICAINS
ET COMMISSION DE LA CARTE GÉOLOGIQUE DE L'AFRIQUE

L'association des services géologiques africains et la commission de la carte géologique de l'Afrique se sont réunies à Alger pendant le congrès, durant huit séances. Les représentants des divers services géologiques de l'Afrique ainsi que de nombreuses personnalités ont participé à ces séances.

Lors de la première réunion, du 8 septembre, les deux organismes ont réélus leurs bureaux, savoir :

- pour la commission de la carte géologique internationale de l'Afrique :
Président : M. Emm. DE MARGERIE.
Vice-présidents : D^r F. DIXEY, Professeur P. FOURMARIER.
Secrétaire général : M. F. BLONDEL.
- pour l'association des services géologiques africains :
Président : D^r F. DIXEY.
Secrétaire : M. F. BLONDEL.

We might recall that the **1st International Geological Map of Africa at 1:5 M was accomplished and presented at this Congress**. This cartographic project had been decided in Brussels in 1922 based on a proposition by E. de Margerie and assigned in 1934. This first edition is acknowledged as quite imperfect, moreover considering the gap of nearly fifteen years between the time when the first sheet was issued and the time when the last ones were issued. A second edition is absolutely necessary.

The proceedings of the IGC of Algiers were published in 1956, just before the Congress in Mexico. They include F. Blondel's report on the activity of the Commission (p. 296-308) from 1953 to 1954. It explains: «*the commission was organized at the Congress in Algiers in 1952.*» 1953 was the «*upstarting year*». The next year «*was marked by interesting results*». President Blondel attended in a certain number of international meetings:

- Tokyo (April 1953). At the Mining Conference of the Economic Commission for Asia and the Far East (ECAFE) of the United Nations. F. Blondel recommends the compilation of a regional map of Asia and the Far-East at 1:5M (which would be the task of the S/C of the CGMW for Southern and Eastern Asia);
- Nairobi (September 1954). The Association of African Geological Services (ASGA) reviews and discusses the 1st edition of the Geological Map of Africa that was presented at the IGC in Algiers in 1952 (see above), and also the preparation of a *Structural Map* and a *Mining Map* of this continent;
- Bangkok (November 1954). In this meeting which was sponsored by the ECAFE and the “Commission for the International Geological Map of the World”, it is decided to compile a map at 1:5 M of «*the entire area of the South, South East and East of Asia, from Pakistan to Japan and Korea (Iran will be represented on the second edition of the Map of Africa)*. The case of territorial China was put forth and will be taken care of depending on the possibilities». This way the contours of the future Sub-commission for Southern and Eastern Asia are outlined. The funding would be provided by voluntary contributions of the interested countries. These would be «*especially centralized by the Commission for the International Geological Map*». In this «*meeting, representatives of the USSR expressed their will to participate in the work of the Commission*» and, moreover, paid their own fee that month. The revision of the map of the USSR at 1:5, originally presented in 1937, is ongoing and might be completed in 1955. This meeting in Bangkok was especially fruitful for the CGMW since it allowed an ad hoc discussion with Australia regarding the creation of a «*regional map covering Australia and Oceania*».

During the Congress in Algiers, and from that moment on, F. Blondel acts with perseverance, efficiency and diplomacy to boost the CGMW machine for the future. He concludes: «As we can see, not only from what has already been accomplished but also from both, the ongoing and the future projects, it will be undoubtedly possible to anticipate the existence of regional maps at 5 000 000th of all the world at the next Congress scheduled in Mexico in 1956. Moreover, the organizations will be well established and prepared to allow the constant improvement of this project which is meant to be perennial.» (p. 301).

Blondel's vision is clear: maps of continents or of great geographical-geological regions at 1:5 M, re-assembled in an «*International Geological Atlas at a 10 000 000th*». He readily promotes the idea for the coming Congress «*This seems to be the right time to launch the project of an international geological atlas at a 10 000 000th based on the different maps at a 5 000 000th in progress at the moment. Such an atlas, with the required scientific endorsement does not currently exist. The first contacts made with an internationally prestigious publishing house allow us to think it is possible to carry it out, if the scientific participation of the different countries is ensured. A specific memorandum regarding this subject is being prepared and will be sent to all of the countries.*»

We also notice (p. 302) that the functioning of the new CGMW «*necessarily means diverse expenses, especially travel fares, secretarial wages and mailing charges. Since 1953 a memorandum requesting an annual fee was sent to all the countries. Each country had to pay the equivalent of 20 000 French francs (or £20 or the equivalent in any other currency). Adopting a unique fee seemed more practical than varying the fee depending on the importance of the country, which would have led to a complicated formula, also because the fee was already quite moderate.*»³⁶

The payments were addressed to the «*Commission de la carte géologique internationale du monde, 12 rue de Bourgogne, Paris 7^e* »³⁷, which was already headquarters to the «*Bureau d'Études géologiques et minières coloniales*» (Bureau of Geological and Colonial Mining Studies). In Annex I (p.303-306), there is a «*List of Geological Services of the World (or equivalent organizations)*» including 118 addresses. The **registration list of subventions** received by the CGMW in 1953 and 1954 (Annex II) as well as the 1954 account statement (Annex III) is presented below:

ANNEXE II		
LISTES DES SUBVENTIONS REÇUES		
PAYS	VERSEMENTS REÇUS	
	1953	1954
A.-O. F.	19 996	—
Allemagne	21 781	—
Angola	20 000	20 000
Autriche	20 000	—
Brésil.	19 781	—
British Guiana	19 391	34 654
Burma.	19 565	—
Danemark	20 000	20 000
Dominicaine (République).	19 827	—
Égypte	—	20 000
France.	20 000	—
Gold Coast.	19 563	—
India	20 000	—
Israel.	—	19 473
Kenya	19 661	—
Madagascar.	20 000	—
Malaya (Fédération)	20 000	—
Maroc (français).	19 996	—
Mexique	19 911	—
Pays-Bas	20 000	—
Portugal	20 000	40 000
Sierra Leone	19 563	—
Suisse.	—	20 000
Surinam	18 336	—
Tchécoslovaquie.	19 868	—
Tunisie	10 000	—
Turquie.	19 782	—
Uganda	19 580	—
United Kingdom.	19 365	—
United States	19 480	—
U. R. S. S.	—	38 756
Uruguay	—	15 727
Venezuela	20 000	—
Viet-Nam	20 000	—
Colonial Geological Survey of the British Colonial and Dependant Territories.	—	49 013
Congrès géologique international d'Alger.	250 000	—
	815 446	277 623

ANNEXE III	
COMMISSION DE LA CARTE DU MONDE	
BILAN AU 31 DÉCEMBRE 1954.	
Actif.	Passif.
Disponible :	Résultats :
Caisse et banque 94 221	Solde créditeur au 31 décembre 1954 94 221
Pertes et profits au 31 décembre 1954.	
Dépenses.	Recettes.
Frais de secrétariat 1953.... 561 755	Cotisations 1953..... 815 446
Frais de banque 1953 333	Cotisations 1954..... 277 623
Frais de secrétariat 1954.... 21 429	
Frais de banque 1954 831	
Frais de voyage (Bangkok, 1954)..... 414 500	
	1 093 069
998 848	
Total créditeur au 31 décembre 1954 94 221	
	1 093 069

- When the 20th IGC takes place in **Mexico** (September 1956), the CGMW is on track. The new adjective “permanent” is added to the name of several commissions. «*Commission permanente de la Carte géologique de l'Europe*» (*Permanent Commission for the Geological Map of Europe*) and the seat of vice-president is then created and filled by the Italian Gortani.

— COMISION PERMANENTE DE LA CARTA GEOLOGICA DE EUROPA	
Presidente.....A. BENTZ	Alemania
Vicepresidente ..M. GORTANI	Italia
Secretario.....H. Von GABRTNER	Alemania
MIEMBROS	
W. E. PETRASCHKE	Austria
A. M. GROSJEAN	Bélgica
W. KUGEL	Brasil
R. KETNER	Checoslovaquia
H. ODUM	Dinamarca
J. GARCÍA SÁENZ	España
A. LATAKARI	Finlandia
E. RAGUIN	Francia
W. J. PUGH	Gran Bretaña
M. MYTSOPOULOS	Grecia
E. VADASZ	Hungría
M. W. O'BRIEN	Irlanda
A. MARÍN Y BRERÁN DE LIS	Marruecos Español
J. MARÇAIS	Marruecos Francés
M. GLEDITSCH	Noruega
A. J. PANNKOEK	Países Bajos
J. CZARNOWSKI	Polonia
A. DE CASTELLO BRANCO	Portugal
G. MACOVEI	Rumania
N. H. MAGNUSSEN	Suecia
R. BUXTORF	Suiza
G. CASTANY	Tunisia
F. BAYKAL	Turquia
I. I. GOESKY	U.R.S.S.
D. V. NALIVKIN	U.R.S.S.
M. PAVLOVITCH	Yugoeslavia

The work takes its course, particularly over the sheet D6 (Athina). This sheet completes the 2nd edition of the Geological Map of Europe at 1:1, 5 M which was made using the ancient codes of representation and printing techniques. There are problems of continuity between the sheets in progress and the ones published at the beginning of this 2nd edition. A completely revised legend will be ready in 1962 and the remaining sheets of the 2nd edition will be made following the new modalities, just as the 3rd edition which will include sheets from the 2nd edition that had to be revised.

Thirty countries³⁸ were represented at the meetings of the «*Permanent Commission for the International Geological Map of the World*». The names of the vice-presidents of the geographical sub-commissions are not pointed out on the Congress's published official list (p. 41-42) of member countries (around

sixty; corresponding to the countries that had paid their subscriptions) as had been done at the former session but they appear on the report by F.Blondel (p. 379-384).

COMISION PERMANENTE DE LA CARTA GEOLOGICA DEL MUNDO

Presidente.... F. BLONDEL Francia

M I E M B R O S

Los Directores de los Servicios Geológicos (o sus representantes)

E. H. JAKES	Adén	B. CHUBERT	Guayana Francesa
M. ROQUES	África Oriental Francesa	J. BUTTERLIN	Haití
J. BARBEAU	África Ecuatorial Francesa	B. C. ROY	India
L. T. NEL	África del Sur	R. SUNDU SUBASTRO	Indonesia
G. BÉTIER	Argelia	M. V. O'BRIEN	Irlanda
A. BENTZ	Alemania	L. PICARD	Israel
H. VIEIRA	Angola	E. BENGO	Italia
C. J. SULLIVAN	Australia	T. MITSUOHI	Japón
W. E. PETRASCHKE	Austria	W. PULFREY	Kenya
A. GROSJEAN	Bélgica	M. A. MASSAQUOI	Liberia
B. A. THI	Burma	M. LUCIUS	Luxemburgo
F. M. DE ALMEIDA	Brasil	H. BESAUER	Madagascar
J. GAZEL	Camerún	F. T. INGHAM	Malaya
J. M. HARRISON	Canadá	J. MARÇAIS	Marruecos Francés
P. FOURMARIER	Congo Belga	A. MARÍN Y BERTRÁN DE LIS	Marruecos Español
D. A. BATES	Costa de Oro	J. GONZÁLEZ REYNA	México
A. ZAPLETAL	Checoslovaquia	A. BORGES	Mozambique
H. GRY	Dinamarca	R. R. JACOBSON	Nigeria
J. GARCÍA SÁNCHEZ	España	L. STORMER	Noruega
W. E. WRATHER	Estados Unidos	N. M. KHAN	Pakistan
V. MARMO	Finlandia	A. J. PANNERKOR	Países Bajos
R. A. BARQUES	Filipinas	I. SAMSONOWICZ	Polonia
E. RAGUIN	Francia	A. DE CASTELLO BRANCO	Portugal
J. W. PUGH	Gran Bretaña	R. MOHA	República Dominicana
F. DIXEY	Gran Bretaña	A. M. MACGREGOR	Rhodesia del Sur
		N. W. WILSON	Sierra Leona
		F. M. DELANY (Señorita)	Sudán
		H. H. MAGNUSSON	Suecia
		J. TERCIER	Suiza
		M. DUBERTRET	Siria y Líbano
		C. B. BISSET	Tanganyica
		V. SETHAPUT	Thailandia
		G. CASTANY	Túnez
		F. BAYKAL	Turquía
		J. W. PALLISTER	Uganda
		V. BELOUSOV	U.R.S.S.
		A. BELLIZZIA	Venezuela
		M. PAVLOVITCH	Yugoeslavia

ORGANIZATION OF THE COMMISSION, Diverse Matters.

1) Bureau of the Commission

The appointment of the Bureau of the Commission was unanimously approved as follows:

President: F. BLONDEL (Paris)

Regional Vice-Presidents:

North America: Dr. JOHNSTON (Washington)

South America: Dr. LAMIGO (Rio)

Europe: Dr. BENTZ (Hanover)

Africa: Dr. DIXEY (London)

U.S.S.R.: Prof. BELIAEVSKY (Moscow)

Asia: Dr. SONDI (Calcutta)

Oceania: Dr. RYE (Melbourne)

Secretary: P. LEGOUX (Paris)

2) Members of the Commission

It will be recalled that all the geological services of the different countries or the organizations which take their place are members of the Commission.

3) Next Meeting.

A meeting of the Commission was called for the beginning of 1958 in Paris. The President of the Commission will be in charge of the organization of the meeting.

4) Fees.

The annual minimum fee per country has been fixed at 50,000 French francs (or its equivalent); beginning January 1, 1956.

The main points to mention here are:

- The president of each of the permanent commissions “Map of Europe” and “Map of Africa” submitted a report of their activity to the Commission for the Map of the World since the previous session.
- The USSR published a geological map of the USSR at 1:5 M and 1:2,5 M. Mr. M.S. Krishnan, from India, was appointed Coordinator of the Geological Map of Asia in 1954 following what was discussed at the ECAFE meeting in Bangkok.
- A Vice-president of the CGMW representing South America (Lamego) was elected in order to enhance the work of synthesis of this continent that was behind in comparison to other sub-commissions.
- At the instigation of the Russians, **the first 2 thematic sub-commissions of the CGMW are created**: one for the *International Tectonic Map* and another for the *International Metallogenic Map*. Let’s remember that the Congress in Mexico was particularly oriented to metallogeny³⁹;
- The **project of an International Geological Atlas at 1:10 M** proposed by Blondel was «almost unanimously approved». It will be published under the aegis of CGMW, but without its financial support;
- And finally, there is an agreement to call a meeting of the CGMW in Paris in 1958, i.e., in the mid-term between two IGCs. This Parisian meeting will eventually become permanent and will be officially called General Assembly, between two IGC (statutory) general assemblies.

The “minimal” annual subscription is set at the amount of 50 000 French francs (or the equivalent) starting on January 1956.

An important step forward is taken in Mexico regarding the current organization of the CGMW.

On the African front there is news: (p. 385 à 389) the secretary general (p. 386-389, and cf. p. 406-407) explains that: «*As the Association of African Geological Services and the Commission for the Geological Map of Africa have identical objectives and the same secretarial office it would be appropriate to dissolve the Commission (created in 1929) and to admit the Association of African Geological Services (ASGA, created in 1929) as a permanent Commission of the Congress.*” This proposition is adopted.». ⁴⁰

<i>Bureau de l'Association</i>	
Sous réserve de l'acceptation de cette proposition, le Bureau de l'Association est constitué comme suit:	
—Président d'honneur:	M. FOURMANIER (Liège)
—Président:	Dr. DIXEY (Londres)
—Secrétaire général:	F. BLONDEL (Paris)
—Secrétaire général adjoint:	P. LEGOUX (Paris)

The members of (the ex- Commission) for the Map of Africa are the following:

M I E M B R O S	
L. T. NEL	Africa del Sur
J. GERARD	Africa Ecuatorial Francesa
M. ROQUES	Africa Oriental Francesa
G. BÉTLER	Argelia
H. VIEIRA	Angola
J. GAZEL	Camerún
A. BATES	Costa de Oro
W. PULFREY	Kenya
M. MASSAQUOI	Liberia
H. BESAIRIE	Madagascar
J. MARÇAIS	Marruecos
A. BORGES	Mozambique
R. JACOBSON	Nigeria
M. MACGREGOR	Rhodesia del Sur
W. WILSON	Sierra Leona
G. ANDREW	Sudán
C. B. BISSET	Tanganyika
G. CASTANY	Tunisia
W. PALLISTER	Uganda

The 2nd edition of the *Geological Map of Africa* at 1:5 M (decided in Algiers, 1952) is in progress and the presentation of the accomplished maquette is foreseen for the next Congress in 1960 (Copenhagen).

The new project of a *Structural Map of Africa* at 1:10 is launched and assigned to R. Furon and G. Daumain, its initiators.

- The host of the **21st IGC in Copenhagen** (August 1960) is constituted by the countries of Northern Europe hence, the official name of the Congress «*The Twenty-First Session Norden-Denmark-Finland-Iceland-Norway-Sweden*».

This session is particularly important for the CGMW because it is the **first time that there is a relatively substantial report on the activities of the Commission**⁴¹. This document can be considered as Bulletin “zero” of the CGMW which will be edited (summarily) by the New Secretariat of the Commission⁴² from 1962 onwards, i.e. after the 2nd Parisian General Assembly (between two IGCs).

This document (**Doc.16**) reports on the first general meeting of the CGMW in Paris on April 1958 where 61 countries were represented (North and Central America: 5, South America: 4, Europe: 17, Africa: 20, USSR: 1, Asia: 10, Oceania: 4). The rules for the legends of the international geological maps that had not been modified since the 2nd IGC in Bologna (1881), were revised and sent to all of the Geological Services of the world. Another in-between meeting is scheduled for 1962. This is important because it turned this meeting into a permanent one.

«As a rule the Commission meets during the Geological Congress. From the Paris meeting, however, experience shows that meetings in between Congresses are particularly useful. It has been suggested that another meeting should be held in Paris in the spring of 1962. As both the Commission's secretariat and records are in Paris the organization of such a meeting is, for that reason, easier there than anywhere else. The Sub-Commission for the Tectonic and Metallogenic Maps would also meet then.»

