The Founding of the International Commission for Optics

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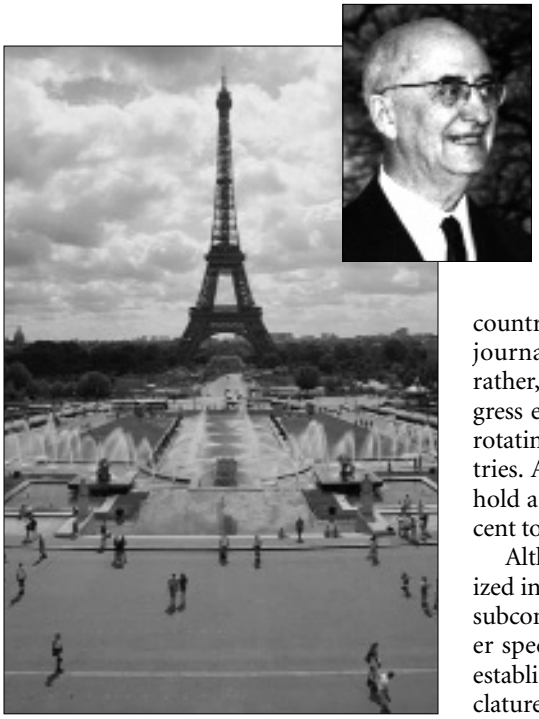
*Representatives of the international optics community joined together in the wake of the Second World War to further the study of optics. OPN Contributing Editor John N. Howard traces the historical trends that led, in 1947, to the formation of the International Commission for Optics (ICO).**

The Industrial Revolution is said to have begun in the 1780s when a young Scottish instrument maker, James Watt, perfected a more efficient steam engine. The first steam engines, which had been developed to pump water from coal mines, were soon adapted to run every sort of machinery. Science and technology quickly became important in everyday life.

The 1800s witnessed a dramatic increase in the application of physics and chemistry to technology, a trend that was truly international in character. In the field of electrical studies, one can cite Ampere, Coulomb and Biot in France; Faraday, Kelvin and Maxwell in England; Gauss, Ohm, Helmholtz and Siemens in Germany; and Henry, Edison and Bell in the United States. In 1832, electrical units were arbitrary and poorly defined. Gauss, who was studying terrestrial magnetism, proposed an absolute definition of the magnetic field unit in terms of length, mass and time.

In 1834, Gauss and his colleague, Wilhelm Weber, organized the Magnetische Verein, which united a worldwide network of observatories for international scientific cooperation in the measurement of terrestrial magnetism. This Verein, the world's first scientific union, ultimately became the International Union of Geodesy and Geophysics (IUGG). By the late 1800s, unions had been organized in other scientific disciplines. Optics-related unions included the International Astronomical Union (IAU), the International Union of Pure and Applied Physics (IUPAP) and the International Union of Pure and Applied Chemistry (IUPAC).



In Paris in 1946, scientists from 16 countries participated in the first post-war international optics meeting. *Inset:* Pierre Fleury, who organized the meeting, was the director of the Institut d'Optique. He is considered the founding father of ICO.

After World War I, in a quest to ensure permanent peace, the Major Powers organized the League of Nations. One of the activities of the league, which was headquartered in Geneva, Switzerland, was to formalize and coordinate the international scientific unions. As a result of this effort, most of the scientific unions moved their secretariats to Geneva or Paris. Today, there are about 25 of these unions, ranging in size from the IUGG (the largest, with about 80 member countries), to middle-sized organizations such as the IAU, IUPAP, IUPAC and the International Union of Radio Science (URSI), to the smallest, the International Union for the History of Science. It is interesting to note that for many years, the president of the International Union for the History of Science was the well-known Italian optical scientist Vasco Ronchi.

Today, the international scientific unions do not function as technical societies but primarily as coordinating organizations. They do not have individual, dues-paying members, being funded instead by assessment of their member countries. In general, they do not publish journals or hold technical symposia; rather, they convene an assembly or congress every three or four years, ordinarily rotating among the major member countries. At times, the host country elects to hold a specialized technical meeting adjacent to the official union assembly.

Although the unions are not all organized in the same way, in general they form subcommittees or commissions to consider specific technical matters, such as the establishment of definitions and nomenclature. There is, for example, a joint IUPAP-IUPAC commission on spectroscopy that is responsible for cataloging atomic and molecular energy states.

In 1946, Europe was beginning to recover from the ordeal of World War II. The oldest and largest optics group in Europe was the Institut d'Optique in Paris, which had been founded in 1921 by the distinguished optical physicist Charles Fabry (1867-1945). The director of the Institut d'Optique, Pierre Fleury, who had succeeded Fabry in 1945, was eager to resume an active role in European optics. He wrote to colleagues and former students throughout Europe to invite them to participate in the Réunions d'Opticiens in Paris in October 1946. Scientists from 16 different countries participated in this, the first post-war European optics conference. The invited papers were by Frank Twyman (of Hilger and Watts) on the production of aspherical surfaces; Louis de Broglie on image formation; Jean Cabannes on the development of optics in France; and Fleury himself, who reviewed the history of the Institut d'Optique and the research that had been pursued since 1940. There followed several days of contributed pa-

*This column is adapted from a salute written for the 50th Anniversary of ICO in 1997. For more information, go to www.ico-optics.org.

pers from most of the European optics groups. Many of the participants urged Fleury to seek some mechanism for continued cooperation among members of the international optics community.

Fleury, already a French representative to IUPAP, which was headquartered in Paris, was aware that the statutes of IUPAP provided for the creation of commissions in specific areas of physics. Why not a commission for optics? He determined that the United Nations Educational, Scientific and Cultural Organization (UNESCO) would be able to provide, through IUPAP, a certain amount of funding for travel to a meeting in Prague to discuss the formation of an international commission for optics.

In January 1947, the IUPAP General Assembly approved the appointment of a preparatory committee, with Fleury as Secretary, to consider forming an international commission for optics. The committee met in Prague, in June 1947, with the professor Josef Hrdlicka as host. In attendance were fifteen delegates representing eight countries: Belgium, Czechoslovakia, France, Great Britain, Italy, the Netherlands, Poland and Sweden. Representatives of five other countries—Denmark, Finland, Norway, Switzerland and the U.S.—had responded that they would be unable to attend. Argentina and the U.S.S.R. did not respond.

The attendees agreed that an international commission for optics should be formed as a self-governing, affiliated commission of IUPAP. Each member country would establish a national committee for ICO, which would select that country's representative to the ICO Bureau meetings. A set of provisional statutes (patterned after the statutes of IUPAP) was adopted. A provisional bureau was elected, subject to approval by IUPAP and reconfirmation by the national committees at the first official meeting.

Thomas Smith of London was elected president; Fleury was elected Secretary; Albert Arnulf of Paris was made treasurer; and Josef Hrdlicka of Prague was elected a vice president. Two other vice presidents were to be selected at the first official meeting. The delegates decided to hold their first ICO plenary session in conjunction with the next IUPAP General Assembly, which was to meet in July 1948, in Amsterdam. Professor Abraham (A. C. S.) van Heel, the Dutch delegate on the ICO preparatory committee, invited the ICO to hold its first meeting at his laboratory in Delft.

Today, ICO continues to coordinate international activities in optics. OSA has cooperated closely with ICO since its founding. Ongoing joint programs include the Education and Training in Optics and Photonics (ETOP) meeting series, the Optics in Computing (OiC) meeting series, the ICTP Winter College on Optics and traveling lecturer programs.

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