

100-YEAR ANNIVERSARY OF THE FIRST INTERNATIONAL SEISMOLOGICAL CONFERENCE

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On April 11 – 13th we commemorate the 100th anniversary of the First International Seismological Conference held in Strasbourg (that time German Strassburg) in 1901. Thirty-one of the participants of this memorable meeting are portrayed in the photograph reproduced in Fig. 1.

The first stimulus to organize seismological research on a global scale came from the German seismologist and experienced designer of undamped horizontal pendulum seismographs, E. von Rebeur-Paschwitz (1861 – 1895) who, as one of the first geophysicists, fully appreciated the importance of international collaboration in the field of observational seismology. He formulated his suggestion in his *Proposals of the establishment of an international network of seismological observations* (Rebeur-Paschwitz, 1895); his premature death, however, prevented him from realising his ideas. After Rebeur-Paschwitz's death in 1895, his ideas were adopted and modified by Prof. Georg Garland, an active member of the Permanent Seismological Commission at the International Geographical Congress (hereafter only '*Permanent commission*'), and later director of the *Imperial Main Station for Earthquake Research in Strassburg*. According to G. Gerland's activities, a principal project on international cooperation in the field of seismology was formulated during the session of the International Congress of Geographers in London in 1895, with the aim to establish the International Seismological Society in 1899 and to hold the First International Seismological Conference in Strassburg in 1901. For details, see *Gerland, 1899; Rudolph, 1902; Sieberg, 1923 and Proceedings, 1981*.

The main objectives of the proposed International Seismological Society (further on only *Society*) were as follows:

- To support systematically macroseismic studies in all countries, especially in those in which seismic stations had not until then been built, and which are thus seismically little known.
- To ensure the procedures applied in performing macroseismic observations in the individual countries to be unified.
- To concentrate future publications in the field in special issues of *Beiträge zur Geophysik*, in order to publish the 1st special issue by 1901 at the latest (cited after *Rudolph, 1902*).

The first date for founding the Society, the year 1899, was missed, namely due to the diversity of its future members as concerns the members' status (individual persons vs. representatives of state institutions).

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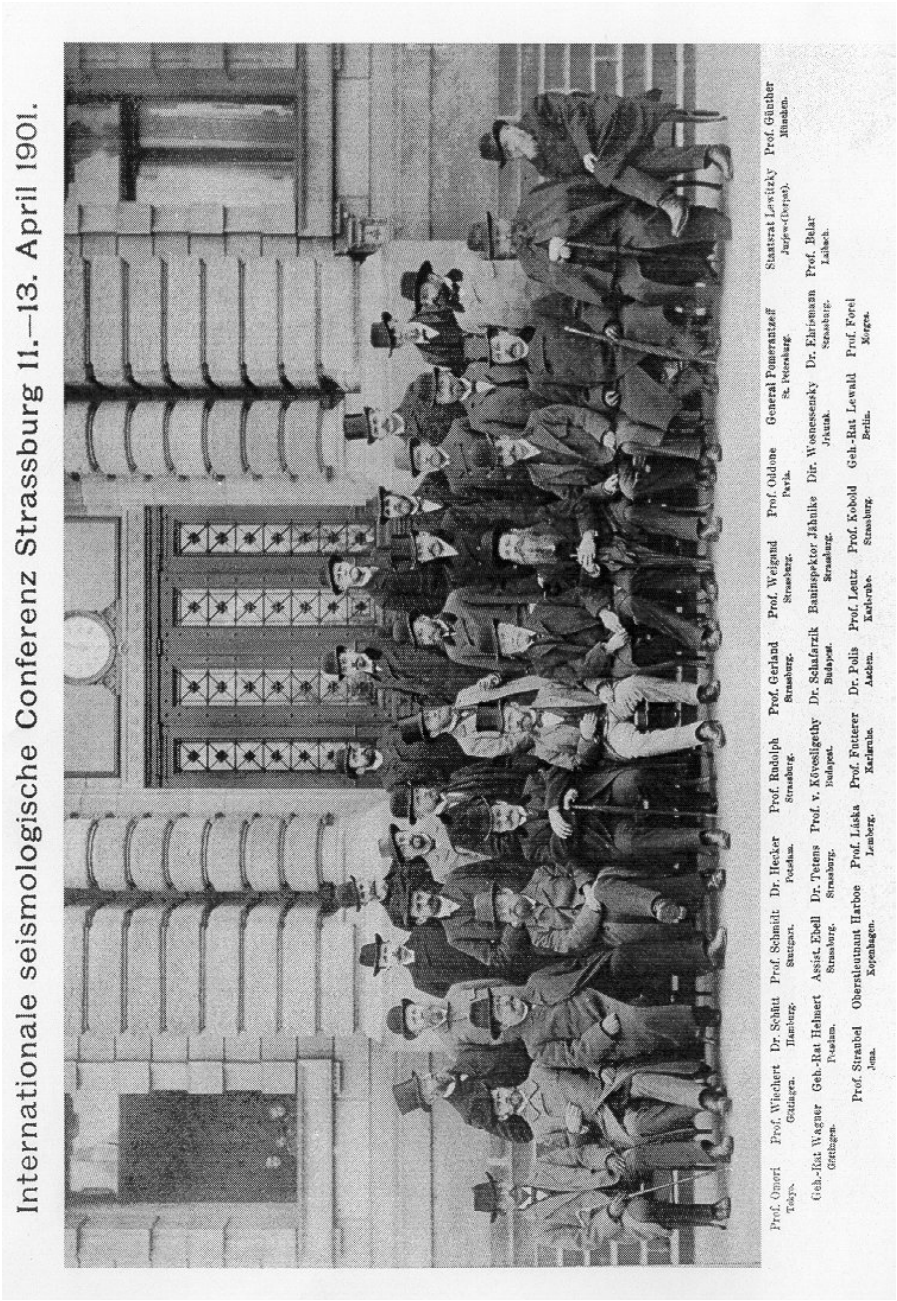