At the Congress in Copenhagen, the board of the CGMW remains unmodified except for the seats of vice-presidents of South and Eastern Asia and Oceania-Australia (the former is taken by Roy from India and the latter by Templewatts from Australia). We notice that East Germany became member of the CGMW in 1958 and that there are certain difficulties in approaching “Continental China”, in other words, to rally Communist China to the CGMW. The real reason being that Taiwan (considered at that time as “Nationalist China”) is member since 1956⁴³. President Blondel traveled a great deal to «*facilitate the contacts*» across the world from 1957 to 1960. It is «*suggested that **the Commission appoints a Secretary General** who can assist the President in his tasks, particularly his international trips; and recommends Mr. Marçais, former Chief of the Geological Service of Morocco for that seat*».

On the other hand, points were made on the assessment of the progress of the continental maps. It is worthy of notice that a new edition of a *Map of North America* shall be presented in Copenhagen, as well as the *Map of South America* (taken in charge by Brazil). Concerning Asia, the Geological Service of India is facing a «*highly complicated*» work, not to mention the fact that «Continental China» has not taken part in the activities. This map (decided in Tokyo in 1953) is carried out with the assistance of the ECAFE (*Economic Commission for Asia and the Far East*) and presented at the Congress in Copenhagen. The *Map of Australia* is in progress.

The Sub-Commissions for the Tectonic and Metallogenic Map met in Paris in 1958 and agreed the main guidelines for their programs.

- For the *Tectonic Map*, the board is constituted by a President (Nicolay Shatsky, Moscow), the Vice-presidents, who are the vice-presidents of the CGMW, and the Secretary General (Alexei A. Bogdanoff, Moscow). It is decided to start with Europe at the scale of 1:2,5 M
- For the *Metallogenic Map*: President W. D. Johnston, American, assisted by two secretaries, one in Washington (Philip Guild), and another one in Paris (Pierre Routhier). The problems of representation in this type of map are particularly difficult. It is recommended to start by representing the mineral deposits with as much detail as possible and then, by overlapping the corresponding geological and tectonic maps, it should be feasible to draft a metallogenic map which displays the relationships between mineralization and geological structures.

The Commission observed that geology was not included in the field of oceanic research at the

International Council of Scientific Unions (ICSU). This irregularity is reported to the Secretary General of the Oceanic Committee of the ICSU.

Finally, the CGMW, considering that its problems and those of the Stratigraphy Commission are similar, decides to appoint a representative within the latter commission.

The Commission for the International Geological Map of Europe meets, as usual, during the Congress.

COMMISSION FOR THE INTERNATIONAL GEOLOGICAL MAP OF EUROPE.	
<i>President</i> : A. Bentz, Germany	
<i>Vice-President</i> : M. Gortani, Italy	
<i>Secretary</i> : H. von Gaertner, Germany	
<i>Members</i> :	
H. Küpper, Austria	A. de Castello Branco, Portugal
A. M. Grosjean, Belgium	G. Macovei, Roumania
R. Kettner, Czechoslovakia	A. Marin y Bertraud de Lis, Spain
H. Ødum, Denmark	Morocco
V. Marmo, Finland	J. Garcia Sineriz, Spain
E. Raguin, France	K. A. Lindbergson, Sweden
M. Mitsopoulos, Greece	R. Buxtorf, Switzerland
E. Vadasz, Hungary	G. Castany, Tunisia
M. W. O'Brien, Ireland	F. Baykal, Turkey
B. Choubert, Morocco	C. J. Stubblefield, U.K.
A. A. Thiadens, Netherlands	I. I. Gorsky, U.S.S.R.
S. Föyn, Norway	D. V. Nalivkin, U.S.S.R.
J. Czarnowski, Poland	M. Pavlovitch, Yugoslavia

A certain number of sheets are being revised and section D6 (Athina) is presented and printed.

- Regarding the ASGA, the composition of its board is modified, and in particular the Secretary General F. Blondel who is replaced by J. Lombard.

Association des Services géologiques Africains
L'association des Services géologiques Africains créé en 1929 a été admise comme Commission permanente du Congrès par une décision prise à Mexico en 1956.
Sont membres de l'Association:
a) de droit, les Services Géologiques officiels des pays africains
b) Les Services Géologiques des Compagnies privées qui désirent participer techniquement et financièrement à ses travaux.
Le Bureau est constitué comme suit:
<i>Président</i> : Dr. F. Dixey, ancien Directeur des Services Géologiques Britanniques d'Outre-mer.
<i>Vice-Président</i> : Mr. A. M. Massaquoi, Directeur adjoint du Bureau des Ressources Naturelles (Libéria).
<i>Secrétaire Général</i> : Jean Lombard, ancien Chef d'un Service Géologique d'Afrique, Secrétaire Général du Bureau d'Études Géologiques et Minières.
<i>Secrétaire Général Adjoint</i> : Pierre Legoux, ancien Inspecteur-Général de la Géologie et des Mines de la France d'Outre-mer.

«The Association contemplated the possibility of working more closely with African elements regarding the management of its affairs. It hopes that the division of scientific responsibilities in Africa becomes stable enough, throughout the whole continent, to make this association feasible for the upcoming session.»

Among other resolutions, the *Association of African Geological Services* decides to pursue with the revision (i.e., the 2nd edition) of the *Geological Map of Africa at 1:5 M* and to start the elaboration of the *Tectonic Map at the same scale*, in association with the "Sub-commission for the Tectonic Map of the World".

The *Structural Map of Africa* announced at the Congress in Mexico and that should be considered as the introduction to the *Tectonic Map of Africa* is published in 1959⁴⁴.

Finally the annual contribution of each member-country of the CGMW is set at 50 pounds sterling (or the equivalent).

II. THE CGMW AFTER 1960 : MATURITY

After 1969, the world undergoes another metamorphosis due, on the one hand, to the fragmentation from decolonization and its consequences (from around 70 countries that existed in 1955, there are 200 in 2012) and, on the other, the unceasing process of globalization. In addition, the «Global Tectonics» (last avatar of the continental mobility of Alfred Wegener) flourishes from the late 1960's on. It is around this time when the CGMW becomes a real international organization, permanent and active, culminating the endeavors of F. Blondel who retires from the Commission in 1964 due to health issues. The Commission progressively emancipates from the International Geological Congress (IGC) remaining, of course, member of the family from which it had stemmed.

The first Bulletin of the CGMW sees the light in 1962 and from then onwards, the role of the Commission in the Proceedings of the IGCs will decrease until it disappears. Its presence was still significant in the proceedings of New Delhi (22nd IGC, 1964) but was reduced to one page for the 24th IGC in Montreal (1972) where, in fact, the *Commission for the Geological Map of Europe* – which reported independently from the *Commission for the Geological Map of the World* thus far – no longer appears. Since the 25th IGC in Sydney (1976), the reports of all the Commissions of the Congress will no longer be included in the proceedings of the IGCs, favoring the addition of the scientific communication abstracts. With the creation of the IUGS in 1961 (see below), the annual activity reports of the Commissions which were previously created within the IGCs will now be addressed to this new organization.

A. 1962, A PIVOTAL YEAR AND THE INITIAL STATUTES OF THE CGMW

1962 (cf. *Bulletin 1 of the CGMW*) marks the starting point of a transformation since the CGMW organizes, for the first time, its Plenary Session at the UNESCO, in Paris. (that was also the second Parisian Plenary Meeting set between to IGCs). **The statutes of the CGMW are, for the first time, established**, beginning with the following terms:

«Since 1948 (the IGC in London)], the Commission for the Geological Map of the World is a Commission of the International Geological Congress.» We extract the main points:

- «The Commission is in charge of encouraging and coordinating the preparation and publication of geological, metallogenic and tectonic maps, etc. of the continents or the great areas of the globe. It organizes and coordinates the international studies related to problems regarding the geological cartography and undertakes or helps others undertake the bibliographic and cartographic studies, considered as necessary, worldwide.
- The members of the Commission will be the official Services in charge of establishing the Geological Maps of different countries or territories or, in their absence, any qualified organization of geological studies
- The functioning of the Commission is ensured by a board composed as follows:
 - A president
 - A secretary general
 - A deputy secretary general
 - A vice-president for each continent or great area of the world
 - The presidents and secretaries of the [thematic] Sub-commissions
- The headquarters of the Commission are located in the city where the Secretary General lives.
- The Commission for the Geological Map of the World meets at the General Assembly when the sessions of the International Geological Congresses take place [...] In principle, a general meeting is held at every Congress session.»

In fact, following the example of the General Assembly in 1962, all the in-between-IGCs meetings of the Commission are held at the UNESCO. Blondel, was ill and thus unable to preside over the session for which he had worked so hard. J. Marçais, the Secretary General, takes his place. Frances Delany (British Geologist at the BRGM, born in Kenya and educated in French-speaking Switzerland) was named Deputy Secretary General during this Plenary Assembly. For the next Plenary Assembly, at the 22nd IGC in New Delhi (1964), F. Blondel, who had announced his resignation, could not be present at

the session, J. Marçais took office as president and F. Delany was promoted to Secretary General.

The statutes were modified at the General Assembly of the 24th IGC in Montreal (1972) (cf. Bulletin 15 of the CGMW, 1973) pointing out that:

«The members of the Commission may be:

The private organizations that participate in the scientific activities of the CGMW and that contribute financially to the Commission every year [e.g. oil or mining companies, etc.]. They will appear among the members of the CGMW as “Associate Members”. These organizations do not have the right to vote in the General Assemblies of the CGMW but may intervene as counsel.»

A third version of the Statutes is made in 1980 for the General Assembly of the 26th IGC in Paris. It does not differ essentially from the 2nd version, but it is now adjusted to the legal framework of French Law in order to be officially registered on October 26, 1981 (Journal Officiel de la République française du 13 novembre 1981, p. 9903) as “a French Association under the 1901 French law of associations”.

B. THE BOARD OF THE CGMW

The board of the CGMW is the executive body of the Commission. The President and the Secretary General (possibly also the Deputy Secretary General) are the core of the board and work at the Parisian Secretariat. Only the representatives of the great regional areas (originally the ones who were responsible for the only sub-commissions that existed in the CGMW, i.e., the S/Cs for the geological maps) can take the seats of Vice-presidents of the CGMW and run their geographic sub-commissions. The ones responsible for the thematic maps, which appeared a little later, are the Presidents of their corresponding Sub-commissions.

Since the Congress in Algiers in 1952, the presidents of the CGMW are all French:

Fernand Blondel (1952-1964), Jean Marçais (1964-1980), Jean Aubouin (1980-1992), Jean Dercourt (1992-2000), Jean-Paul Cadet (2000-2010), Philippe Rossi (since 2010).

Most Secretary Generals came from the BRGM*: Jean Marçais (1960-1964), Frances Delany* (1964-1984), Olivier Dottin* (1984-1990), Philippe Bouysse* (1991-2000), Philippe Rossi* (2001-2010), Manuel Pubellier (since 2010). The BRGM, Geological Service of the country where the Secretary General lives, is the main financial contributor as it finances the Secretary General's salary, and its annual contribution exceeds, by far, other country-members'.

The first geographical Sub-commissions were:

- In Algiers (1952): Africa, North America, South America, Central America (which never came through and was eventually integrated into North America), «Asia» (which was presided by India for a long time), Europe, «Oceania», and the USSR.
- In Copenhagen (1960): not modified except for «Asia» and «Oceania» that were respectively renamed «Asia & Far East» and «Australia-Oceania».
- At the General Assembly at the UNESCO in 1962: creation of the S/C for Middle-East.

In the historical resolutions of this CGMW session it is specified that *«the collaboration of the Commission for the Map of the World [sic], with the Commission for the Geological Map of Europe and the Association of African Geological Services will remain close and that these two organizations will pursue, as they have done in the past, their cartographic work each one in its own territory.»* This formulation emphasizes the specificity of the two old Commissions of the IGC, although they will continue to be more and more integrated into the CGMW through the Sub-commissions of Europe and Africa.

- In New-Delhi (1964): creation of the S/C for the Antarctic after the «Treaty for the Antarctic» entered into force in June 1961.
- In Calcutta (March 1974), in a meeting of the CGMW Sub-commission for Asia at the headquarters of the Geological Service of India, following the proposition of the ECAFE (see below), it is requested that this S/C be named «Sub-commission for South and East Asia» thenceforth.
- In Kyoto (1992), the S/C for «USSR» is diplomatically renamed «Northern Eurasia», evidently, for geopolitical reasons. The three Baltic countries will be, at their own request, considered part of the Sub-commission of Europe.

There are, currently, 9 geographical sub-commissions.

For understandable historical reasons, the Vice-presidency of the CGMW for Europe returns to Germany. India has been in charge of the S/C for Southern and Eastern Asia for half a century; however it is replaced by China at the IGC in Florence (2004). India was in an impasse, as the seat of Vice-president of the CGMW was automatically given to the director of the Geological Service who, since the 1990's changed every year, in such a way, that only a few months after being elected at a General Assembly he was forced to leave the vice-presidency. Brazil and Iran ensured the vice-presidencies for South America and the Middle East respectively since these Sub-commissions were first created.

Differing from the geographical Sub-commissions, the thematic ones were bound to be affected by the evolution of geo-sciences, global social trends, or earth sciences (environment, natural hazards,...). An historical overview is presented below:

- The first thematic Sub-commissions were created upon the explicit request of the Russian delegation at the IGC in Mexico in 1956 to deal with the **Tectonic Maps** (The President of this S/C has been Russian ever since) and the **Metallogenic Maps** as well.
- At the G.A. at the UNESCO in 1966: creation of the Sub-commission for the **Hydrogeological Maps**, linked with the (AIH) "Association Internationale des Hydrogéologues (International Association of Hydrogeologists)" and the (AIHS) "Association Internationale d'Hydrogéologie Scientifique" (International Association of Scientific Hydrogeology).
- At the G.A. at the UNESCO in 1970: creation of the S/C for the **Map of Metamorphic belts**. The name will be simplified to "Metamorphic Maps" in 1978 and completed with the exact wording to "Magmatic and Metamorphic Maps" in 2012.
- In the IGC in Sydney (1976): creation of the S/C for **Geological Maps of the Environment including "Water Resources"**, which involved the S/C for "Hydrogeological Maps".
- At the G.A. at the UNESCO (January 1983): creation of the S/C for **Sea-floor Maps**.
- At the G.A. at the UNESCO in 1987: **reactivation** of the S/C for **Hydrogeological Maps**.
- In the IGC in Kyoto (1992): the S/C for "Maps of the Environment" which had proved incapable to produce the maps was brought to an end.
- At the G.A. at the UNESCO in 1994: creation of the S/C for **Natural Risks** as a result of the Congress in Kyoto.
- In the IGC in Oslo (2008): long-pending creation of the S/C for **Geophysical Maps**.

There are, currently, 7 thematic Sub-commissions within the CGMW.

C. RELATIONS OF THE CGMW WITH OTHER INTERNATIONAL ORGANIZATIONS

Owing to its nature, the CGMW evolved and developed in a historical context that led it to establish, to different degrees, relations with international institutions or organizations involved with the geological cartography: UNESCO, IUGS, ASGA, ECAFE/ESCAP.

— UNESCO

At the beginning of the 1960's the UNESCO⁴⁵ is interested in the international cartographic activity of the CGMW at the worldwide scale. As previously mentioned, Bulletin 1 of the CGMW reports on the G.A. of the CGMW held at UNESCO headquarters in 1962 and mentions the interest of the latter in Earth sciences, hence taking into account the existence of the CGMW and its programs.

«The 1963-64 Program of the UNESCO, includes an Article 113 that says:

«In order to understand one another, the specialists should agree to use an uniform terminology and classification for the diverse sciences of the Earth. The information gathered from all over the world must be presented under a homogenous and condensed form, particularly as international scientific maps. In close collaboration with the competent scientific organizations, the UNESCO will help to prepare this type of maps at a small scale with the universally accepted legend and terminology. The cooperation with the International Union of Geological Sciences will continue in order to prepare international geological, metallogenic and tectonic maps at a small scale, and for correlation of geological formations as well. We will start to prepare a geological atlas of the world at the scale of 1:10 000 000. Besides that, the offices of scientific cooperation of

each region will organize meetings for the realization of the program above mentioned particularly regarding the preparation of the geological map of Latin America and the correlation of geological formations of Africa.»

However, the CGMW prudently responds to such a declaration, probably fearing a certain form of annexation by the UNESCO writing the following resolution at the General Assembly in New Delhi (22nd ICG, 1964) (Bulletin 3 of the CGMW):

«The CGMW approves the idea of a collaboration with the UNESCO as long as the autonomy of the Commission is preserved and the UNESCO supports the activities of the Commission»

However, J. Lombard, responsible for the ASGA (and close to F. Blondel) establishes a «close relationship» with the UNESCO and, in 1964, the CGMW signs the first (big) contract that assures the participation of the UNESCO in the compilation of *The Geological Atlas of the World* for 4 years.

Indeed, *«the UNESCO is able to help and sign contracts with the [scientific] Unions that are part of the «International Council of Scientific Unions» (ICSU)»*. The CGMW had stemmed from the *International Geological Congress* and had joined the *International Union of Geological Sciences* (IUGS; see below), as an Associate Member both of which are members organizations of the ICSU, thus enabling the CGMW to benefit from the funding of the UNESCO.⁴⁶ On the same occasion, the Commission is acknowledged as a non-governmental organization which “*can benefit of consultation and association relations (Category A)*” with the UNESCO⁴⁷. (Doc.17).

– IUGS

The International Geological Congress, a perennial but discontinuous organization, as it reappears every 4 years, reflects on the creation of a permanent structure that could be part, as other scientific unions, of the *International Council of Scientific Unions* (ICSU)⁴⁸ (renamed in 1998, *International Council for Science*, but that kept its original initials). This was extensively discussed during several sessions of the IGC. During the IGC in Brussels (1922), the question is to know whether it is convenient to constitute a Geological Union following the model of other scientific unions or not, but *«puts temporarily apart»* the idea of joining the *International Research Council* (IRC) that will become the ICSU later on. The question is examined again in the IGC in London (1948), with an additional reluctance due to the creation of the UNESCO: *«what will be the long-term impact of the potential funding from this organization, taking into consideration the dispositions stated in the paragraph above? Will the Union be able to act with complete independence?»* Once again, the incorporation is postponed. Things change in the IGC in Copenhagen (1960) with the spectacular success of the “*International Geophysical Year*” organized by the *International Union of Geodesy and Geophysics* (IUGG, created in 1919 as part of the IRC). 13 International Scientific Unions were part of the ICSU that year; only geology was a glaring absence. After discussions, once stated that the Union could receive funding from national members and from the UNESCO, which had reiterated its interest in the constitution of a geological Union: the *International Union of Geological Sciences* (IUGS) is created in September 1961 during UNESCO’s General Assembly. It is declared that *«as the IUGS was a direct descendant of the International Geological Congress, it could be unanimously admitted at the ICSU.»*⁴⁹

Quite a similar scenario takes place at a *«lower level»*, regarding the incorporation of the CGMW into the IUGS. The following paragraphs are included in Bulletin 1 of the CGMW taken from the report on the G.A. at the UNESCO in 1962:

«Incorporation of the Commission to the International Union of Geological Sciences

The International Union of Geological Sciences has expressed its interest in the Commission for the Geological Map of the World and considers, in the meeting of its executive committee in June 1962, that the Commission should become part of the IUGS. This position was coherent with the role of the Union in the international geological activity, however, such a decision could not be made before the Commission defines its own position regarding the incorporation and which will be defined after the 1964 Congress .»

