THE SWISS PHYSICAL SOCIETY CELEBRATES ITS 100TH ANNIVERSARY

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This year 2008 the Swiss Physical Society (SPS) celebrates its Centennial. Over its 100 years of existence the SPS has grown up to a society with more than 1200 members, university professors, teachers, PhD students and other professionals from research laboratories and industry, all linked by their interest for physics. Famous members of the Society are Nobel laureates such as Charles-Edouard Guillaume, Albert Einstein, Wolfgang Pauli, Felix Bloch, Karl-Alex Müller and Heinrich Rohrer.

The SPS is a collective member of the Swiss Academy of Sciences (SCNAT), the Swiss Academy of Technical Sciences (SATW) and the European Physical Society (EPS). Organized like other learned societies, the SPS has representatives from condensed matter physics, astrophysics, nuclear and particles physics, theoretical, applied, and industrial physics. The SPS has also special joint membership agreements with the German Physical Society (DPG), the Austrian Physical Society (ÖPG) and the American Physical Society (APS). Every year it distributes awards to recognize outstanding young physicists in General Physics, Condensed Matter Physics and Applied Physics. In recognition of outstanding contributions in physics and for the advancement of science and technology, the SPS awards also fellowships. The journal of the Swiss Physical Society was the famous *Helvetica Physica Acta*, which has been published since 1928 by Birkhäuser Verlag. In 2000 it was merged with the *Annales de l'Institut Henri Poincaré* to become the *Annales Henri Poincaré*, a Journal of Theoretical and Mathematical Physics.

The annual meeting of the Society will take place this year on March 26-27th in Geneva. It is organized jointly with the three Swiss National Centers of Competence in Research (NCCR): Nanoscale Science (NANO), Materials with Novel Electronic Properties (MaNEP) and Quantum Photonics (QP). A special Centenary celebration event will be organized on June 27th in Bern at the Kultur Casino, in the presence of the political authorities, many honorable members of the Society and students. The special ceremony will include a round-table discussion on "*Research in Physics a hundred years ago and today*" and a plenary talk by Theodor Hänsch - Nobel Laureate 2005 - on the "*Visions for Physics*". During the afternoon outreach activities and exhibits will be proposed to the public.

◀ **Meeting of the Swiss Natural Science Society 1908 in Glarus. Source: Burgerbibliothek Bern.**

From the Natural Science Society to specialized societies

The Swiss Physical Society was founded in 1908 as part of a wave of new, independent scientific societies, which included the Chemical Society and the Mathematical Society (founded in 1901 and 1910, respectively). All of these newly established societies were offshoots of the Swiss Natural Science Society, which had existed since 1815. On the occasion of its 100th anniversary, the Swiss Physical Society can look back on a remarkable history. Nearly all important Swiss physicists of the last 100 years were members. As early as in 1908, the year of its founding, the society's roster included such famous names as Marcel Großmann, Walter Ritz, and Albert Einstein.

The SPS's parent society, the Swiss Natural Science Society (SNG), was formed in the early 19th century, at a time when academic societies were gaining ground as centres of independent research. The academic societies were competing effectively with the more established university system, and were seen by many as more important to scientific innovation. In the middle of the 18th century, the Swiss physician, scientist and polymath Albrecht von Haller noted that universities were "instructing academies", whereas academic societies were the actual "inventing academies".

The SNG was not, however, officially an "academy".[1] Academies usually consisted of professional scientists, whereas the SNG was a union of interested laymen who did their research, for the most part, as a hobby – their actual occupations were as teachers, ministers, bailiffs ("Landvögte") and the like.

Beginning in the 19th century, specialized societies were founded all over Europe. The reasons for their emergence were various: The German Physical Society, for example, which was founded in 1850, wanted to create "an association open to everyone" that would "search for the relationship among many natural sciences and wider scopes connected with physics."

The Swiss Physical Society was created in May of 1908, during the annual meeting of the SNG in Glarus. It had already existed informally for several decades as a section of the SNG, and had held separate meetings on mathematical and physical topics. In many regards, the SPS was a substantially more professional organization than the SNG, consisting almost exclusively of professional physicists. Most of them worked at universities, while others were Gymnasium teachers who often held an adjunct professorship ("Titularprofessur") at a university. Among the non-physicists, there were some chemists, mathematicians, astronomers and also engineers who were directly involved with the physical research, either as collaborators of the physicists or as private researchers.