Fig. 1. Reproduction of the original photograph portraying the participants of the First International Seismological Conference in Strassburg, Apr. 11-13, 1901

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(The Society was then established in 1904 but its activities were terminated by World War I: the Society was dissolved in 1922, retroactively since 1916, see Sieberg, 1923. In 1922 the International Union of Geodesy and Geophysics was founded).

However, the First International Seismological Conference was held in Strassburg at the time originally planned, i.e., in April 1901. One of the most important objectives discussed there was to find a compromise formulation of the proposed Society Statutes acceptable to everybody. This was not achieved due to the intransigent stand point of the speaker of the Japanese delegation represented by Prof. F. Omori, who insisted that individual persons should not be admitted to the Society membership, as the delegates from Germany requested (Japan maintained that only institutions under state auspices should be admitted to the Society membership).

The Proceedings of the Conference in which the records of the individual Commissions, discussions, and paper presentations were published (430 pp) were edited in Leipzig by a participant of the Conference, Prof. E. Rudolph of the Strassburg seismic station (*Proceedings, edited by E. Rudolph, 1902*).

Let us now look at some of the famous seismologists-promoters in the order shown in our memorial photograph.

Prof. F. Omori, (1868 – 1923). Permanent commission member, delegate of Japan. Professor of seismology at the Imperial University in Tokyo and Secretary general of the Imperial Japanese Commission for Earthquakes. He became famous as a young scientist for his detailed studies of the Japanese earthquakes of the end of the 19th century (*Omori, 1901*). He studied the regularities of the time occurrence of foreshocks and aftershocks (*Omori, 1900*), and constructed the Omori horizontal pendulum seismograph. At the Conference, he presented the paper *Amendments to the Statutes of the International Seismological Association* (*Omori, 1902a*) and another contribution *On Seismic Instruments* (*Omori, 1902b*). His third, most extensive communication (64 pages) was entitled *Note on Applied Seismology* (*Omori, 1902c*).

Prof. E. Wiechert, (1861 – 1928). Permanent commission member. In the turn of the century he was active in Königsberg and later in Göttingen, where in January 1898 he was appointed director of the newly established Geophysical Institute. He was the first to lecture geophysics at the Königsberg and Göttingen universities; therefore, in Germany the turn of 19th and 20th centuries is considered to be a period in which geophysics became a regular independent discipline of science, see (*Schröder, 2000*). E. Wiechert became famous especially as the inventor and designer of the astatic horizontal pendulum seismograph (several types, e.g., the large ‘one-ton’ device for recording teleseismic waves, or the smaller instrument for monitoring local events). He also designed a 1.3-ton vertical seismograph. Details are given in (*Wiechert, 1903, 1904*). Some of Wiechert’s devices were also installed in Bohemia, e.g., two of them worked shortly in the first years of the 20th century at the Příbram station (*Benndorf, 1903*). Another horizontal Wiechert seismograph, which was operated at the seismic station Praha by the Charles University, was disassembled only in the late 60ties of the 20th century. As a matter of pride, about ten of these devices are still being operated at several seismic stations. At the Conference, E. Wiechert presented a paper entitled *Prinzipien für die Beurteilung der Wirksamkeit von*

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Seismographen (Principles of the assessment of the efficiency of seismographs, Wiechert, 1902).