Nevertheless, this incorporation poses some problems – always the same –, mainly of a budgetary kind. Indeed, a certain number of countries, members of the CGMW and of the IUGS, recently created, have a hard time paying two separate fees for what they consider as one structure and its “offspring”:

«Relations with the International Union of Geological Sciences

«The creation of the Union and the affiliation of certain countries to the Union caused these countries to consider that the fee they paid to the Union replaced the one they use to pay to the Commission.»

It was indeed a strong argument. Finally, the Commission recommends:

«approving the affiliation to the Union of Geological Sciences, for the sake of the scientific links between the Commission and the International Geological Congress. **This decision will be definitely ratified after an agreement of the International Geological Congress in New Delhi in 1964.**»

At the G.A. of the IGC in New Delhi, the problem caused by the transfer from a Commission of the Congress to the Union seems to be in the process of being solved after having been discussed at the Council of the Geological Congress. Jean Marçais, President of the CGMW, addressing the Council of the IGC suggests two options to integrate the IUGS:

«- either the Commission is simply affiliated to the Union;
- or the Union proceeds to modify its statutes in order to grant the absolutely necessary autonomy and freedom of action to its important commissions.»⁵⁰

Finally, in the G.A. at the UNESCO in 1966 the CGMW joins in the IUGS. The record of the event appears in Bulletin 5 of the CGMW, p 10:

«At present, therefore, **this Commission is a permanent commission and affiliated to the IUGS as an International Association of IGC.** This solution in no way denies our old loyalties to the IGC and whilst stressing the independent character of the Commission, associates it with the IUGS. This association can be as close or as loose as occasion requires».

Thus, the CGMW becomes a permanent Commission of the International Geological Congress (IGC), affiliated to the IUGS as an International Association. The exact term which will be officially adopted by the IUGS for this kind of membership is “Affiliated Organization”. There are, nowadays, around fifty of such associations, contrasting with only six “Scientific Commissions” which are completely integrated to the IUGS as, for example, the “International Commission for Stratigraphy” (ICS) or the “International Commission for the History of Geological Sciences” (INHIGEO).

It is important to recall the words of J. Marçais, President of the CGMW since the Congress in New Delhi (1974), expressing his vision of the Commission defending it from any kind of imperialism (Bulletin 5, p.2-3):

«J. Marçais stressed that the main aim of the Commission is to ensure the collaboration of all countries in the compilation of cartographic syntheses on a continental or worldwide scale. The methods employed and which have proved efficient, are firstly scientific discussions on the preparation of maps, on the scales and then the compilation of the maps by continents and their prior presentation for discussion during meetings of the Commission. Projects may be realized in two ways according to continents: either by organization grouping the countries of the continent (e.g. ECAFE, ASGA), or else by one country of the continent, with the scientific collaboration, and, if necessary, financial support of the other countries. The Commission remains the prime mover and scientific coordinator of this activity, but is in no way its director. In the future, mapping will play an ever increasing role, as much as a document summarizing former knowledge, on which to base research projects, as a document on which to plot the results of recent research, expressing scientific progress.»

Commenting on this intervention, Jean Lombard (Secretary General of the ASGA), and on behalf of F. Dixey (both Vice President of the CGMW Sub-Commission for Africa and President of the ASGA), absent, requests «the Commission to confirm its intentions of limiting its activities to the realization of maps of the continents and the world at a small scale representing the synthesis of the state of the art.»

— ASGA

In the previous section that deals with the period before 1962, we have extensively talked about the *Association des Services Géologiques Africains* (ASGA) (i.e. Association of African Geological Services) created at the IGC in Pretoria (1929), more or less mingled with its senior *Commission for the Geological Map of Africa*, initiated in 1922 in the IGC in Brussels by E. de Margerie.

At the time of the reorganization of the CGMW in 1962, the ASGA/Commission for the Geological Map of Africa had already published, between 1936 and 1952, its 1st edition (9 sheets at 1:5 M) of

the *International Geological Map of Africa* under the guidance of F. Blondel's Bureau of Geological and Colonial Mining Studies, and had just published its 2nd edition (1963), sponsored by the ASGA and the UNESCO with a slightly modified title: *Geological Map of Africa*. The situation is not very clear as, on the one hand, the ASGA is an independent structure that has its *Commission for the Map of Africa* and, on the other hand, the board of the CGMW includes an officially registered *Sub-Commission for the Map of Africa*, whose vice-president is also the President of the ASGA.

That is why the G.A. of the CGMW at the IGC in Montreal (1972), adopts the following resolution (Bulletin 14 of the CGMW, p.76):

«The Commission, after discussion with the President and the Secretary General of the Association of African Geological Services and due to the recommendations followed by the ASGA in the course of the sessions in Montreal, accepts the following resolutions submitted to the counsel of the IUGS:

- to welcome the proposition that **the cartographic work executed so far, under the guidance of the ASGA will be pursued in the framework of the CGMW**
- to commend the direct future participation of the African Geological Services and associate organizations in the projects of the CGMW within a Sub-commission for Africa of the CGMW presided by Dr. J.E. CUDJOE, CGMW Vice-president for Africa.»

Things are now better defined and the “Geological Map of Africa” is entirely managed by the CGMW.

The next General Assembly at the UNESCO (1974) provides further details regarding the ASGA (Bulletin 18 of the CGMW, p.183):

«I The ASGA remains, because of its structure and objectives, an African organization, nevertheless, becomes the Sub-commission for Africa within the Commission for the Geological Map of the World under a sole Board. Its official name will thus be: “ASGA—Sous-Commission de la Carte géologique pour l’Afrique de la CCGM (ASGA-SCCGA)” (ASGA—Sub-Commission for the Geological Map of Africa of the CGMW)

«II The Board the ASGA and the Sub-Commission for the Geological Map of Africa of the CGMW is composed as follows:

- a President: A. AZZOUZ (Tunisia) (also in charge of the North African sector)
- four vice-presidents:
O. ABDOUL (Chad), for Central Africa
M. ISHAG (Sudan), for East Africa
C. WOTORSON (Liberia), for West Africa
A.J. RASOAMAHENINA (Madagascar), for the South of Africa
- a Secretary General:
J.L. MESTRAUD (France)
- an African Deputy Secretary General: to be nominated

«III- In order to prepare the subsequent transfer of the ASGA and the Sub-Commission to Africa, the Secretary General will come from an African country which altogether with international organizations will facilitate the necessary sojourns of the Deputy Secretary General to work closely with the Secretary General. It is the responsibility of President of the ASGA-SCCGA to make the necessary arrangements with the African authorities to propose the candidates for the post of Deputy Secretary General.»

The 3rd (beautiful) edition of the *International Geological map of Africa* (at 1:5M ; 5 geological sheets, each one with its own legend plus the General Legend) will be compiled by G. Choubert and A. Faure-Muret and published by the “Commission for the Geological Map of the World” with the “participation of UNESCO” between 1985 and 1990. It includes an (adapted) geological mapping of the sea-floor.

The 1st edition of the *International Tectonic Map of Africa*,(9 sheets at 1:5M) was co-published by UNESCO and ASGA in 1968, mentioning that it was «sponsored by the International Geological Congress and the Commission for the Geological Map of the World (Sub-Commission for the Tectonic Map of the World)»

The 2nd edition of the map mentioned above will not appear until 2010 (1 sheet at 1:10 M), published by the CGMW constituted by the S/C for Africa and the S/C for the Tectonic Map. An improved version of this map (completed and at 1:5M) shall be published in 2016.

– ECAFE / ESCAP

The headquarters of the ECAFE (*Economic Commission for Asia and the Far East*) are in Bangkok. It is a United Nation's agency created in 1947, originally constituted by 9 members: China, India, Philippines, Thailand, Australia, France, Netherlands, USSR, United Kingdom and USA, and was joined by Japan in 1952. In 1974, its name changes to ESCAP (*Economic and Social Commission for Asia and the Pacific*). Today it is constituted by 53 member-countries and 9 associated members (not recognized as completely independent territories, or associated to an ancient colonial power as the US Samoa Islands or the French Polynesia). The objectives of this organization are: 1) to prepare an annual assessment of the region; 2) to publish regional studies on diverse aspects of cooperation; 3) to communicate worldwide perspectives and programs to the Asian context; 4) to assist the member-countries to establish common positions towards worldwide problems. The ECAFE/ESCAP took into particular consideration the sector of geological resources and environmental problems *sensu lato*. As a consequence, the ECAFE was brought to coordinate the cartographic aspect of these issues. Inevitably, the ECAFE and the CGMW were meant to meet regarding the maps of Asia. The ECAFE and UNESCO had already co-published the 1st (1961) and 2nd (1971) editions of the *Geological Map of Southern and Eastern Asia*, scientifically coordinated by the Geological Survey of India (Calcutta)⁵¹.

In Teheran (July 1968) during “the 7th session of the Group of Chief Geologists of the ECAFE, the Secretary General of the CGMW (Miss Frances Delany) highlighted the common projects of both scientific organizations and recommended establishing an official link to ensure this collaboration.” (Bulletin 8 of the CGMW, p.3, 1968). Therefore, common ECAFE/CGMW workshops were organized in Kuala-Lumpur (1973), Calcutta (1974), Sydney (1976), Seoul (1977) and Bangkok (1978).

Hence, the following are published: in 1980, the 3rd edition of the *Tectonic Map of South and East Asia* (7 sheets at 1:5 M), co-published by the CGMW and the Geological Survey of India; in 1984, the *Metamorphic Map of South and East Asia* (1sheet at 1:10 M), published by the CGMW and coordinated by the Geological Service of South Korea; in 1985-86, the *Metallogenic Map of South and East Asia* (4 sheets at 1:5 M, plus a Legend), co-published by the S/C for Metallogenic Maps of the CGMW and UNESCO; and in 1990, the 3rd edition of the *Geological Map of South and East Asia*.

D. THE GEOLOGICAL WALL MAP OF THE WORLD

At the General Assembly at UNESCO in 1966, the interest of having access to a synthetic Geological Map of the World at a small scale is put forth for the first time. It would sort of be the culmination of the ambitious project of a *Geological Atlas of the World* that had been approved in 1956 (see note 19) in the IGC in Mexico, but had not been started until 1964. This map would allow the replacement of the “non-official” *Geological Map of the Earth* at 1:15 that F. Beyschlag and W. Schriel accomplished in 1932 (see note 28), that was, besides, completely out-dated after the considerable evolution that the geological surveys had undergone in 3 decades.

Concerning this project, Resolution 10 (Bulletin 5 of the CGMW, 1966, p. XXI) says (as in the original phrasing):

«THE COMMISSION

acknowledges the evident interest in wall maps at the scale 1:15.000.000 on a sole contiguous area where the whole can be displayed, instead of the Geological Atlas of the World at the scale 1:10.000.000th which can only be consulted sheet by sheet,

desires that following the publication and distribution of the Atlas, a wall geological map at 1:15.000.000 is established and published, and

recommends, considering this geological map at 1:15.000.000, as a whole, a project of the Commission as the Atlas had been, nevertheless

insists on publishing and putting on sale the latter way before the appearance of the wall geological map; in order to include the results of the most recent geological research of the world in the geological wall map and,

considers that, in the same way, it would be highly desirable to contemplate, in the Commission's program, the future preparation of the tectonic, metallogenic, etc. maps of the world at the scale 1:10.000.000 and,

that this double series of maps, the wall one at 1:15.000.000 and the Atlas at 1:10.000.000, together with the continental maps at 1:5.000.000 and at larger scales as well, will constitute the complete cartographic development of our geological surveys, and that this series should also be regularly up-dated in the subsequent editions.

The *Geological Atlas of the World* required 20 years of considerable efforts from coordinators of the project and scientific collaborators, and also, from a financial point of view. Therefore it is only in January 1983 that this concept of wall map is launched again at the G.A. at UNESCO (Bulletin 32 of the CGMW) by the Resolution 11 (p. 147).

«The Commission recommends studying the possibility of preparing a wall geological map of the world at an appropriate scale and type of projection that could be useful for general research and educational purposes»

At the following G.A. in 1984 (27th IGC in Moscow) the conditions to establish this map are proposed (Bulletin 34 of the CGMW, 1985, p.202-206) by the Secretary General O. Dottin. The chosen scale is 1:25M, but there is still hesitation over the mode of projection because of distortions around high latitudes (Van der Grinten or Mercator?). The Resolution 68 (p.229) of this G.A. proposes to create a task force:

«The Commission proposes a group – composed by the continental Vice-presidents or their representatives, the President of the Sub-Commission of the geological Map of Sea Floors, and the general coordinators of the Geological Atlas of the World, G. Choubert and A. Faure-Muret, – to organize a meeting in a year's time designed to:

- discuss the project of the Geological Wall Map of the World and*
- propose a list of persons from the CGMW who could gather together an ad hoc task force.»*

Finally, the next year's Bulletin of the CGMW (Bulletin 36 of the CGMW, p.191, June 1986) informs that the system Van der Grinten that covers the entire globe is considered inadequate, (particularly to represent the structure of the Arctic Ocean). Therefore, the projection of Mercator is chosen for the main map, and the two zones, Arctic and Antarctic are represented in polar stereographic projection.

The 1st edition of the *Geological Map of the World* is published in 1990. For the first time, the geology of the continents and the geology of the oceans appear together as a contiguous area. The oceans no longer appear as a uniform color, but are attenuated or, in the best case, highlighted by bathymetric curves. In this map, the sub-marine cartography was taken from the oceanic sheets of the "Geological Atlas of the World" carried out by the famous marine geologist Bruce Heezen⁵². The structure of the oceanic crust (very largely interpolated) still has quite a "geometric" aspect.

The 2nd edition, issued in 2000, essentially benefits from new techniques of imaging, acquired by the altimetric observations of the satellites combined with multibeam bathymetry that represented a remarkable technological breakthrough. The sea-floor acquires, all of a sudden, a new aspect that outlines the ocean bathymetric structure at a smaller scale than before.

The 3rd edition (**Doc. 18**)⁵³ appears in 2010. The morphologic grain of the sea floors reaches an even greater degree of refinement and data is available at worldwide geophysical data bases. The important increase and great reliability of techniques of dating the absolute ages allow a better resolution of the sub-divisions of the Precambrian (Archean, Paleo-, Meso-, Neoproterozoic ages). However, most of all, the issue of the earth's great magmatic pulsations (hot spots, traps, oceanic plateaus,) reached maturity and generated an important modification of certain points of cartographic representation.

It's worth pointing out that these three editions are separated by a 10-year interval each. Indeed, thanks to the acceleration of the surveys, a decade became an adequate space of time to make a sufficiently significant revision of the conception of the map of the world.

CONCLUSION

When we entered the CGMW at the end of the summer of 1989 as Deputy Secretary General (part-time) we had only a vague idea of the past history of this international organization. Regarding a paper by our predecessor, Olivier Dottin, that had just appeared in Episodes⁵⁴, we could imagine the history of the CGMW unfolding «along a (nearly) quiet river» according to the rather laconic formulation found in the introduction of O. Dottin's paper: «*Organized in 1881 to create a geological map of Europe, the Commission for the Geological map of the World (CGMW) later expanded its purview to include all the continents and ocean basins.*»

Our research during the autumn of 2012, essentially analyzing the proceedings of the International Geological Congress sessions since 1978, allowed us to shed some light concerning the infancy of the Commission, interrupted in the first half of the 20th century, by the two major conflicts of the history of humanity. Like this, we saw the headquarters of the Commission passing progressively from Berlin, with a Prussian-German general coordination, to Paris, with French promotion and a greater international participation. We cannot but wish that the Commission for the Geological Map of the World continues to convey the image of the Earth that the astrophysicists tell us is in the middle age of its existence, with the indispensable and always renewed work of cartographic synthesis for at least another century.

Philippe Bouysse

Paris, December 21, 2012

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We also appreciate the help of the Société Géologique de France and the Bibliothèque de l'École des Mines de Paris, who gave us permission to access the proceedings of all the International Geological Congresses.

Finally, it was Jean Gaudant's, Vice-president of COFRHIGEO (Comité Français d'Histoire de la Géologie), insistence that persuaded us not to put off any longer the research on the origins of the CGMW.

CGMW today

The CGMW has developed from the oldest geoscience organization in the World, the International Geological Congress (IGC) created in Paris in 1878. The idea of the Commission was first postulated in 1910 at the 11th IGC in Stockholm, and set up in 1913 at the 12th IGC in Toronto, following the completion of the first edition of the Geological Map of Europe which was initiated at the 2nd IGC in Toronto in 1881.

The CGMW, whose headquarters are in Paris, is a non-profit-making scientific and educational association governed by French law. The CGMW is responsible for designing, promoting, coordinating, preparing and publishing small-scale thematic (geology, tectonics, ore deposits, natural resources, climate, etc.) Earth Science maps of the globe, continents, major regions, and oceans.

The CGMW is affiliated since 1966 to the International Union of Geological Sciences (IUGS) which was created in 1961 out of the constraints related to the organization of the IGC. As an active member of geoscientific unions and non-governmental organization (NGO), it is recognized by UNESCO as a rank A NGO and as such is eligible for UNESCO funding. Geological Surveys (or similar organizations responsible for national geological mapping) of countries and territories throughout the World are Statutory Members of the CGMW.