The founders

Pierre Eugène Chappuis-Sarasin (1855 – 1916) from Basel was the founding president of the SPS and remained president until 1910. He had already been active as secretary of the SNG, president of the Bernouillanum commission in Basel as well as president of the Natural Science Society of Basel from 1904 to 1906. In addition, he was active in numerous non-profit organisations, among other things for the support of the victims of the First World War. Thus, given his manifest organizational talent, it may not surprise that Chappuis also participated actively in the founding of the SPS.

Beside Chappuis there were two more people in the board of directors of the SPS: Alfred Kleiner (1849 – 1916) from the University of Zurich served as vice president. Kleiner is remembered today largely because he examined Albert Einstein's thesis of 1905 and in 1909 was responsible for hiring Einstein at the University of Zurich. Since 1879 he had been associate professor for physics, and from 1908 to 1910 he was director of the university. Second, as secretary there was the young Emile Alfred Rosselet (1887 – 1950). Rosselet had studied physics at the University of Lausanne and earned a doctorate in 1909.

At that time many members came from the famous "Polytechnikum" in Zurich - the later Swiss Federal Institute of Technology. Among them, Professor Pierre Weiss (1845 – 1940), who served as secretary of the SPS in 1909, as vice president in 1910 and as president in 1912, as well as the Professors Alfred Fritz Schweitzer (1875 – 1963), Heinrich Friedrich Weber (1843 – 1912), Marcel Großmann (1878 – 1936) and Walter Kummer (1875 – 1962).

From the University of Zurich – besides Alfred Kleiner – there was Albert Einstein[2], as well as the doctors Edgar Meyer – the later successor of Kleiner – and Friedrich Adler.

▼Postcard showing the Polytechnikum in Zurich in 1908. Source: Image Archive ETH-Bibliothek Zurich.

Einstein and Adler

Adler had studied physics, chemistry and mathematics at the University of Zurich from 1897 to 1903. After employment at the Deutsches Museum in Munich he worked from 1907 onward as a private lecturer at the University of Zurich. Alfred Kleiner who was director of the university at the time, offered Adler a newly opened position in theoretical physics. Adler refused it, arguing that "if our university can get a man like Einstein, then it would be unreasonable to appoint me. My abilities as a researcher can in no way be compared with those of Einstein. Such an opportunity to win a man who can effect an elevation of the whole field, one should not lose because of political sympathies."[3] If it had not been for Adler's support, Einstein – a mere civil servant and unpaid private lecturer at the University of Berne – would hardly have been a viable candidate. Einstein would never forget this nobility on Adler's part. Adler's act of selflessness was even more amazing in light of the fact that although he did indeed admire Einstein's abilities, he doubted his results.

When Einstein moved to the University of Prague in 1911, he recommended Adler as his successor. Adler, however, decided to go into politics and took a position as party secretary of the Austrian social-democratic party in Vienna. Since the beginning of the First World War, Prime Minister Karl Freiherr von Stuergkh (1859 – 1916) had ruled under the so-called "Notstandsparagraphen" without a parliament. In 1916 Adler organized a demonstration demanding the re-instatement of the parliament, but Stuergkh prevented this by forbidding any demonstrations. In a violent reaction, Adler shot the Prime Minister in public. When Einstein heard of the arrest of his former colleague, he organized – together with other Swiss physicists – a personal appeal to the emperor requesting mercy on Adler.[4] Adler, however, rejected Einstein's offer. In 1917, Adler was sentenced to death, but the verdict was first converted to 18 years' detention and then a year later – as a result of the dissolution of the Austro-Hungarian Empire – he received full amnesty. During his time in prison he kept working on physics, exchanged letters with Einstein, and wrote a treatise about the refutation of relativity theory – he remained at odds with Einstein on that subject.[5] In the following years, Adler continued to pursue his political career, becoming General Secretary of the reformed Socialist International in 1919. At the end of the Second World War he retired from politics and returned to Zurich.

This episode shows that the contact between the physicists had not broken off – and the connecting link between them was among other things the SPS, whose annual meetings provided the framework for both scientific and personal exchanges.

World War II and beyond: Debye, Scherrer, Pauli

Swiss physicists were not affected by National Socialism nearly as much as their German colleagues. Nevertheless, the political climate in the neighbouring country was distinctly felt by the Swiss scientific community, in part because one of its most famous members was a dedicated opponent of Nazism: Paul Scherrer (1890 – 1969). Among Scherrer's many accomplishments is his involvement in the founding of two of the most important research institutions in Switzerland: the CERN in Geneva and what is now known as the Paul Scherrer Institute near Zurich.