Prof. **A. Schmidt**. Permanent commission member, delegate of the Kingdom of Württemberg. Professor at the College of Technology in Stuttgart and President of the Royal Württemberg Meteorological Central Station in Stuttgart. He contributed with the communication *Trifilar Gravimeter* (Schmidt, 1902).

Dr. **O. Hecker**, (1864 – 1938). Permanently affiliated to the Royal Prussian Geodetic Institute in Potsdam, where he performed a detailed investigation of the distortion of ground displacements by different types of inertial seismometers with mechanical registration (Hecker, 1899). In particular, he tested the effects of friction of the mechanical components of the seismographs. He also made experiments with the new instruments of Golitzin, and he translated from the Russian and edited in Germany Golitzin's fundamental work *Vorlesungen über Seismometrie* (Lectures on seismometry). For details see P. Schmidt (1979). In 1919 O. Hecker was appointed director of the Observatory in Jena as Professor of Geophysics. In the first and second decade of the 20th century he published a series of papers on seismographs, and pendulums. He presented two papers at the Conference, namely *Art der Bearbeitung und Veröffentlichung des Gesamtverlaufs einzelner Erdbeben* (Method of evaluation and publishing of the time development of individual earthquakes, Hecker, 1902a) and *Perioden und Form regelmässiger Berichterstattung der Stationen an die Centralstelle* (Frequency and way of delivery of regular station reports to the centre, Hecker, 1902b).

Prof. **E. Rudolph**, assistant of the Imperial Main Seismic Station in Strassburg. He became known for his study of submarine earthquakes based on the analysis of data he collected during his expeditions in the region of the western segment of the Afro-European collision zone (Rudolph, 1887 – 98). In 1902 he edited the *Proceedings* of the Strassburg Conference of 1901 (*Proceedings*, Rudolph, edit., 1902). He presented the paper *Ausbreitung und Organisation der makroseismischen Beobachtungen* (Expansion and organisation of macroseismic observations, Rudolph, 1902a). His second communication was entitled *Art der Bearbeitung und Veröffentlichung der Fernbeben* (Method of evaluating and publishing teleseismic data, Rudolph, 1902b).

Prof. **G. C. Gerland**, (1833 – 1919). Permanent commission member, University professor, originally ethnographer, linguist and geographer, later also geophysicist and seismologist. In 1887 he began to edit geophysical papers in his own journal *Beiträge zur Geophysik, Zeitschrift für physikalische Erdkunde, Stuttgart und Leipzig*. In 1900 – 1913 he was the director of the Strassburg seismic station. The results of his long-term work were published in the yearly reports 1900 – 1913 of the director of the Imperial Main Station for the Study of Earthquakes in Strassburg (Gerland, 1900 – 1913). G. Gerland was active also in the field of macroseismicity: He formulated a series of questions for German macroseismic questionnaire concerning observation of earthquake effects. At the Conference he presented the opening address.

Dr. **Br. Weigand**, professor at the College of Technology in Strassburg. Assistant affiliated to the Imperial Main Station for Earthquake Research. At the Conference he presented a lecture entitled *Ausbreitung der microseismischen Beobachtungen* (Expansion of microseismic observations, Weigand, 1902).

Dr. **E. Oddone**. Private lecturer of geophysics, director of the Geophysical Institute in Pavia (Italy). Later, in the 2nd decade of the 20th century, he studied the relation between

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seismology and volcanology (Oddone, 1914). At the Conference he presented the communication *Recherches en séismométrie avec des appareils non pendulaires* (Seismometric research by means on non-pendulum devices, Oddone, 1902).

General **H. Pomeranzeff**. Permanent commission member, delegate of Russia, Head of the Geodetic Division of the Institute of Topography in St. Petersburg.

State Councillor **G. V. Lewitzky**, born 1852. Permanent commission member, delegate of Russia, director of the Sternwarte (Astronomical observatory) in Pulkovo, Russian astronomer. After studies at the Kharkov and St. Petersburg universities he worked in the Pulkovo Astronomical Observatory. In 1894 he was appointed Professor in the University in Yuriew (also Dorpat or Tartu, in Estonia). At the Conference he presented two communications: *Über die Organisation der seismischen Beobachtungen in Russland* (On the Organisation of Seismological Observations in Russia, Lewitzky, 1902a) and *Horizontalpendelbeobachtungen in Yurjew* (Observations at Yuriew by means of the horizontal pendulum, Lewitzky, 1902b).