The management of the Commission is ensured by a Bureau composed by a President, a Secretary General and the heads of the nine geographical Subcommission and seven thematic Subcommissions. General Assemblies are held every two years, alternately at the UNESCO headquarters in Paris, and during the International Geological Congress.

NOTES and REFERENCES

- 1 p.4 Ellenberger F., 1982. *The first geological maps in France: projects and realizations*. **Travaux du COFRHIGEO**, (session of 24 March 1982).
- 2 p.4 Gaudant J., 1991. 150th anniversary of the first geological map of France. **Travaux du COFRHIGEO**, (session of 27 November 1991).
- 3 p. 4 Durand-Delga M., 1997. From the first geological maps of the world by Ami Boué (1843) and Jules Marcou (1861) to the Geological Atlas of the World of 1984 in «De la géologie à son histoire», **CTHS**, p. 193-205.
- 4 p.4 Laurent G., 1993. Ami Boué (1794-1881): his life and work. **Travaux du COFRHIGEO**, (session of 3 March 1993).
- 5 p.4 Durand-Delga M. & Moreau R., 1994. *A disturbing savant: Jules Marcou (1824-1898), French geologist from America*. **Travaux du COFRHIGEO**, (session of 30 November 1994).
- 6 p.4 Durand-Delga & Moreau R., 1996. Jules Marcou, French pioneer of the North-American geology. **La Vie des Sciences** (Académie des Sciences), t. 13, n°1, p.59-83.
- 7 p.4 Marcou J., 1853. *A geological Map of the United States and the British provinces of North America, with an explanatory text* (92 p., 8 pl., 1 map), **Crould and Lincoln**, Boston.
- 8 p.4 Juan Vilanova y Piera, born in Valence, was the great authority of the emergent Spanish geology. He studied the first dinosaur found in Spain and was a strong advocate for the authenticity (quite controversial in that time) of the rupestrian paintings of Altamira.
- 9 p.4 Vai G.B. 2002. *Giovani Capellini and the origin of the International Geological Congress*. **Episodes**, vol. 25, n° 4, p. 248-254.

- 10 p.4 This group of geologists met on the occasion of the 25th session of the “American Association for the Advancement of Science”, immediately after «[because] the 1876 Centennial Exhibition of Philadelphia being the means of securing the attendance of foreign-savants».
- 11 p.5 Ellenberger F., 1999. *The first International Geological Congress, Paris, 1878. Episodes*, vol. 22, n° 2, p. 113-117. Gian Battista Vai (cf. the reference in note 9) suggests, referring to Capellini, an explanation that can be relevant for the choice of France and Paris for the launching of this inaugural Congress (p.249) : « After publication of d’Alembert’s Encyclopédie, and as a consequence of the French revolution, and Napoleon’s reforms, French replaced Latin as the international scientific language. Paris was the prime centre for culture, arts, and science. Both old prominent and young emerging geologists, especially those coming from southern European countries, could expect visibility and international audience only through Paris and the Société Géologique de France. »
- 12 p.5 «*Comptes rendus sténographiques du Congrès international de Géologie (Exposition universelle internationale de 1878, Paris, Paris Imprimerie Nationale, 1880)*» (the pdf is downloadable at <http://cnum.cnam.fr/CGI/redir.cgi?8XAE258>). Moreover, the complete series of the IGC proceedings can be consulted at the library of the Société Géologique de France, except for volume 1 of the 13th IGC (Brussels, 1922) which is available at the Library of the École des Mines (Fontainebleau, France).
- 13 p.5 All the more since it was during this Bologna Congress that Berlin was selected for the 3rd session of the IGC.
- 14 p.5 This institution became afterwards and successively: *Preussische Geologische Landesanstalt, Reichsamt für Bodenforschung* (“research on soil”), and *Bundesanstalt für Geowissenschaften und Rohstoffe* (BGR, nowadays based in Hannover; literally: “Federal Service for Geoscience and Raw Material”).
- 15 p.6 Meinhold K.-D. & Wellmer F.-W., 1994. *Die Rolle der staatlichen deutschen Geologie bei der Herstellung internationaler geologischer Kartenwerke –dargestellt am Beispiel der Internationalen Geologischen Karte von Europa 1:1 500 000. Z. dt. geol. Ges.*, v. 145, p. 16-27 (the translation in French by Ph. Bouysse was published in the CGMW Bulletin n° 44, 1994, p. 99-107 under the title: «*The role played by the German geology in the production of international geological cartography represented by the example of the International Geological Map of Europe at the scale of 1:1.5 M*»).
- 16 p.6 The parts of *texts quoted* in **bold**, indicate that it is emphasis added.
- 17 p.8 It is a suggestion of Alexander von Humboldt (1769-1859) that would have inspired Heinrich Berghaus to undertake his Atlas, which shall contribute to illustrate the *Kosmos* of the great naturalist.
- 18 p.8 The two first editions of the *Berghaus Physikalischer Atlas*, present only 2 geological maps at small scale: Europe (1843) and Germany and surrounding areas (1843) that are strictly contemporaneous with Ami Boué’s map (1843 for his first sketch).
- 19 p.8 The project of this bilingual Atlas (French-English), proposed by Fernand Blondel in 1952 at the Algiers Congress, was approved in Mexico in 1956. It can be considered that its construction really started in 1964. It was completed, assembled and published in 1984, the first sheets (North America) having been printed in 1974. The Atlas is composed of 18 continental sheets at the 1:10 M scale (at different projections), 5 oceanic sheets (scales ranging from 1:16 M to 1:36 M), and 1 sheet with the General Legend. The second president of the CGMW (1964-1980), Jean Marçais, recapitulates in the foreword of this atlas, the history of the complexity of this work, the only one in its kind. One can read between lines an overview of the history of the CGMW, which was a useful introduction to our research on the «*obsure years*» from the point of view of archives.
- 20 p.8 The dates of the official proceedings of this IGC are given in two calendars, the Julien (still used in Russia at that time) and the Gregorian that is 12 days ahead the former. We noted an excerpt of the Proceedings (p. CLII) that seems to us worth to be mentioned and that will be meaningful 6 or 7 decades later: one participant «*underlines the importance of marine formations*» and notes that «*an extensive study of the oceans is necessary for the geologist [...] A very reduced number of geologists have had the opportunity to take a look at the sea bottom.*» Then, it is suggested that an «*International floating institute, supported by all the governments, could be of service to Science.*»
- 21 p.8 Here are some relevant points (among many others) about this Congress:
p. 108: a memorable «geo-poetical» speech by C. Diener, Secretary General of the Congress, about «the geologists and the Antaeus myth»;
p. 129 sqq.: very lively discussions between the pros and the cons on the nappes «theory».
p. 707 sqq.: a paper and pictures on the Mt. Pelee cataclysmic eruption occurred the former year.
- 22 p.9 Jacques Deprat (1880-1925), «Chief of the Indochina Geological Survey» and his intimate ennemy Honoré Lantenois (1863-1940), then District Engineer in Chief of the Indochina Mines (Hanoi), are both attending

- the Congress. Deprat is one of the appointed Vice-presidents of this Congress, probably at the instigation of Pierre Termier, and we'll see that the influential E. de Margerie had him nominated at the Commission for the Geological Map of the World. (cf. M. Durand-Delga, 1990. *L'Affaire Deprat*. **Travaux du COFRHIGEO** - Session of 28 November 1990).
- 23 p.9 This map was published in its entirety (as well as the proceedings of the Bologna Congress – 1881) in a CD of the Servizio geologico sismico e dei suoli, Regione Emilia-Romagna (Bologna, 2008) distributed at the 33rd IGC of Oslo (2008).
 - 24 p.11 Emmanuel de Margerie (1862-1953), born in a well-to-do catholic family, is quite an extraordinary character (cf. the *Annales de Géographie*, Paris, March-April 1954, t. 63, n° 336, p. 81-87), but also a controversial one (cf. Jean Vogt, 1999, *A propos d'Emmanuel de Margerie et de son équipée strasbourgeoise -1919-1930*. **Travaux du COFRHIGEO**, - session of March 1999). Self-taught, in the social round, not having followed formal studies and with no university degree, de Margerie is a quick-witted, curious, cultured and very learned person. From the age of 15, he attends the international geological Congresses (Paris inaugural Congress), and very early develops an interest for geology, although he is more a man of the office than a field geologist. He claims for himself to be both a geographer and a geologist and will be twice the president of the Société géologique de France (1879 and 1919). He played an active role, nationally and internationally, in the meetings and learned societies of geography and geology. It was him who promoted J. Deprat to the «Committee of the Geological Map of the World» in Toronto (1913), but will be also the chair of the «Committee of Scholars» that will irrevocably condemn in 1919 the brilliant geologist of Tonkin that was J. Deprat, after the questionable case of trilobite's substitution. De Margerie will be nominated at the Académie des Sciences in 1923. It is worth to note that E. de Margerie is the editor of the French version (and the translator for a large part) of the main works, in four volumes, of E. Suess's *The face of the Earth* (Armand Colin, 1897-1900-1902-1918).
 - 25 p.12 Map presented at the Conference of Emile Argand, on August 10, 1922 before the Geological Congress of Brussels, entitled "*Tectonic map of Asia*", and published with a text and 27 figures in the **Compte Rendu du XIII^e Congrès géologique international 1922**, (1924), p. 171-372.
 - 26 p.13 E. de Margerie calls himself, in an address to the closing session of the Congress, as «*the oldest of the present delegates*» (p. 156).
 - 27 p.13 Fernand Blondel (1897-1968), former student of the École Polytechnique and the École des Mines de Paris (1919-1921), was a member of the Mine Corps of the French colonial administration. He was president of the Société Géologique de France in 1937. After his return from Indochina (in 1929), he created in 1932 a foundation to promote the geology of the overseas territories and particularly of Africa, the *Bureau d'études géologiques et minières coloniales* (Bureau of colonial geological and mining surveys) that will publish the *Chronique des Mines coloniales* (Chronicle of colonial mines) and taken over by the BRGM in 1961 under other titles. See his biography in : Raguin E. & Marçais J. (1970). «*Fernand Blondel* ». **Bull. Soc. Géol. de France**, (7), XII, n°5, p. 733-747.
 - 28 p.14 The publication of this *Map of the Earth* will be completed in 1932. The references are the following: F. Beyschlag, *Geologische Karte der Erde 1:15.000.000* (12 sheets, 82/66,5 cm) carried out by the «Preussischen Geolog. Landesanstalt», Berlin; Verlag Bornträger, 1929-1932, projection in a «mappa mundi» style (i.e. in 2 hemispheres each enclosed in a circle, with a legend in 34 items. The authors are: «Dr. Franz Beyschlag, former President and Dr. Welter Schriel, Scientific Editor». A simplified bathymetry is figured in the oceans that reflects the state of the art in those times.
 - 29 p.14 References: F. Beyschlag und W. Schriel, *Kleine geologische Karte von Europa 1:10,000,000* (1 sheet, 60/72 cm), produced by the «Preussischen Geologischen Landesanstalt», Verlag Bornträger, Berlin, 1925; with an overview of the tectonics of Europe drawn on a tracing paper.
 - 30 p.14 L'Union The Union of South Africa dominion (as for Canada or Australia) was created in 31 May 1910, from the union of the 4 British colonies of southern Africa: The Cape, Natal, Transvaal, Orange River.
 - 31 p.14 Between his departure from Hanoi and his return to France, the Government entrusts him with a reconnaissance mission in Java and South Africa, that allows him to attend the Pretoria Congress where he delivers, among others, «*a masterful report [...] entitled «State of our knowledge in 1929 on the geology of French Indochina»* » (Raguin and Marçais, 1970 ; cf. note 24).
 - 32 p.17 It concerns sheets 68 (Cape Town), 69 (Dunbar), 62 (Congo) and 63 (Zanzibar); the first 2 completed in 1930, and the 2 others in 1932. An online search revealed that this set was referenced as: «*Carte géologique internationale de la Terre 1:5 000 000 [Südliches Afrika], Berlin 1933, 4 Karten, Preussische geologische Landesanstalt, Berlin*» and that [in 1934] «*other sheets of Africa should soon follow, and in this manner complete the cartography of this continent*». These sheets were sold at 20 RM price each (except for Dunbar, to the East, at 6 RM) ;(see **Doc.15**).

- 33 p.21 Contrary to the 3rd edition of the Geological Map of Africa (1985-1990) distributed by CCGM in 6 sheets, the first 2 editions (1936/37-1952, and 1963), at the same scale of 1:5 M, include 9 sheets.
- 34 p.21 *Amt für Bodenforschung in Hannover* (1950); *Bundesanstalt für Bodenforschung* (BfB, 1958); *Bundesanstalt für Geowissenschaften und Rohstoffe* (BGR, 1975).
- 35 p.21 In his report of activities delivered at the CGMW General Assembly held for the first time at UNESCO in December 1962 (between the IGCs of Copenhagen-1960 and New Delhi-1964), Secretary General Jean Marçais recalls that: «*In his opening speech of the General Assembly of the Commission held in March 1958 in Paris [hence between the IGCs of Mexico-1956 and Copenhagen-1960], our President [F. Blondel] recalled that the Commission for the Geological Map of the World had commenced a **second life** after the Geological Congress held in London in 1948, and since that in Algiers in 1952.*»
- 36 p.27 Nevertheless, it is at the G.A. of the Sydney IGC (1976) that resolution n° 3 is voted to approve the definition of 3 categories of subscriptions, following the motivations and possibilities of Member Countries of CGMW:
- « *The COMMISSION:*
considering the world-wide increase of costs and devaluation of currencies,
decides that the annual subscription be raised to \$250 (or 1250 French Francs), and
that higher subscriptions (of \$500 and \$1,000 or \$2,000 and \$5,000 French Francs)
be encouraged for member countries who may thus express their faith in and support
of CGMW projects, following the example shown by some countries in 1976.»
- 37 p.27 The headquarters of CGMW, at rue de Bourgogne until 1974, will move to 74 rue de la Fédération, Paris 15^e (1970-1974; at BRGM headquarters), then to 51 Bd de Montmorency, Paris 16^e (1974-1984; at the ICSU headquarters) and finally settled down in 1985 at 77 rue Claude-Bernard, Paris 5^e, at the Maison de la Géologie, besides the Société Géologique de France. The first subscriptions will be paid by 30 countries or organisations in 1953 (*in Proceedings of the Algiers Congress, published in 1956*). For the 5 next years (1956 to 1960), cf. p. 347-350 in : **Report of the Twenty-First Session Norden, 1960, Part XXVIII, General Proceedings, Copenhagen 1964**, the number of financial contributions will range between thirty and fifty, the best year being 1958 with 55 paid subscriptions (Europe: 19, Africa: 14, Asia: 7, Oceania: 1, North and Central America: 3, South America: 2), (see **Doc.16**).
- 38 p.28 USA, Mexico ; Chile, French Guyana, Uruguay, Venezuela ; Germany, Bulgaria, France, Great Britain, Hungary, Italy, Norway, the Netherlands, Poland, Portugal, Sweden ; French Western Africa (AOF), Algeria, Egypt, Liberia, Morocco, Tunisia, South African Union; USSR ; British Borneo, Korea, India, Japan.
- 39 p.30 Cf. “*The 20th International Geological Congress, Mexico (1956)*” by L.P. Mazadiego Martínez & O. Puche Riart, **Episodes**, v. 32, n° 3, p. 194-207. 2009. The authors underline that at that moment, «*metallogeology was at its zenith*» and that the lecture, at the Congress, by F. Blondel entitled «*Notes de géologie minière*» based on his work «*La classification des gisements minéraux*», released in 1951, was noteworthy.
- 40 p.30 One can raise the question on the true reason for the formal fusion of these two bodies. It is clear that the *Bureau d’Études géologiques et minières coloniales* (BEGMC) (managed by F. Blondel) could no longer exist as such after 1960, a date that corresponds roughly to the end of the European colonial empires. The BEGMC, that was in charge of the 1st edition of the Geological Map of Africa and published the «*Chronique des Mines coloniales*», should be transformed, in 1961, into «*Centre d’Études géologiques et minières* (CEGM). In 1981 the latter will become the «*Centre international pour la formation et les échanges géologiques*» (CIFEG). The magazine published by the BEGMC (*Chronique des Mines coloniales*) turns into the «*Chronique des Mines et de la Recherche minière*» of the CEGM, a magazine that is gradually taken over by the BRGM to become in 1977 the «*Chronique de la Recherche minière*».
- 41 p.31 This 12 pages document (**Doc.16**) (p. 339-350) appears in the **Report of the Twenty-First Session Norden, 1960, Part XXVIII, General Proceedings, Copenhagen 1964**. It is preceded by a report of the «Commission of the international Map of Europe» (p. 335-339) and followed by that of the ASGA (p. 360-361).
- 42 p.31 The Secretariat of the CGMW settles after the Algiers Congress in the premises of the «*Bureau d’Études géologiques et minières coloniales*» created by F. Blondel (see notes 34 and 37) located at rue de Bourgogne. The BEGMC renamed «*Centre d’Études Géologiques et Minières*» will move to rue Léonard de Vinci (Paris 16^e). This last transfer must have been done at the moment the Copenhagen Congress was held because this was the address indicated for Blondel in the list of delegates of the 21st Session.
- 43 p.33 The «People’s Republic of China» («continental») was declared in October 1949 by Mao Zedong, and was not admitted to the UN until 1971. It was Taiwan (Chiang Kai-shek’s «Kuomintang National Government of China») that as from 1950 represents «China» at the UN until the P.R. of China replaces Taiwan in October 1971. At the CGMW, China-Taiwan pays (regularly) its subscription from 1956 until 1986. Then

in 1987, the P.R. of China joins CGMW which *ipso facto* triggers the withdrawal of Taiwan, in spite of the highly diplomatic statements of the Commission. Hereafter are the Resolutions of the CGMW General Assembly in Paris (February 1987); in : Bulletin of CCGM/CGMW n° 37, June 1987), where «CGMW Bureau:

« 5 *invites* The Chinese Academy of Geological Sciences, Republic of China, to become Statutory Member of the Commission, and

6 *acknowledges* that in consequence, the Central Geological Survey of Taiwan, China, can no longer remain Statutory Member, and

7 *encourages* the Central Geological Survey of Taiwan, China, to become Associate Member of the Commission, registered as Geological Survey of Taiwan, China. »

- 44 p.33 This map entitled «Provisional structural sketch of Africa at the scale of 1:10.000.000» (1959) was carried out by R. Furon and G. Daumain, and published in Paris by the «Association des services géologiques africains, Congrès Géologique International». The foreword of the Explanatory Note was written by F. Blondel. One learns in this text that the principle of this map was decided at the London IGC (1948), «and in an efficient and precise manner» at the Algiers IGC (1952) based on the International Geological Map at 1:5 M (1952). A first draft of this map will be drawn in March 1953.
- 45 p.35 UNESCO, created in November 1945 in London, set up its headquarters in Paris in 1946, temporarily at the Hôtel Majestic (avenue Kléber), then settled down definitively in «Fontenoy» in Novembre 1958. This second period of its settlement is concurrent with the development of the «new» CGMW. The geographical proximity of the offices of these two international bodies has greatly facilitated the establishment of a close relationship in the field geological cartography.
- 46 p.36 The financial assistance that UNESCO grants to the Commission to support the compilation of drafts and the publication of maps (and for some time, the holding of workshops and General assemblies) was substantial until around 1994. On a constant currency basis, UNESCO's funding per year could represent an average of 10 times the sums that this institution allows to the CGMW nowadays.
- 47 p.36 This decision was recalled to CGMW in a letter of UNESCO dated 15 February 1984. (see **Doc.17**).
- 48 p.36 ICSU is the extension of the *International Research Council* (IRC , 1919-1931).
- 49 p.36 Cf. *The roots of IUGS*, James M. Harrison, **Episodes**, v.1, p.20-23, 1978.
- 50 p.37 Hereafter is the full text of the report of CGMW President to the Council of the New Dehli IGC (1964) ; cf. **Bull. CCGM** no.3, p.45-46, 1964:

«VIII-REPORT OF THE PRESIDENT OF THE COMMISSION TO THE COUNCIL OF THE INTERNATIONAL GEOLOGICAL CONGRESS

In 1948 the Commission of the Geological Map of the World became a permanent Commission of the Congress, and as such the Commission's President reported to the council of the Congress on the activity of the Commission.