Beginning in 1954, Scherrer contributed to the development of the CERN (Conseil Européen pour la Recherche Nucléaire). Twelve European Nations were the original signatories of the convention establishing the CERN, and nine more nations have joined since. The CERN remains the preeminent international center for research in particle physics. Even more important was Scherrer's part in the founding in 1955 of Reaktor AG, which has since then been renamed the Paul Scherrer Institute in recognition of Scherrer's contributions. Today, the Paul Scherrer Institute is best known for its facilities for treating tumors by proton irradiation and for its most advanced synchrotron light source (SLS).

Scherrer studied physics in Zurich, Königsberg and Göttingen before working as a Privatdozent (University lecturer) in Göttingen. Together with his advisor Peter Debye, with whom he had developed the Debye-Scherrer-method for measuring the atomic structure of crystals, he moved to the Polytechnikum in Zurich in 1920, taking a position as professor. In 1927, after Debye's departure from Zurich, Scherrer assumed Debye's chair in experimental physics. During his short stay in Switzerland, Debye (1884 –1966) had been active in the SPS: he served as vice president from 1923 to 1925 and as president from 1925 to 1927. In Germany, he became the president of the German Physical Society in 1937.

While Debye was rather indifferent in regard to Nazism and avoided any confrontation, Scherrer was actively involved in mounting opposition against National Socialism. Partly through his membership of the German Physical Society, Scherrer maintained close contact with his German colleagues even during the Second World War, among others with Werner Heisenberg. Scherrer kept his eyes and ears open and forwarded what he learned about German research to the Office of Strategic Research (OSS) – the predecessor of today's CIA.

During the war, Scherrer sheltered two Jewish physicists at his institute, Corudis Gugelot and Hans-Gerhard Heine – and he worked toward the emigration of Lise Meitner from Germany. Meitner hesitated to leave the Kaiser Wilhelm Institute, since she identified herself as German. Scherrer's view was probably more realistic. In July of 1938 he urged her on: "Pull yourself together and come here this week, it is but a short hop by plane. You may give your lecture on Wednesdays or Fridays from five to seven."

Denied to leave the country by the German authorities, Lise Meitner was helped by several European scientists and finally moved to the Netherlands with the support of the Dutch physicist Dirk Coster.

Scherrer also supported Wolfang Pauli (1900 –1958), who decided even in 1928 that he no longer wanted to live in Germany. Scherrer immediately procured a position for Pauli at the Polytechnikum. In 1938, when the situation in Switzerland became too precarious for Pauli, Scherrer helped him obtain a visa to the USA – with a heavy heart, for the two men had since become close friends. When Pauli left Zurich in 1940 to assume a position at Princeton, Scherrer refused to take back Pauli's key to the institute. Indeed, Pauli would return to the ETH in 1946 – his position had been kept on hold for him through all these years. Pauli again became active in the Swiss scientific community and served as vice president (from 1952 to 1954) and then as president (from 1954 to 1956) of the SPS.

▲ Paul Scherrer and Wolfgang Pauli in Zurich in the late 1940s. Source: CERN.

A common watering hole

These were just a few episodes in the history of the Swiss Physical Society. Outside of Zurich, we find he same picture; the SPS brought all Swiss physicists together. Not only established scientists were member of the SPS: young talents were also accepted. It is noteworthy that the SPS had few members without an academic title – and that those who were part of it nearly without exception had an extraordinary academic career.

At the time the vast majority of Swiss physicists participated in the Swiss Physical Society. Of course the SPS was not the only bond that held the scientists together, but nevertheless it was a strong link – a Society that carried scientific and private exchange. Today, in spite of many changes in the communication means, the SPS is still a kind of "common watering hole" for physicists all over Switzerland. Its role is not only to defend the interest of the physics community at large, but also to promote the awareness of the public on the importance of physics in our everyday life and to develop the interest for physics among youngsters, boys and girls alike. The participation of the SPS in the World Year of Physics 2005 and in the different events that took place in Bern to celebrate Einstein's seminal papers of 1905 is a good example of its engagement. ■

NOTES

1. The society was renamed to include the word "academy" only in 1988, almost two centuries after its founding.
2. Einstein didn't join in 1908 but in 1909 when he got the chair in physics.
3. Adler wrote to his father that Kleiner would definitely prefer Einstein and he anyway wouldn't get the job. It remains open if that was false dignity; Einstein saw it the other way.
4. They wrote a letter in the name of the Physical Society Zurich.
5. Ortszeit, Systemzeit, Zonenzeit und das ausgezeichnete Bezugssystem der Elektro- dynamik. Eine Untersuchung über die Lorentzsche und die Einsteinsche Kinematik. Verlag der Wiener Volksbuchhandlung, 1920.