Prof. **S. Günther**, born 1848. Permanent commission member, delegate of the Kingdom of Bavaria. Professor in the Division of Earth sciences at the College of Technology in Munich. Since 1873 private lecturer at the universities in Munich and Erlangen. Since 1894 deputy in the Bavarian Assembly. In the 80ies and 90ies of the 19th century he produced a series of fundamental works and textbooks (Geophysik, 1885; Lehrbuch d. mathem. Geographie, 1890; Lehrbuch d. phys. Geographie, 1891). In 1877 he also joined the Royal Czech Society of Science, for which he published a series of works. He also published in Ljubljana's Erbebenwarte. As geophysicist, S. Günther was considered to be a leading personality in the field by both German and non-German specialists. At the Conference he presented the paper *Die seismischen Verhältnisse Bayerns* (Seismic conditions in Bavaria, Günther, 1902).

State Privy Councillor **H. Wagner**, born 1840. Permanent commission member, delegate of the representatives of the VIIth International Congress of Geographers. In 1876 he was appointed University professor in East-Prussian Königsberg and in 1880 also in Göttingen. Since 1879 he edited the Geographisches Jahrbuch in Jena and in 1882 – 83 also the Lehrbuch d. Geographie.

State Privy Councillor **R. F. Helmert**, 1843 – 1917. Permanent commission member, delegate of the Kingdom of Prussia, director of the Royal Prussian Geodesic Institute in Potsdam. In 1890's, he published his most famous works in the field of geodetic and Earth gravity measurements. He was respected as one of the leading specialists in gravimetry of the period. At the Conference he presented the paper *Pflichten der Centralstelle* (Duties of the Central Station, Helmert, 1902).

Dr. **R. von Kövesligethy**, University professor, member of the Hungarian Academy of Sciences in Budapest, an outstanding Hungarian geophysicist. He derived a way of seismic foci depth determination (Kövesligethy's method). He also derived and presented a special procedure enabling the assessment of energy of strong earthquakes (Kövesligethy, 1904) and the method of determination of the relation between energy and intensity degree of an earthquake (Kövesligethy, 1907). At the Conference he presented a paper *Vorweisung des ungarischen Erdbebenkatalogs* (Preliminary report on the Hungarian earthquake catalogue, Kövesligethy, 1902a). His second paper was entitled *Über die Lesung seismischer Diagramme* (On reading seismic records, Kövesligethy, 1902b).

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Dr. **F. Schafarzik**, Ass. Professor of Geology at the Polytechnic University in Budapest. He presented the paper *Die Erdbebenkommission in Ungarn* (The Commission for earthquakes in Hungary, *Schafarzik, 1902*).

Prof. **A. Bellar**, seismologist of Slovenia, director of the Seismological station in Ljubljana. In Slovenian journals *Erdbebendienst*, *Erdbebenwarte* und *Erdbeben-nachrichten* (Ljubljana 1900 – 1915), he published regularly, over a period of 15 years, the reports on the seismicity of Slovenia and Dalmatia. After the 1895 earthquake in Ljubljana, the local seismic station was – as one of the first in the Austro-Hungarian monarchy – provided with seismographs. Before 1900 he published his papers on the above-mentioned Ljubljana quake. He was also engaged in the study of micro-tremors; at the Strassburg conference he presented the results in this field – *Erdbebenbeobachtungen an der Laibacher Erdbebenwarte* (Observations of earthquakes at the seismological station in Ljubljana, *Bellar, 1902*).

Prof. **R. Straubel**, 1864 – 1943. Permanent Commission member, delegate of the Conference. Professor of Physics at the Jena University. In 1898 – 99 a seismological observatory was established in Jena and Prof. Straubel, who later constructed a vertical seismograph (*Straubel, 1908*), was appointed its director. He was the first to give lectures on geophysics in Jena. Since 1905 he edited and regularly published Jena monthly seismic bulletins. At the Conference he presented the paper *Beleuchtungsprinzipien und Beleuchtungseinrichtungen bei photometrischer Registrierung* (Principles of lighting and lighting devices using photometric recording, *Straubel, 1902*).

First Lieutenant, Dr. **G. Harboe**, Danish seismologist. He presented his method of determining arrival times from seismograms. He also became known for constructing *lines of seismic foci* or ‘Harboesche Herdlinien’. In the first decade of the 20th century he made numerous seismic measurements in Iceland and in Greenland (*Harboe, 1911*).