This report summarized briefly the activity of the Commission since the XXIst Session of the International Geological Congress, Copenhagen (1960), and presented the resolutions made in the general session during the closing meeting of the present meeting of the Commission (see Appendix 12).

During the deliberations of the Council of the Congress on the relationship between its commissions and the International Union of Geological Sciences, the President of the CGMW presented a short note on the eventual transfer of the Commission to the IUGS. The text of this note follows:

«The question of the affiliation (Bull. 11; p. 29) or of the transfer of commission of the Congress to the Union ought to be carefully examined to ascertain that such a measure would in no way interfere with the functioning of the commissions, but, on the contrary, would facilitate their activity and contribute to the development of these commissions.

«The Commission for the Geological Map of the World is one of the oldest commissions of the Congress. It comprises all the countries which participate in the Congress (122), and which, in a varying but continuous fashion, participate in the work of the Commission. F. BLONDEL has been President until this session, when he was forced to resign on 12 December for reasons of health, and I had the honour of being elected President of the Commission by the General Assembly on 14 December, on the proposal of the Bureau of the Commission (Africa, North America, South America, Asia, Australia and Oceania, East and West Europe). I would ask that the President of the Congress send on the part of the Council a message of friendship and of appreciation to F. BLONDEL for the work that he has accomplished as head of this Commission.

«I will submit a separate report of the activity of the Commission, but in order to enable the Council and the committees designated by the Congress and the Union to be well-acquainted with the problem for today's discussion, I would like to draw their attention to the following points:

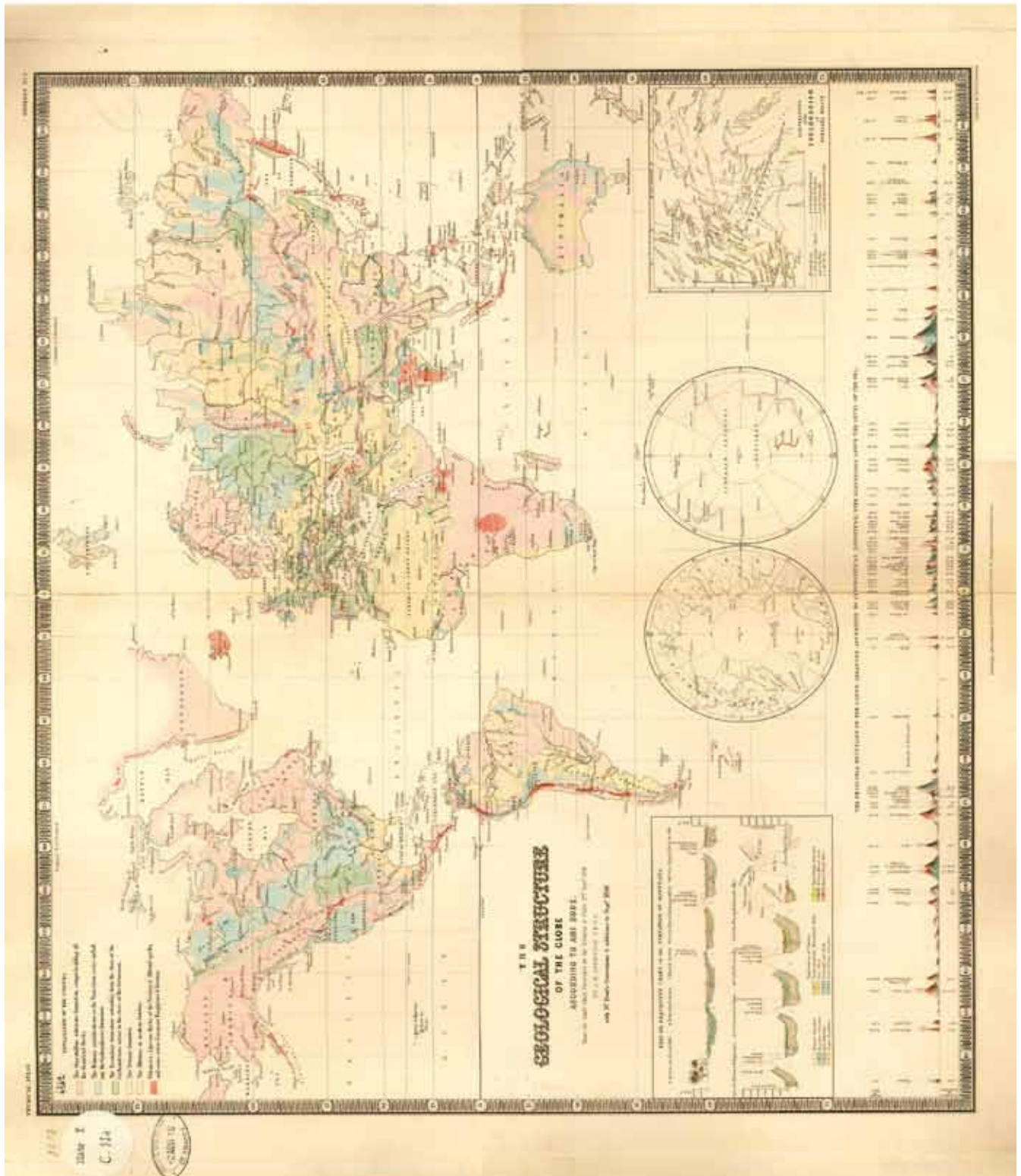
- 1- The activity of the Commission is truly international; with the participation of 122 countries, of which only 44 belong of the Union. This activity takes the form of numerous regional or continental meetings on every continent, organized by the Commission or the Sub-Commissions and of a general meeting organized every four years between the geological Congresses. The last such meeting, held in Paris in 1962 gathered representatives of 55 countries in the buildings of UNESCO.
- 2- The constitution of this Commission and its organization are very different from those of the commission of the Union. The Commission itself elects its Bureau and its President for an undetermined length of time. It has a permanent Secretariat in Paris. It is assured of the collaboration of a very great number of geologists besides the heads of local Geological Surveys who are members by right of the Commission : its acts therefore as an international and practically autonomous scientific association.
- 3- This autonomy is even more evident on a financial level. The functioning of the Commission (secretariat, meetings, publications, travel, etc.) is assured by various sources of income: fees of member countries (£ 50 a year), subsidies from various countries (especially for publications), national and international organisms (UNESCO, IUGS), participation in the expenses of publications or of meetings by certain countries. The financial aspect is very important, for it implies that the Commission reports on its accounts directly to its members, to the countries and to the organisms that support it financially, and if it should become a commission of the Union this financial aspect would have to be studied with the greatest care.
- 4- To recapitulate, one might say that the Commission resembles more a scientific association being truly international and autonomous and deciding on its own action within the extremely flexible framework of the organization of the International Geological Congress: on the scientific level as well as on the administrative and financial level. If it should seem desirable that this Commission be integrated into the general activity of the Union, the manner in which this integration occur should be studied with the greatest of care in order not to impede the activity of a Congress commission which has accomplished a great deal of work effectively for many years and which continues to do so more than ever today.

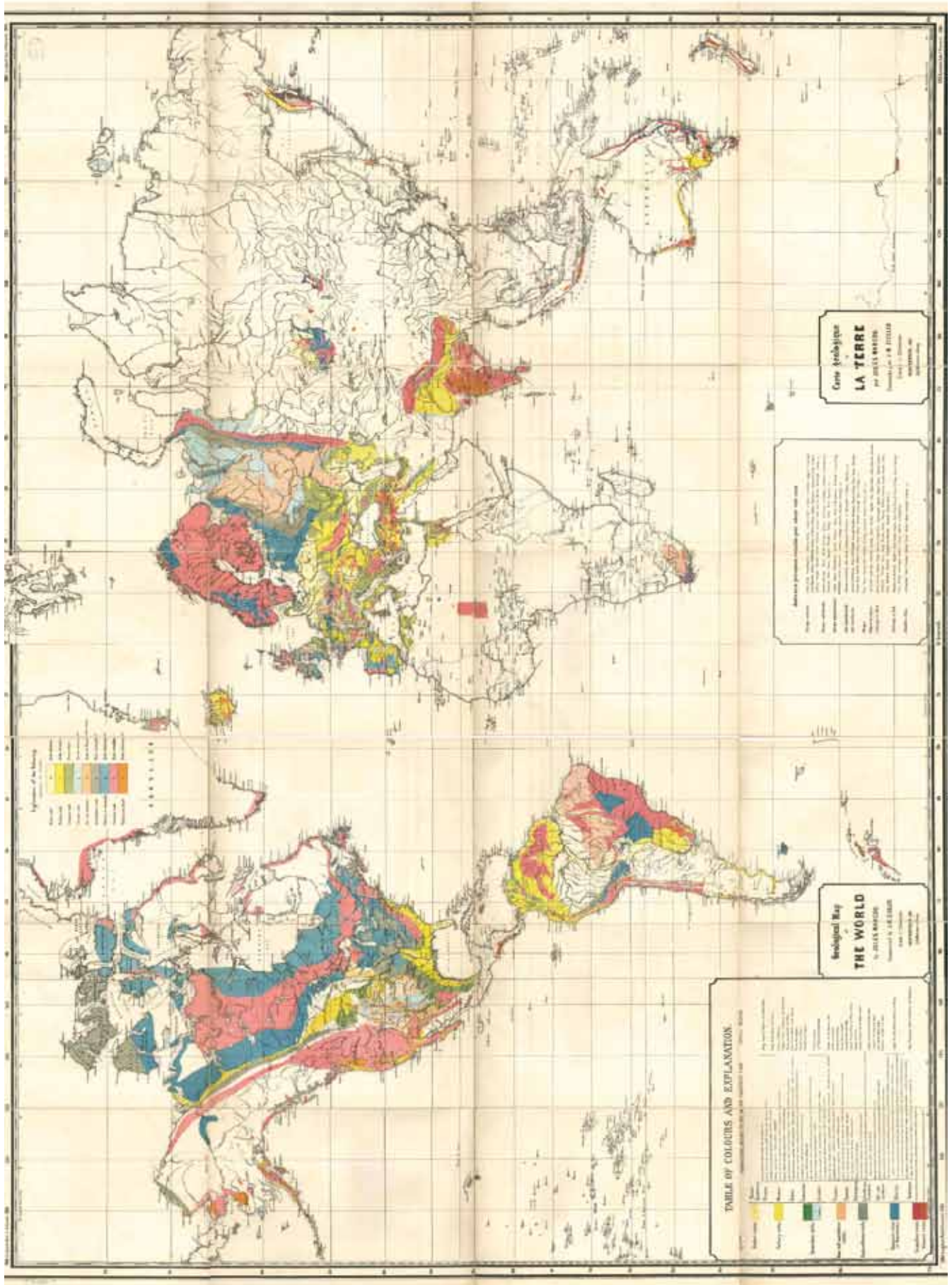
In what may ought this integration to take place:

- either the Commission would be simply affiliated (IUGS, Letter N° 11, p. 29) with the Union as an International Association,
 - or the Union should anticipate an important amendment to its statutes to enable large commission to keep their autonomy and the freedom of action which is absolutely indispensable to their activity.»
- 51 p.39 The 3rd edition of the Geological Map of South and East Asia was published in 1990, at that time under the aegis of the CGMW and its «Subcommission for South and East Asia» (4 sheets at 1:5 M scale and legend in 2 sheets), and carried out under the general coordination of the Geological Survey of India whose General Director was CGMW Vice-President for South and East Asia. For reasons that it would take too long to discuss here, the sales of this map were not managed by CGMW Secretariat.
- 52 p.40 Bruce C. Heezen (1924-1977) is a famous marine geologist from the Lamont Doherty Geological Observatory (Columbia University, N.Y.). Together with his colleague Mary Tharp, he worked on the morphology («physiography») of the seafloor, starting in the North Atlantic (1959). Their map of the world physiography, known worldwide, was published shortly after his death (heart failure) occurred, in June 1977, on board a submarine while working on the mid-Atlantic ridge.
- 53 p.40 The «philosophy» of this 3rd edition is mentioned in the Explanatory Notes that accompany the Map. The text can be downloaded in English, French and Spanish at the CGMW web site.
- 54 p.41 Dottin O.-Y., 1989. *The Commission for the Geological Map of the World at cartographic crossroads; Episodes*, v.12, no.3, p.184-189.
Episodes is the official magazine of the International Union of Geological Sciences (IUGS) to which the CGMW is affiliated.

List of attached documents

- Doc. 1 *Essai d'une Carte géologique du globe terrestre*, by Ami Boué; sketch presented in Graz in 1843.
- Doc. 2 *Carte géologique du globe terrestre*, by Ami Boué; English edition dated 1846.
- Doc. 3 *Carte géologique de la Terre*, by Jules Marcou, printed in 1861 in Winterthur (Suisse).
- Doc. 4 List of the sessions of the International Geological Congress (IGC) since its creation (1876/78).
- Doc. 5 Index map of the *Carte géologique de l'Europe à 1:1,5 M.* This plan corresponds to the index map of the 3rd edition (completed in 2000) which is identical to the first edition.
- Doc. 6 *Atlas der Geologie* by Hermann Berghaus (1892) : summary
- Doc. 7 idem : Sheet VII-VIII : Global view
- Doc. 8 idem : Sheet IX : Europe
- Doc. 9 idem : Sheet XII : Africa
- Doc. 10 Index map of the *Geological Atlas of the World*, CGMW/UNESCO edition carried out between 1974 and 1984.
- Doc. 11 Sheet 49 (title, authors,...) of the 1st edition of the *Geological Map of Europe at 1:1.5 M* (1913)
- Doc. 12 Global view of 47 + 2 sheets that compose the former map.
- Doc. 13 *Geologische Karte der Erde* at 1:15 M (1929/32) : «Old World» hemisphere, by F. Beyschlag and W. Schriel.
- Doc. 14 idem : «New World» hemisphere.
- Doc. 15 Index map of the *Geological Map of the World at 1:5 M* initiated at the Stockholm IGC (1910) and coordinated by the Directors-Managers of the Geological Survey of Germany/Prussia until the end of the 1940's.
- Doc. 16 Report of the activities of the CGMW presented at the Copenhagen IGC (1960).
- Doc. 17 Affidavit of UNESCO concerning the CGMW.
- Doc. 18 *Geological Map of the World at 1:25 M*, 3rd edition of 2010.





Document 4

Founding Committee (1876)

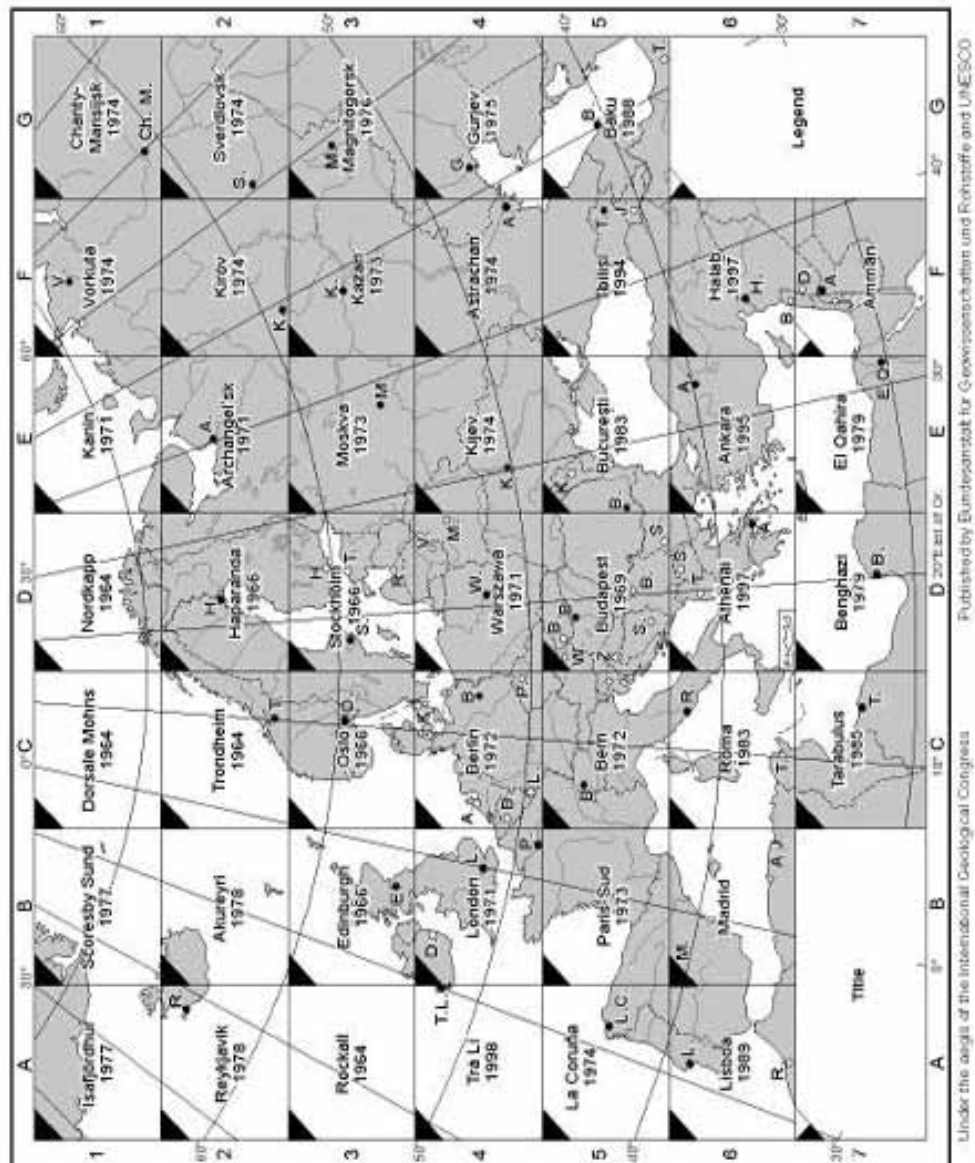
President: James Hall (USA); Secretary: T. Sterry Hunt (Canada)

Members: William B. Rogers (USA), J. William Dawson (Canada), John S. Newberry (USA), Charles H. Hitchcock (USA), Raphael Pumpelly (USA), J. P. Lesley (USA), Thomas H. Huxley (UK), Otto Torell (Sweden), E. H. de Baumhauer (The Netherlands)

Sessions of the International Geological Congress

Session	Year	Country	City	President	Secretary-General
1.	1878	France	Paris	E. Hebert	E. Jannettaz
2.	1881	Italy	Bologna	G. Capellini	T. Taramelli
3.	1885	Germany	Berlin	E. Beynch	M. Hauchecorne
4.	1888	UK	London	J. Prestwich	J. W. Hulke, W. Topley
5.	1891	USA	Washington	J. S. Newberry	H. S. Williams, S. F. Emmons
6.	1894	Switzerland	Zurich	E. Renevier	H. Gollier
7.	1897	Russia	St. Petersburg	A. Karpinsky	Th. Tschernyschew
8.	1900	France	Paris	A. Gaudry	C. Barrois
9.	1903	Austria	Vienna	E. Tietze	C. Diener
10.	1906	Mexico	Mexico City	J. G. Aguilera	M. E. Ordonez
11.	1910	Sweden	Stockholm	G. de Geer	J. G. Anderson
12.	1913	Canada	Toronto	F. D. Adams	R. W. Brock
13.	1922	Belgium	Brussels	J. Lebacqz	A. Renier
14.	1926	Spain	Madrid	C. Rubio	E. Dupuy de Lome
15.	1929	South Africa	Pretoria	A. W. Rogers	A. L. Hall
16.	1933	USA	Washington	W. Lindgren	W. C. Mendenhall
17.	1937	USSR	Moscow	I. M. Goubkin	A. E. Fersman
18.	1948	UK	London	H. H. Read	A. J. Butler, L. Hawkes
19.	1952	Algeria	Algiers	C. Jacob	R. Laffitte
20.	1956	Mexico	Mexico City	A. G. Rojas	E. J. Guzman, J. Gonzalez Reyna
21.	1960	Nordic Countries	Copenhagen	A. Noe-Nygaard	T. Sorgenfrei
22.	1964	India	New Delhi	D. N. Wadia	B. C. Roy, R. K. Sundaram
23.	1968	Czechoslovakia	Prague	J. Svoboda	A. Dudek
24.	1972	Canada	Montreal	R. E. Folinsbee	J. E. Armstrong
25.	1976	Australia	Sydney	N. H. Fisher	A. Renwick
26.	1980	France	Paris	J. Aubouin	P. Sangnier
27.	1984	USSR	Moscow	E. A. Kozlovsky	N. A. Bogdanov
28.	1989	USA	Washington	C. L. Drake	B. B. Hanshaw
29.	1992	Japan	Kyoto	T. Sato	S. Ishihara
30.	1996	China	Beijing	Song Ruixiang	Zhang Hongren
31.	2000	Brazil	Rio de Janeiro	U. Cordani	Carlos Oiti Berbert
32.	2004	Italy	Florence	Attilio Boriani	Ernesto Abbate
33.	2008	Nordic Countries	Oslo	Arne Bjorlykke	Anders Solheim
34.	2012	Australia	Brisbane	Neil Williams	Ian Lambert
35.	2016	South Africa	Cape Town	Thibedi Ramontja, Richard Viljoen	Danie Barnardo

Document 5



International
Geological Map of Europe
and the
Mediterranean Regions
1 : 1 500 000

INDEX MAP

Map sheet on sale
at
ILH (GeoCenter)
Postfach 800830
D-70 508 Stuttgart
or
UNESCO
7, Place de Fontenoy
F - 75 700 Paris

BGR
Bundesanstalt für Geowissenschaften und Rohstoffe
Steinweg 3, D-30650 Hannover

Under the aegis of the International Geological Congress
Published by Bundesanstalt für Geowissenschaften und Rohstoffe and UNESCO

ATLAS der G e o l o g i e

(Berghaus' Physikalischer Atlas, Abteilung D.)

15 kolorierte Karten in Kupferstich
mit 150 Darstellungen.

Unter beratender Mitwirkung von Prof. Dr. K. v. ZITTEL

bearbeitet

VON

Dr. HERMANN BERGHAUS,

Professor in Göttingen.

Nach dem Tode des Verfassers ist dieses Werk fortgesetzt von Dr. H. Hübner, Dr. C. Kalksch und Prof. Dr. Ziemann.

INHALT:

Vorbemerkungen.

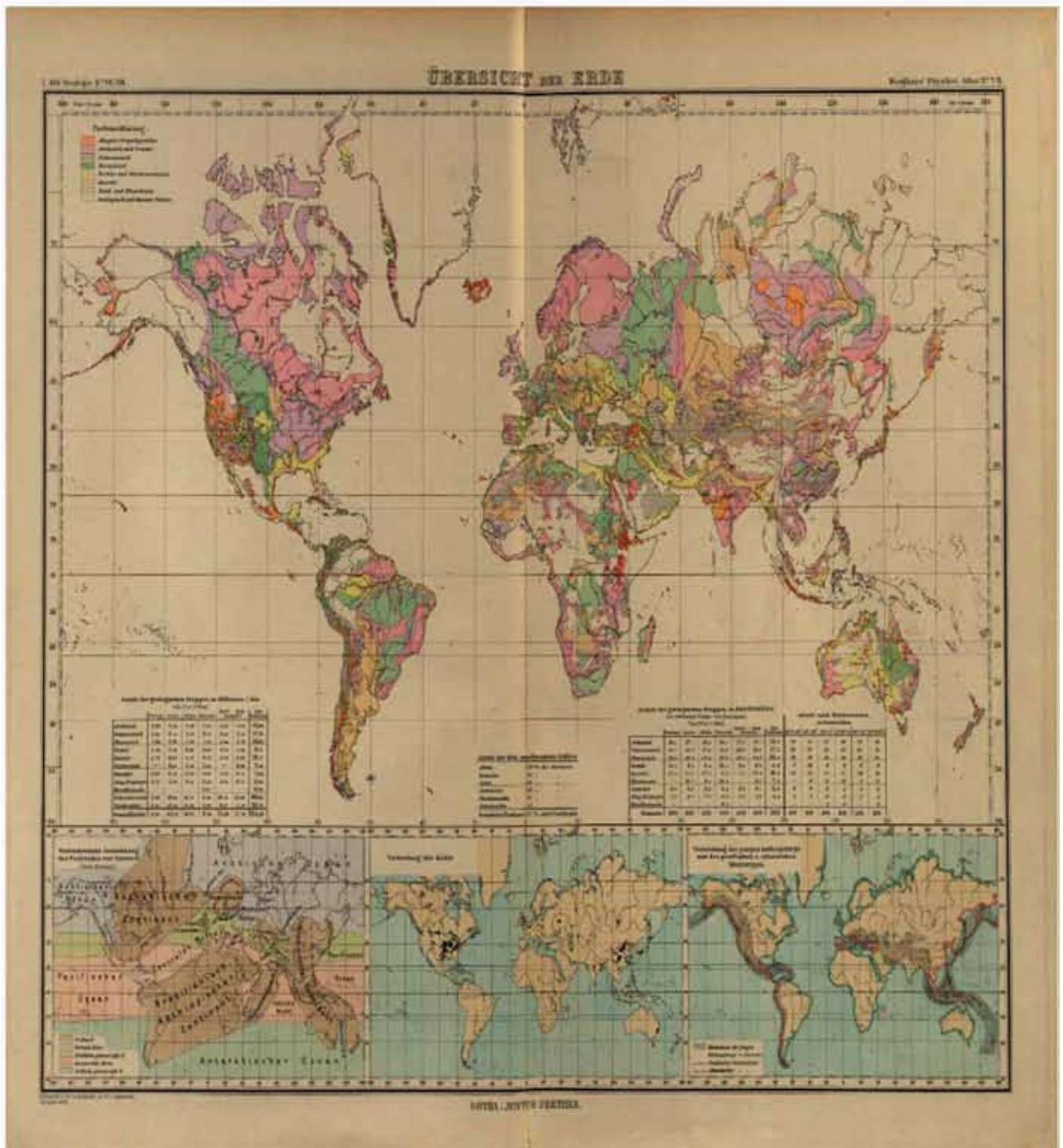
- I. Höhen und Tiefen (1 Karte und 11 Profile).
- II. Tiefländer (16 Karten).
- III. Thätigkeit des Erdinnern (9 Karten).
- IV. Gneis und Boden (8 Karten).
- V. Eisverbreitung (8 Karten).
- VI. Gletscherkarte (21 Karten).
- VII/VIII. Übersicht der Erde (4 Karten).

Es haben sich viele über die Größe des Atlas geäußert, und es ist zu erwarten, dass der Atlas in der nächsten Ausgabe eine noch größere Ausdehnung erfahren wird. Eine solche Erweiterung ist bei der Herstellung des Atlas in der nächsten Ausgabe zu berücksichtigen. Die nächste Ausgabe wird die Größe des Atlas auf 1000 Seiten vergrößern.

- IX. Europa (8 Karten).
- X. Alpenländer (9 Karten und 4 Profile).
- XI. Asien und Europa (6 Karten).
- XII. Afrika (11 Karten).
- XIII. Nordamerika (13 Karten).
- XIV. Südamerika (8 Karten).
- XV. Ozeanien (20 Karten).

GOTHA: JUSTUS PERTHES.

1892.