Prof. **V. Láška**, 1862 – 1943. Permanent commission member, delegate of the Conference. Originally educated in geodesy, astronomy and applied mathematics, later specialist in geophysics and seismology. Since 1891 he worked at the Astronomical Institute in Prague, in 1898 he was appointed Full Professor of geodesy in Lvov, where he stayed for a total of 16 years. Here he created and published a series of works (in Czech, Polish and German) in the field of astronomy and observatory and theoretical seismology, see, e.g., *Láška, 1902*. He developed a method of determining earthquake epicentral distances by means of measuring the time difference between the arrival times of P and S waves (the Láška principle, *Láška, 1903*), which he named as ‘overture’ and ‘main shock’. In 1911 V. Láška returned to Prague where he was appointed Professor of Applied Mathematics at the Charles University. After Czechoslovakia came into existence, Láška established the State Geophysical Institute in Prague and became its director, (for details, see *Zátopek, 1981*). He undoubtedly belonged to the most outstanding seismologists of the time, had high credit among his colleagues at home, as well as abroad. At the Conference he presented the extensive paper *Über die Pendelunruhe* (On the unrest of the pendulum, *Láška, 1902a*).

Prof. **K. Futterer**. Permanent commission member, delegate of the Archduchy of Baden. Professor of Mineralogy and Geology at the Technical University and head of the Commission for Earthquakes of the Association for Studying Natural Sciences in Karlsruhe. He presented the communication entitled *Erdbebenforschung in Baden* (Earthquake research in Baden, *Futterer, 1902*).

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Prof. **A. F. Forel**, born 1841. Permanent commission member, delegate of the Conference. An outstanding Swiss geophysicist and seismologist, Professor at the University of Lausanne. He published a series of papers on the Swiss nature (lakes, mountains, glaciers, earthquakes). He was co-author of the famous Forel macroseismic intensity scale of the end of the 19th century. According to the size of the shaken zone diameter he classified the earthquakes into five intensity levels.

(The Proceedings of the Strassburg Conference, which the author of the presented text used, also gives a detailed record of the negotiations of the participants and Commissions, incl. Discussions, etc., the texts of letters of apology and regards, the text of the Conference Resolution and the text of the prepared Society Statutes. Except for the above cited papers, the Proceedings also contain several shorter papers by the authors not portrayed in the discussed photograph. The supplement to the Proceedings consists of 21 Tables, such as maps, seismograms, technical sketches, photographs, etc.).

An observer who studies the photograph of the participants of the First **International** Seismological Conference carefully, may not be satisfied by the regional composition of the participants. Most of them come from Germany and the majority of the remaining attendees come from regions of Central and Eastern Europe where German was spoken at the time. The rest of the world is then (on the photo) represented exclusively by the director of the Geophysical Observatory in Russian Irkutsk, A.W. Woznessensky, by General Pomeranzeff of St. Petersburg, by Prof. Oddone of Pavia, by Dr. Harboe of Denmark, and by the above mentioned Prof. Omori of Tokio. Seismologists from the Americas, the United Kingdom and from France are missing. The whole of the seismically highly active Mediterranean area is represented only by two participants, from north Italian Pavia and from Slovenia. Nor were specialists from Vienna, such as Prof. E. von Mojsisovics, present. Some of those invited, but not present, sent letters of apology.

The auto-selection of the participants in the Conference could also have been affected by the contemporary animosity between France and Germany, which arose after the recent war between the two countries: After the lost war, France had to surrender Alsace with its capital Strasbourg to Germany. Also the expansive colonial policy of the time could have played its role.

However, regardless of these drawbacks, the Conference photograph discussed represents an unique document illustrating the initiative of one hundred years ago which tried to start a desirable international collaboration in the field of mitigating the effects of earthquakes.

Note: The original photograph was kindly offered for reproduction by I. Pšenčík of the Geophysical Institute of the Czech Acad. Sci., Prague. According to the designation on the reverse of the photograph, it appears to have been the property of Prof. V. Láska, who evidently kept it as the (only Czech) participant of the Strassburg Conference. It seems that the reproduced photograph was the only one which, after the return of Prof. Láska from Lvov to Prague in 1911, could be found on the territory of the present Czech Republic.

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Acknowledgements: The author is thankful to Dr. Jiří Vaněk of the Geophysical Institute, Prague, for reading and making additions to the above text and for providing important, now long-forgotten information pertaining to the subject.

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