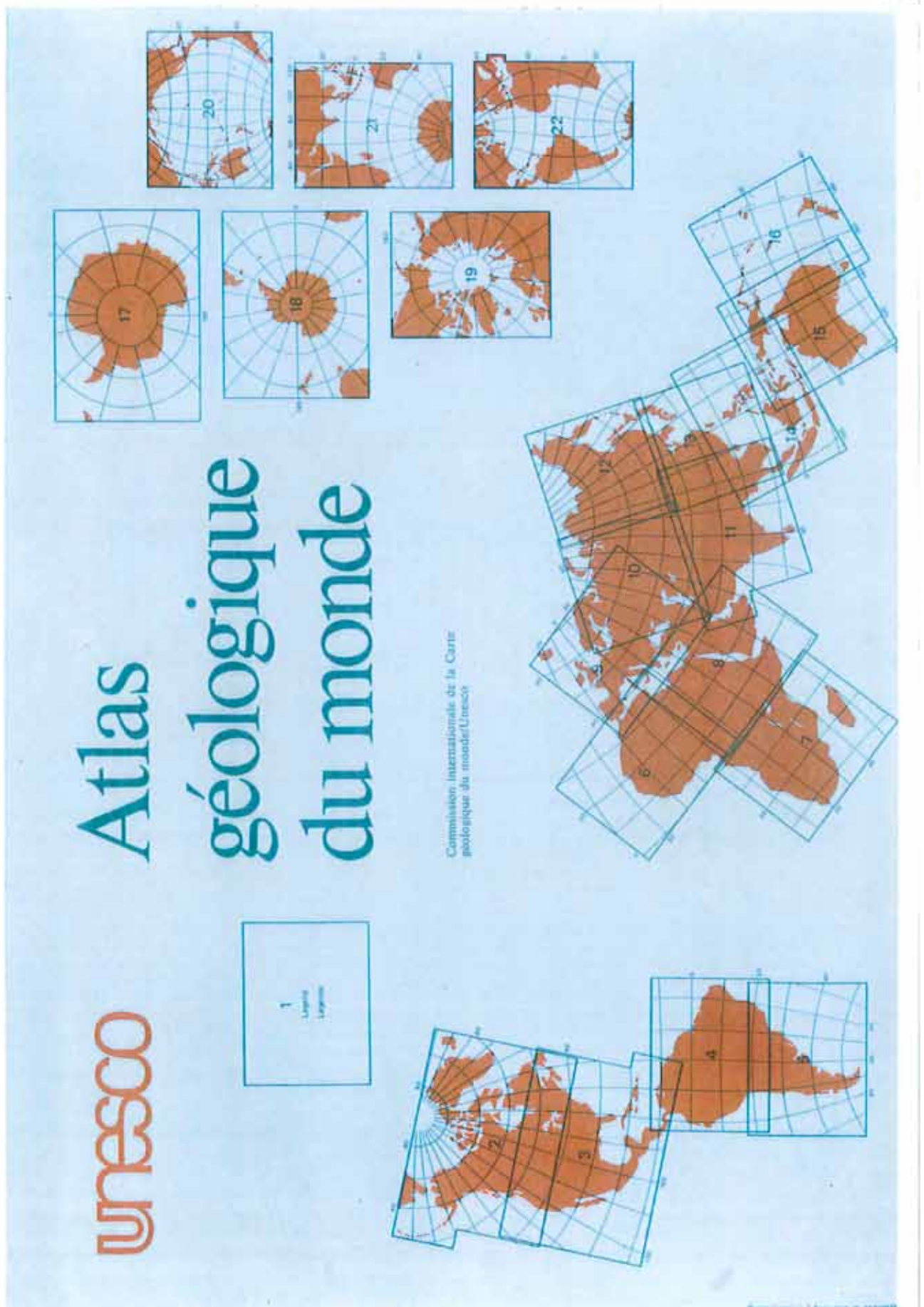


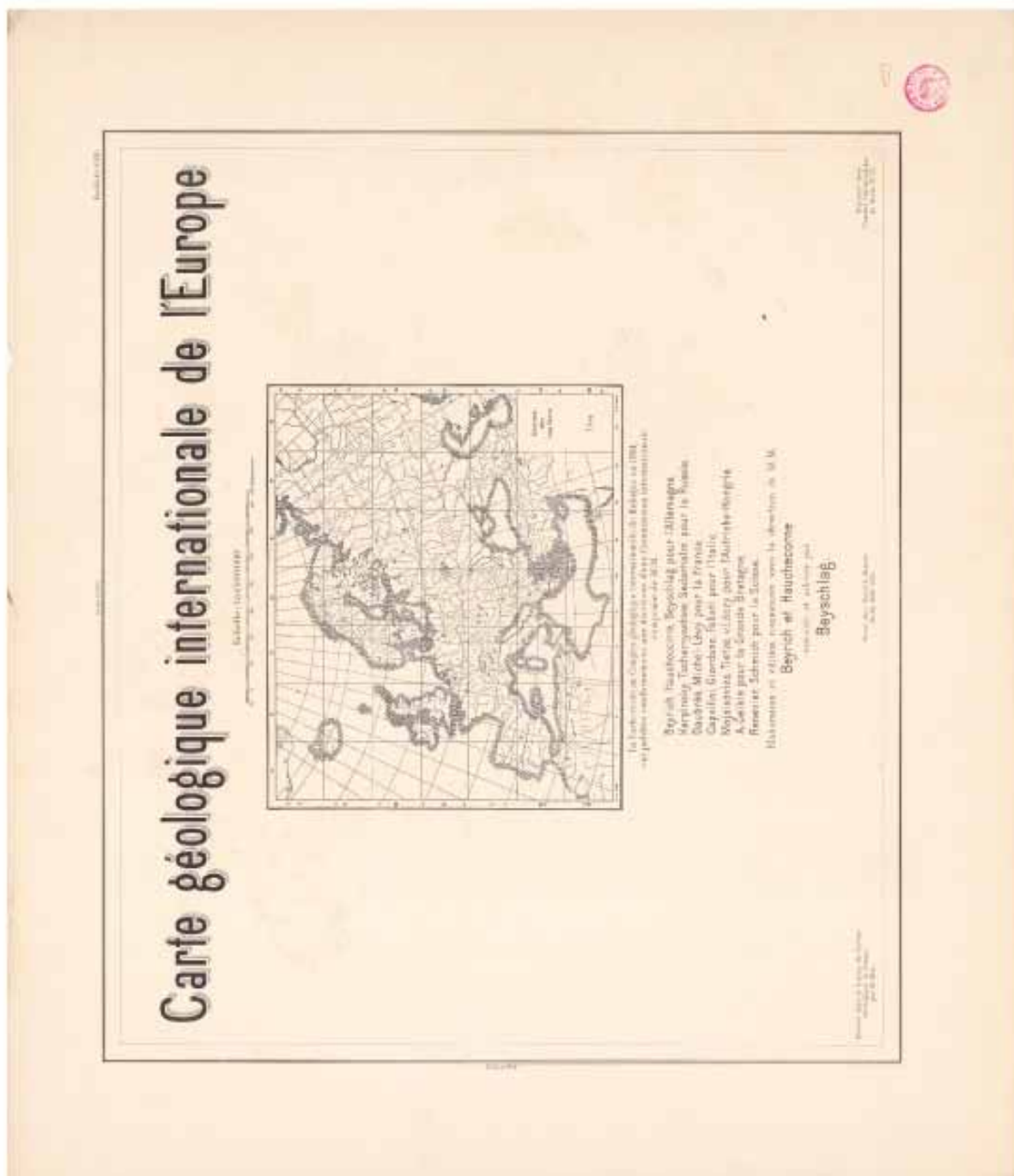
Document 8



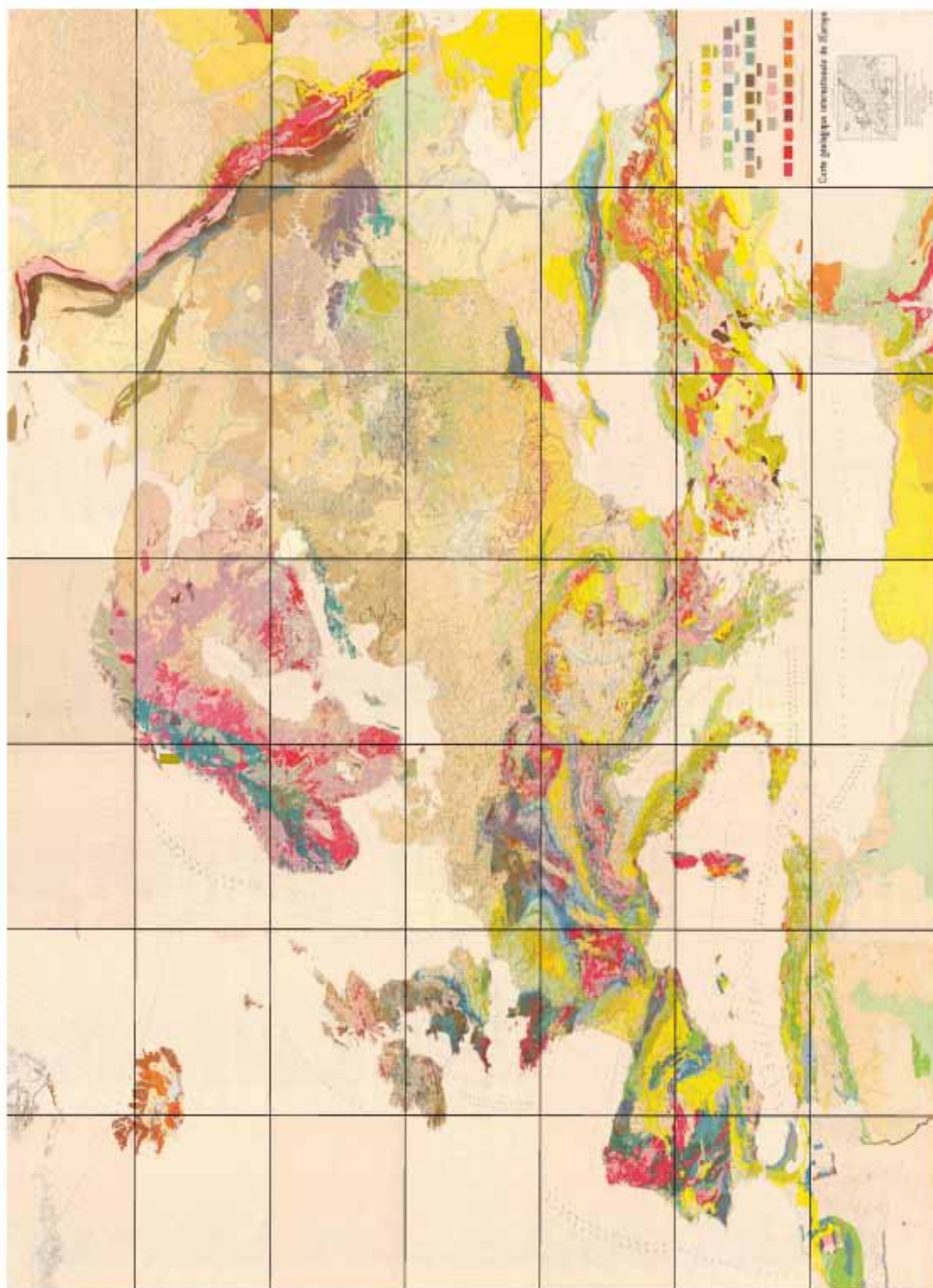
Document 9



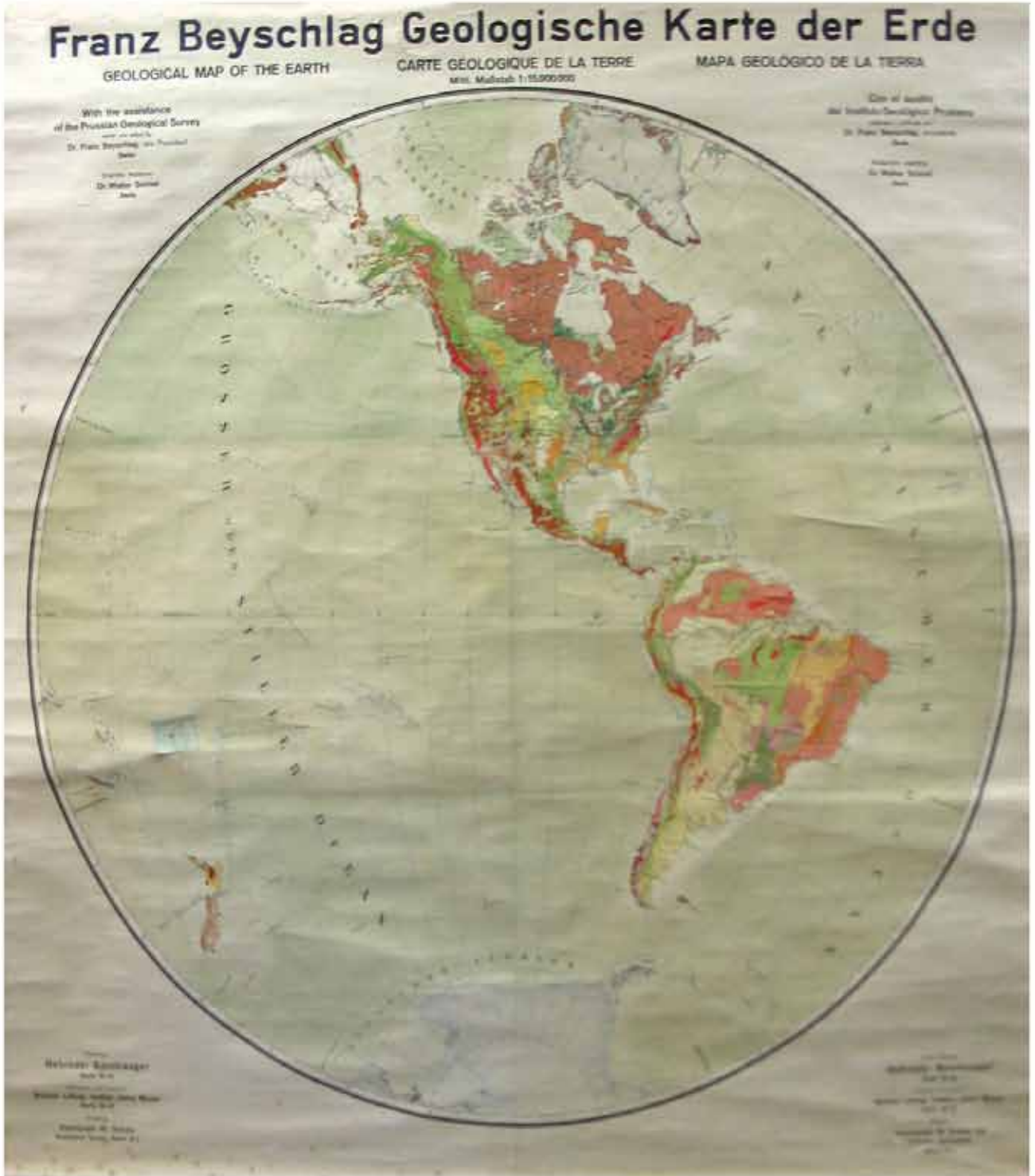




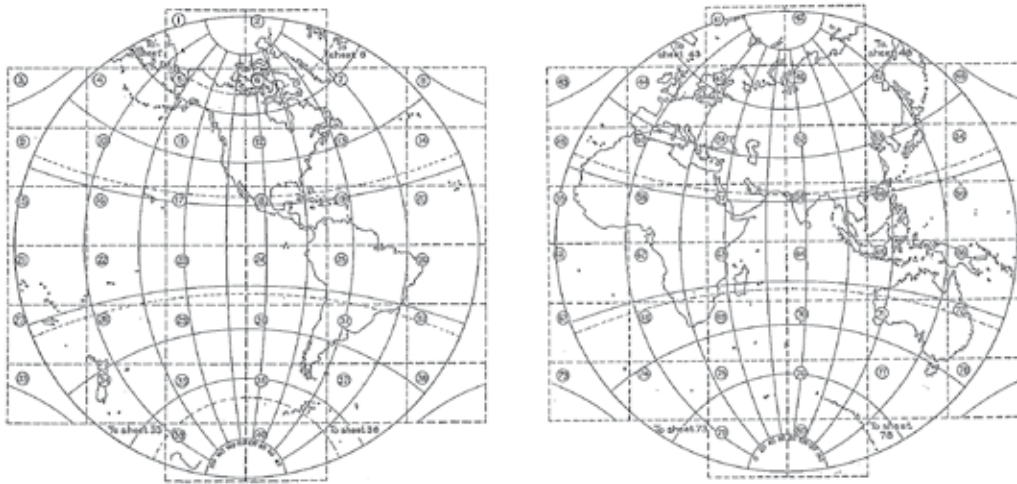
Document 12



Document 14



Document 15



XVI INTERNATIONAL GEOLOGICAL CONGRESS

Index map of the geologic map of the world. Size of sheets 55 by 75 cm.

Document 16

REPORTS OF COMMISSIONS

- Entwurf Meeresstiefen liegt vor,
lithographische Arbeiten an Meeresstiefen im Gange.
Geologischer Entwurf liegt vor.
- Blätter C 3, C 3:
und D 3: Andruck der Topographie liegt vor.
Entwurf Meeresstiefen liegt vor,
lithographische Arbeiten an Meeresstiefen im Gange.
Andrucke Topographie u. Meeresstiefen bis Herbst 1960 fertig.
Geologischer Entwurf für Kopenhagen zugesagt.
- Blätter C 1, C 2 Andruck der Topographie liegt zur Korrektur vor.
und D 1, D 2: Entwurf der Meeresstiefen ist in Auftrag gegeben.
Geologischer Entwurf ist für Kopenhagen zugesagt.

3. Auflage:

- Blätter B 4, B 5 Andrucke der Topographie in Auftrag gegeben.
und C 4, C 5: Beste Revisionsarbeiten an der Geologie wurden
auf den Blättern C 4, C 5 begonnen.

COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

Progress report presented at Copenhagen August 27th 1960.

1. GENERAL ACTIVITY OF THE COMMISSION

After its reorganization at both Geological Congresses held in London (1940) and at Algiers (1952) respectively (see the official Comptes-rendus of these Congresses), the Commission for the Geological Map of the World held a plenary session during the Geological Congress of Mexico (September 1956) followed by another one in Paris in April 1958.

This very important Paris meeting was devoted to the revision of the Legend of the International Geological Maps and to setting up the organization for both the Sub-Commissions of the Tectonic Map and the Metallogenic Map, created at Mexico in 1956 and which have functioned normally since: a summary of their respective activities is given below.

Concerning the work of the Commission, properly speaking, such substantial progress has been made thanks to the individual activity of each of the regional Vice-Presidents, as will be seen hereafter, that it can now be hoped that the publication of the map in its entirety will be possible within a few years.

2. ORGANIZATION OF THE COMMISSION

Following the conclusions already arrived at, notably at the Algiers (1952) and Mexico (1956) Congresses, the Commission is organized as follows:

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REPORTS OF COMMISSIONS

North and Central America	5
South America	4
Europe	17
Africa	20
U.S.S.R.	1
Asia	10
Oceania	4
	61

It is worth stressing the fact that the meeting adopted recommendations concerning the legend of Geological Maps. The rules for the Legend of International Geological Maps were laid down about 80 years ago at the Bologna Congress in 1881 and has not been revised since that date in spite of new problems which arose. Agreement on certain rules was rapidly come to at the Paris meeting and immediately distributed in mimeographed form. A printed booklet (both in French and English) of this document was recently sent to all Geological Surveys in the world together with the recommended colours. These recommendations refer, of course, to international geological maps. Naturally, each country is free to interpret these as it sees fit for its own particular maps. The rules in question which seem to have met with general approval will be applied in future.

The two highlights of the Paris meeting was the work concerning the Sub-Commissions for the Tectonic and Metallogenic maps of the World together with the fixing of a program in their concern. A summary of that program will be found further on.

As a rule the Commission meets during the Geological Congress. From the Paris meeting, however, experience shows that meetings in between Congresses are particularly useful. It has been suggested that another meeting should be held in Paris in the Spring of 1962. As both the Commission's secretariat and records are in Paris the organization of such a meeting is, for that reason, easier there than anywhere else. The Sub-Commission for the Tectonic and Metallogenic Maps would also meet then.

4. PROGRESS MADE IN THE WORK OF THE REGIONAL GEOLOGICAL MAPS

As each one knows, it was at Algiers (1952) that it was decided that the geological map of the world should be established by continent and that the preparation of each continental map should be entrusted in each case to a concern specialized in the execution of this type of work. The progress achieved in the different regions is given below.

a) *North America.* The map of North America has already long been published. A new edition of this map is being prepared by the U.S. Geological Survey and will be presented at the Copenhagen Congress.

b) *South America.* Due to the great difficulties that had to be overcome, the effort employed on the part of South America in preparing its geological map deserves special mention. This work was effectuated by the Geological Survey of Brazil under Dr. Lamego's direction. At the time of the President's visit to South America in 1958 it was decided that special meetings should be held in order to facilitate this work. These meetings took place in 1959 in Buenos Aires, Lima and George-

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GENERAL PROCEEDINGS

President: M. F. Blondel, Paris,

assisted by a Secretariat entrusted to Madame Françoise Rousseau.

The Regional Vice-Presidents are:

North America:	Dr. Johnston (U.S. Geological Survey, Washington).
South America:	Dr. Lamego (Geological Survey of Brazil, Rio de Janeiro).
Europe:	Dr. Bentz (Geological Survey of Federal Germany, Hannover).
Africa:	Dr. Dixey, London.
U.S.S.R.:	Dr. Belavsky, Moscow.
Asia and the Far East:	Dr. Roy (Geological Survey of India, Calcutta).
Oceania and Australia:	Dr. Temple Watts (Bureau of Mines of Australia, Canberra).

With the exception of the country, indicated further on, all the Countries in the world are represented in the Commission, by their respective Geological Survey (or other organism replacing it). East Germany has become a member of the Commission only since 1958. Continental China has still not joined the Commission; contacts have been made between the Secretariat of the Commission and the Academia Sinica at Peking, but China has not yet agreed to become a member in spite of having been approached by the President. It is hoped that the near future will see the successful conclusion of the contacts so far undertaken. It is asked that all the other members of the Commission should do their utmost to help obtain this last Country's consentment so that the whole world may be represented in the Commission. An official invitation made by the Commission would no doubt be advisable.

Besides attending the plenary meetings both at Mexico and Paris, the President undertook a number of trips with a view to facilitating contacts: since 1957, he has been to Calcutta in 1957, Rio, Buenos Aires and Lima in 1958, to New Delhi in 1958, to Tokyo in 1960. An account of these trips will be found further on.

In order to help the President in his task and more particularly in his international visits, it has been suggested that the Commission should appoint a Secretary General and that Monsieur Margais, former Chief of the Geological Survey of Morocco and well known internationally, be proposed for this function.

As regards the financial aspect of the Commission an annual contribution of 50 Pounds (or its equivalent) has been requested from all countries, as was decided at Mexico. As may be seen from the financial report most countries have responded favourably.

5. PLenary MEETING IN PARIS (1958) AND FUTURE MEETINGS

Sixty countries were represented at the Paris meeting (April 1958): these countries are listed by continent below, thus giving an idea of the international scope of the Commission:

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GENERAL PROCEEDINGS

town to which the neighbouring states of these central points were convened. Unfortunately, due to circumstances beyond his control, the President was unable to attend these regional meetings having proved very efficacious ones. Moreover, thanks to the good will of the different states, the Geological Survey of Brazil is able to present a draft of the map of South America at the Copenhagen meeting. Printing of this map is expected to be done shortly.

c) *Europe.* The Geological Map of Europe has long been entrusted to a special Commission seated in Hannover under the presidency of Dr. Bentz. The latter commission is continuing the revision of the already published sheets of the map in question. It shall be suggested in Copenhagen that a special report be presented by the just mentioned Commission.

d) *Africa.* A preliminary Geological Map of Africa was presented by the Association of African Geological Surveys at the Algiers Congress in 1952. The President of this Association is Dr. Dixey: the secretariat is in Paris in the same office as that of the Commission of the Map of the World. The 1952 Map of Africa is now being revised. A new edition of sheet 3 was published in 1960 (the north eastern corner) includes the Middle East region and the petroliferous zones. This revision includes in addition, the geological tracings for Turkey and Iran, thus making the connection with the Map of Asia. This sheet is of great interest for all those concerned with geology. Most of the remaining sheets are now in draft form and it is hoped that the new edition of the Map of Africa will be published in its entirety within the next few years.

e) *U.S.S.R.* The Map of the U.S.S.R. already published a few years ago at the 5,000,000 scale is now being revised.

f) *Asia and the Far East.* With the exception of Continental China who has not taken part in our work, as already mentioned, Asia is to be highly complicated for the work accomplished by the Geological Survey of India, assisted by E.C.A.F.E. (Economic Commission for Asia and the Far East). The preparation of this map was decided by E.C.A.F.E. in 1953 during the Tokyo meeting to which the President of the Commission was convened. A special committee of geologists was appointed to follow up the work. The committee in question met in Bangkok in 1954, in Tokyo in 1956, in Calcutta in 1957 and again in Tokyo in 1960. The work was carried out by the Geological Survey of India formerly under the direction of Dr. Krishnan and Dr. Sondhi respectively. At present the work is continuing under Dr. Roy's direction and greatly assisted by an international co-operative spirit on the part of the countries expanding from Iran to Corea. This fine co-operative work has made possible the presentation of this map in its printed form at the present Congress.

g) *Oceania and Australia.* This regional map is being prepared by the Bureau of Mines of Australia. The realization of this map has been hindered due to health complications of the Director of the Bureau. However, preparation of this map is continuing under Dr. Temple Watts' direction. The presented drafts of this map prove that his work is coming along fine.

The present brief account proves that the working method so far applied by the Commission is quite efficacious and should be continued in future.

It is worthy stressing that the results achieved by the Commission are due to the high spirit of international co-operation. The President wishes to express here his grateful thanks to all those who have devoted themselves to this task with

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such good will and steadfastness: is this not an outstanding example of international scientific co-operation!

5. OTHER ACTIVITIES OF THE COMMISSION

a) It was suggested that the results obtained by the Commission should be applied to the preparation of a Geological Atlas at the 10,000,000 scale. This project would be trusted to a special publishing concern already having prepared a draft of the sheeting, together with the topographical background discussed in Mexico. Before commencing this undertaking a subscription form will be sent out shortly to all Geological Surveys with a view to gather a sufficient number of buyers. Due to the original aspect of this work which should be realized without demanding favourably met by geologists and miners.

To this atlas will be attached lists of the general geological work and general geological maps of the different countries. These two lists will furnish helpful information. Circulars concerning the preparation of these lists have already been distributed.

b) Hydrogeological Map of the World.

The President of the Commission has been approached by the International Association of Hydrogeologists concerning the preparation of a hydrogeological map of the world by the Commission for the Geological Map of the World. The Vice-Presidents of this Commission and the Center of Development of Hydraulic Resources of the United Nations have already been consulted concerning this project which will be discussed during the Copenhagen Congress.

6. SUB-COMMISSION FOR THE INTERNATIONAL TECTONIC MAP

This Sub-Commission was created in Mexico and its program in general was fixed in Paris in 1958. The Bureau of the Commission is composed as follows:

President: Professor Schatzky (Moscow).

Vice-Presidents: Vice Presidents of the Commission for the Geological Map of the World.

Secretary General: Professor Bogdanoff (Moscow).

The difficulty in realizing a tectonic map of the world lies in the fact that traditions now existing for ordinary geological maps are lacking for the map in question so that so far an empirical method has been used concerning this work. After having discussed a number of general rules in Paris concerning this question it was decided that a few try-outs should be carried out with a view to aid the concretization of a working plan. It was then decided that a map of Europe at the 2,500,000 should be established first of all. It is a well known fact that if the tectonic problems in Europe are very complicated ones they have the advantage, at least, of being better known there than anywhere else in the world. It is hoped that with the greatest difficulties having thus been coped with, a better understanding of the same problems will result for the remaining parts of the world to be mapped.

It has been suggested that the other continents should also make trial attempts in that concern, bringing out thus their own particular problems.

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REPORTS OF COMMISSIONS

An exchange of information has been established between the Commission for the Geological Map of the World and the Organisation Internationale de Normalisation.

8. SPECIAL COMMITTEE ON OCEANIC RESEARCH (BOUR)

The lack of geological representation in the International Council of Scientific Unions made aware the fact that geology was not included in the field of oceanic research, whereas a working programme is to be largely developed in the coming years for this last. This situation, for the least abnormal has been brought the attention of the Oceanic Committee's Secretary General who is taking the necessary steps in that concern.

9. STRATIGRAPHIC COMMISSION

The Commission for the Geological Map of the World and the Commission on Stratigraphy having similar problems it was considered that necessary steps should be taken to establish a liaison between these two Commissions. A representative of the Commission for the Geological Map of the World was then appointed to the Commission on Stratigraphy.

10. FINANCIAL REPORT OF THE COMMISSION FOR THE GEOLOGICAL MAP

A list of the financial contributions towards the Commission for the years 1953, 1954, 1955 and 1956 was attached to the report presented at the Congress of Mexico. A similar list for the years 1956, 1957, 1958, 1959 and 1960 (as at July 15th) will be found in appendix to the present report. The number of countries having kindly contributed towards the Commission are listed as follows:

North and Central America	5
South America	4
Europe	20
Africa	21
Asia	10
Oceania	3

It is hoped that the contributions will become more and more numerous as time goes on, as a proof of the interest brought towards the work of the Commission by each country.

The annual contribution is fixed on the basis of 50 Pounds Sterling (or the equivalent of that sum). It should be pointed out that since 1959 a number of countries have continued to send their contributions as for the preceding years, that is to say, 50,000 Francs (500 N.F.) without taking into account the devaluation of the French Franc. It should be appreciated if all the Commission members would kindly keep to the basis of 50 Pounds Sterling in that concern.

The figures concerning expenditures and receipts covering the period of 1956 to July 15, 1960, will be found in appendix (the figures covering the period 1954 to 1956 were given at Mexico). The budget of the Commission amounts to about 27,000 N.F. The increase in expenditures is due to the expenses involved by the contacts necessitated by the Commission with countries the world over.

(visits abroad and secretarial expenses).

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GENERAL PROCEEDINGS

The Sub-Commission has been very active since the Paris meeting in 1958. It met in Paris in March 1959, in Moscow in June 1959 and in April 1960. The Tectonic Map of Europe is being presented at Copenhagen due to the Sub-Commission's great activity.

The tectonic map of North America is being prepared by the United States; a tectonic map of the U.S.S.R. has been published conformably to the Russian geologists' point of view. A preliminary structural esquisse of Africa at the 10,000,000 scale was distributed in 1959 by the Association of African Geological Surveys. The Geological Survey of Malaya has undertaken the same work concerning Asia. It is anticipated that similar contributions will be made by the other continents so that a fruitful discussion can take place in Copenhagen in this connection.

7. METALLOGENIC MAP OF THE WORLD

The President of this Sub-Commission was appointed in Paris in 1958: Dr. Johnston was kind enough to accept this task; he is assisted by a Secretary: Dr. Philipp W. Guld in Washington and by a Secretary in Paris, Professor Routhier, acting as liaison officer with the Commission for the Geological Map of the World.

Of the three maps, the work of which is being assumed by the Commission, the metallogenic one is the most difficult to cope with. In Paris, (1958) it was considered that this metallogenic mapping problem should be divided into two parts: 1) it was decided that a preliminary mineral map should be prepared showing mineral deposits in as much detail as would be practicable. The rules laid down in Paris in that concern were diffused by circular to the different countries. 2) Once these mineral maps are established their superposition on geological and tectonic maps will be the first step towards the construction of a metallogenic map indicating the relations between the mineralizations and geological structures. This work is a long and exacting one but, it is evident that the establishment of provisional maps are of the highest interest in the field of mining research.

There are now a number of examples which permit discussion to be opened. Canada has published a series of fine metallogenic maps as have also the U.S.A. and the U.S.S.R. With regards to coal and iron in Europe, maps have been compiled in this concern. Several meetings were held for these last. For its part, Asia has compiled drafts for both the mineral map and the Oil and Natural Gas map of Asia and the Far East.

A worthy effort regarding Central Africa deserves to be mentioned here and should be generalized: a historical account of the mining industry of that region has been drawn up by the Association of African Geological Surveys. This first class historical data formerly difficult or impossible to find in current publications is now available and is thus a great time saver in respect of prospecting problems.

7. ORGANISATION INTERNATIONALE DE NORMALISATION

The Bureau of the Commission has approached the Comité technique 82 (Industrie minières) of the Organisation Internationale de Normalisation, with a view to avoid that incompatible steps be taken concerning the different legends being prepared for land surveys and those adopted for the geological maps in general.

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GENERAL PROCEEDINGS

COMMISSION FOR THE GEOLOGICAL MAP OF THE WORLD

Situation as at 15th July 1960

Expenditures and Receipts since 1956 (New Francs)

Expenditures		Receipts	
Secretarial expenses 1956..	13,465,78	1956 Contributions.....	16,932,99
Publishing of an Atlas....	3,700	do., 1957.....	23,277,07
Secretarial expenses 1957..	13,865,77	(including the sum of 5000	
Secretarial expenses 1958..	15,524,25	Ministry of FOM)	
Meeting April 1958.....	2,478,32	do., 1958.....	29,583,24
Secretarial expenses 1959..	20,044,49	(including 5000 Minist.	
Printing of Legend.....	13,267,90	FOM)	
Secretarial expenses 1960		do., 1959.....	32,609,01
1960 (as at 15/7).....	16,160,02	(including 5000 Minist.	
Meeting March/April.....	4,235,26	FOM)	
	102,741,74	do., 1960.....	19,871,69
Difference.....	19,730,09	(as at 15/7)	
	122,471,83	Issue Legend.....	197,83
		(as at 15/7)	
			122,471,83
Assets		Liabilities	
On hand:		Results:	
Cash and Bank.....	11,174,44	Credit Balance 1956/1960..	19,730,09
		Debit Balance as at	
		31/12 55.....	8,555,63
			11,174,44

REPORTS OF COMMISSIONS

Contributions

<i>Europe</i>	1956	1957	1958	1959	1960 au 15/7
Albanie.....					
Allemagne.....	+	+	+	+	+
Autriche.....	+	+	+	+	+
Belgique.....			+	+	+
Bulgarie.....					
Danemark.....	+	+	+	+	+
Espagne.....		+	+	+	+
Finlande.....		+	+	+	+
France.....	+	+	+	+	+
Grèce.....	+	+	+	+	+
Hongrie.....		+	+	+	+
Irlande.....					
Islande.....					
Italie.....	+		+		+
Luxembourg.....					+
Norvège.....	+	+	+	+	+
Pays-Bas.....			+	+	+
Pologne.....	+	+	+	+	+
Portugal.....	+	+	+	+	+
Roumanie.....	+	+	+	+	+
Suède.....		+	+	+	+
Suisse.....	+	+	+	+	+
Tchécoslovaquie.....			+	+	+
United Kingdom.....	+	+	+	+	+
Yougoslavie.....			+	+	+
U.R.S.S.....	+	+	+	+	+

Contributions

<i>Afrique</i>	1956	1957	1958	1959	1960 au 15/7
Algérie.....	+		+	+	+
Angola.....	+	+	+	+	
Basutoland.....					
Bechuanaland.....					

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REPORTS OF COMMISSIONS

Contributions

<i>Asie</i>	1956	1957	1958	1959	1960 au 15/7
Afghanistan.....					
Arabie Saoudite.....					
British Borneo.....					
Burma.....		+		+	
Combedge.....					
Ceylon.....					
Chine.....					
Chypre.....			+	+	+
Corée.....					
Inde.....	+	+		+	+
Indonésie.....					
Irak.....					
Iran.....					
Israël.....		+	+	+	+
Japon.....		+		+	+
Jordanie.....					
Laos.....					
Liban.....					
Malaya.....	+	+	+	+	+
Népal.....					
Pakistan.....	+		+	+	686,81
Philippines.....					
Sarawak.....					
Syrie.....					
Taiwan.....	+	+	+	+	+
Thaïlande.....			+	+	+
Turquie.....	+		+	+	+
Vietnam.....					
Yémen.....					
<i>Océanie</i>	1956	1957	1958	1959	1960
Australie.....	+	+		+	
Nouvelle-Calédonie.....					
Nouvelle-Guinée (Aust.).....					
Nouvelle-Guinée (Néer.).....		+	+	+	+
Nouvelle-Zélande.....					
Salomon Islands.....		+			

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GENERAL PROCEEDINGS

<i>Afrique (cont.)</i>	1956	1957	1958	1959	1960 au 15/7
Cameroun.....		+	+		
Congo Belge.....					
Congo Français.....				+	+
Côte d'Ivoire.....					
Dahomey.....					
Egypte.....					
Ethiopie-Brythée.....					
Gabon.....					
Ghana.....	+	+	+	+	+
Guinée.....					
Guinée Portugaise.....					
Haute-Volta.....					
Kenya.....	+		+	+	+
Libéria.....					
Libye.....					
Madagascar.....	+		+	+	+
Maroc.....			+	+	
Mauritanie.....					
Mozambique.....		+	+	+	+
Niger.....					
Nigeria.....					+
Northern Rhodesia.....	+	+	+	+	
Nyasaland.....					
Oubangui-Chari.....					
Sénégal.....	+	+	+	+	
Sierra Leone.....			+	+	
Somaland.....					
Soudan Français.....					
Southern Rhodesia.....				+	
South West Africa.....	+				
Soudan.....					
Swaziland.....					+
Tanganyika.....		+	+	+	
Tchad.....					
Togo.....	+	+	+		+
Tunisie.....		+	+		
Uganda.....		+	+		+
Union South Africa.....		+	+	+	

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GENERAL PROCEEDINGS

Contributions

<i>Amerique du Nord et Amerique Centrale</i>	1956	1957	1958	1959	1960 au 15/7
Canada.....			+	+	
Etats-Unis.....	+	+	+	+	+
Mexique.....	+		+	+	+
Costa Rica.....					
Guatemala.....					
Honduras.....					
Honduras Brit.....					
Nicaragua.....					+
Panama.....					
Salvador.....					
<i>Amerique du Sud</i>	1956	1957	1958	1959	1960
Argentine.....					
Bolivie.....					
Brazil.....		+			
British Guiana.....	+	+	+	+	
Chili.....			+	+	+
Colombie.....					
Equateur.....					
Guyane Française.....					
Paraguay.....					
Pérou.....				+	+
Surinam.....					
Uruguay.....					
Venezuela.....					

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united nations educational, scientific and cultural organization
organisation des nations unies pour l'éducation, la science et la culture

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Géologique du Monde
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75016 Paris

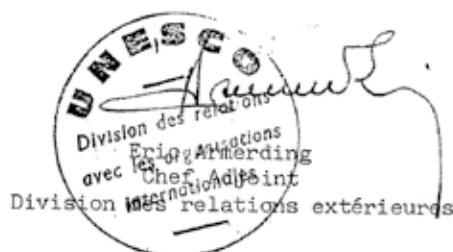
Paris, le 15 février 1984

Monsieur,

La Division des relations extérieures du Secrétariat de l'Unesco certifie que la Commission de la Carte Géologique du Monde (Commission for the Geological Map of the World) est membre du Conseil International des Unions Scientifiques (International Council of Scientific Unions) qui est une organisation internationale non gouvernementale créée à Bruxelles en 1919 et qui entretient des relations officielles avec l'Unesco depuis 1946.

Le Conseil bénéficie auprès de l'Unesco de relations de consultation et d'association (Catégorie A) depuis 1962, et son Secrétariat est situé dans la Maison de l'Unesco, 1 rue Miollis, 75015 Paris, ainsi qu'au 51 boulevard de Montmorency, 75016 Paris.

Je vous prie de croire, Monsieur, à l'assurance de mes sentiments distingués.



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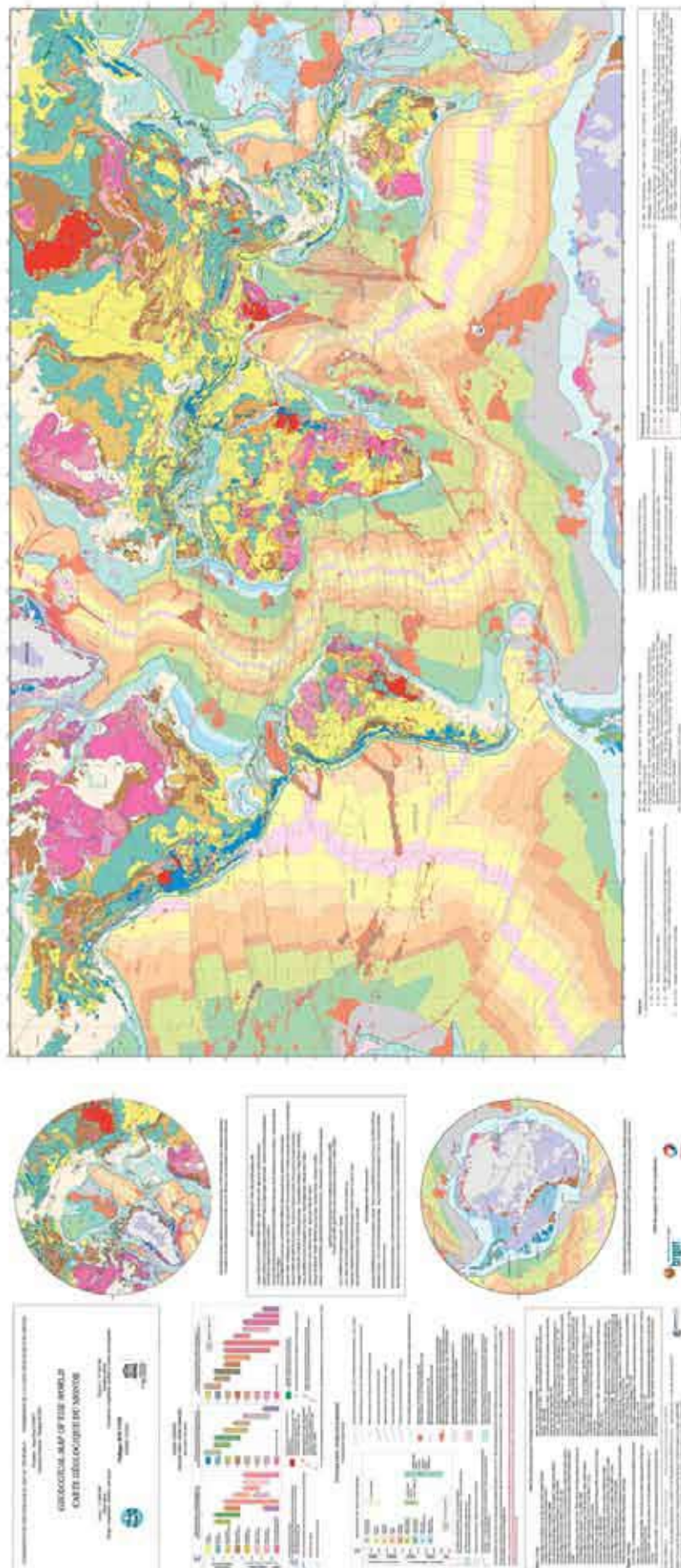


Fig. 1.



SCEAU DU CONGRÈS

Reproduction of the official seal of the International Geological Congress designed by Giovanni Capellini during the Second session of the congress in Bologna, 1881.