

Edoardo Amaldi 1908-89

Edoardo Amaldi, one of the driving forces of European science and a pioneer of CERN, died on 5 December.

He began his career in the 1930s with Enrico Fermi in Rome, where he helped discover that slow neutrons were more readily captured in target nuclei.

After the premature death of Ettore Majorana and the decision of Fermi and other prominent Italian physicists to emigrate in the 1930s, Amaldi took essential steps to maintain the spirit of Italian physics. Gian Carlo Wick was invited to take up the Rome chair left vacant after the departure of Fermi. Gilberto Bernardini at Bologna commuted regularly to the Italian capital to continue the cosmic ray tradition pioneered by Bruno Rossi. Under their guidance, dramatic wartime research exploits under difficult conditions nevertheless made important contributions to physics, culminating in the epic 1946 discovery of the muon by Marcello Conversi, Ettore Pancini and Oreste Piccioni.

In 1955, while the experiment of Owen Chamberlain, Emilio Segré, C. Wiegand and T. Ypsilantis that was to discover the antiproton was being set up at the new Berkeley Bevatron, an emulsion stack study by a Berkeley/Rome collaboration went ahead at the new machine, and a particle with antiproton-like properties was revealed in subsequent analysis in Rome. An Amaldi group had also seen an antiproton candidate in cosmic ray studies.

In later years, Amaldi pointed out how the novelty and intimacy of physics at cosmic ray mountain observatories and nuclear emulsion laboratories in the immediate post-war years had suggested wider and more ambitious collaborations. Putting these ideas into action, he



Edoardo Amaldi, right, with Gilberto Bernardini at a CERN Council session in 1965.

had led the small but vigorous group of scientists and politicians who promoted the idea of a European Laboratory in the early 1950s, and it was fitting that he held the position of Secretary General when CERN formally came into being in 1954. His vision and wisdom in helping to create the Organization and its guiding document, the Convention, were important factors in enabling CERN to respond to all the challenges of the past 35 years.

Following a 1963 proposal by CERN Director General Viktor Weisskopf and Scientific Policy Committee Chairman Cecil Powell, Amaldi was the first chairman of a new body, the European Committee for Future Accelerators (ECFA), a 'little parliament' of physicists which under his guidance produced the famous 'Amaldi Report', with recommendations for new machines – the Intersecting Storage Rings and the 300 GeV machine (the SPS) – that secured CERN's fu-

ture. It took many years before final agreement on the latter was reached, but it was symbolic that Amaldi was President of the CERN Council when the SPS was finally approved in 1971. Subsequently he was a regular visitor, still involved in experiments, and a necessary presence at all CERN's great events, including most recently the LEP Inauguration on 13 November (see page 6).

From 1957-60 he was President of the International Union of Pure and Applied Physics. In his home country, he was President of the INFN from 1960-65, a member of the prestigious Accademia dei Lincei, becoming its President in 1988, and the Accademia Nazionale dei XL.

For a man of great vision who could transform his ideas into reality, he was very modest. At his 80th birthday celebrations at CERN in 1988 he concluded simply, 'It has always been a joy to work for CERN'.

Recollections of Edoardo Amaldi

20th Century Physics: Essays and Recollections, a Selection of Historical Writings by Edoardo Amaldi, World Scientific 9810223692 (£83).

This interesting book was published in the Edoardo Amaldi Foundation Series and, as Ugo Amaldi, Edoardo's son, writes in the preface, "offers, by reading Amaldi's own words, the occasion to delve into his way of viewing the people he liked and the events which he had participated in".

It contains a collection of articles and speeches by Amaldi and gives sometimes very personal views, being based "in part on my memory and personal diary". Although intended to be a historical book, it cannot conceal Amaldi's deep love of science. Hence even the recollections of old friends are full of interesting scientific anecdotes.

The text contains two parts: "From nuclei to particles: 50 years of physics in Italy"; and "European physicists and their institutions". I found the articles describing the work of Fermi's group at Rome from 1934 to 1936 particularly fascinating. Amaldi describes from his own experience the exciting developments of the time, with details of the experimental arrangements and, for example, the correspondence with Rutherford.

As well as the rise of the Rome group, he relates the creation of the group at Florence, which was engaged mainly in cosmic ray physics. After the years of glory, Amaldi, in his typical sober and objective style, also covers the dark times of decay, of racial persecution and of emigration of many Italian physicists. It is touching to read the reasons for Amaldi's decision not to join the emigration, although in 1942 he was onboard a ship sailing for the USA.

Several articles deal with the resurrection of Italian physics after the war, starting from the beginnings after the arrival of Allied troops in Rome, when cosmic-ray equipment built by Conversi and Piccioni was recommissioned, and the gradual build-up of new groups, under the leadership of Bernardini and Ferretti

among others, which eventually led to a flourishing new physics in Italy and also included groups in fields like optics and solid-state physics.

Knowing Edoardo, I am not surprised that his own contributions are played down. Of course, many articles are devoted to the foundation of CERN in which Amaldi as first secretary-general played such an important role. His recollections provide an extremely interesting complement to the description of CERN's foundation, written by professional historians. They include inside stories about divergences involving P Auger (director at UNESCO), I Rabi, N Bohr and H A Kramers (president of IUPAP), and they relate how the final agreement to create a particle physics institute at Geneva was reached, pushed by the strong desire of the European physicists to be able to compete on a worldwide scale.

Regrettably, Amaldi mentions only briefly the time before UNESCO came into play, probably because he was then less involved. However, in this key phase of the history of CERN, the wish of the physicists was preceded by far-sighted politicians advocating a united Europe. Denis de Rougemont (who considered himself to be one of the founding fathers of CERN but is only mentioned once by Amaldi) told me about this crucial 1949 political initiative when I explained to him the LEP project.

To my knowledge, CERN is the only laboratory created to foster science and international collaboration. The great human qualities of Amaldi are revealed when he writes about his friends. His closest colleagues were G C Wick, B Touscheck and F G Houtermans. Amaldi gives a full account of their scientific achievements, but also offers warm words about the personal relations, and reports many interesting and amusing stories (among them 11 pages of cartoons drawn by Touscheck) about their careers.

Many reminiscences concern the then famous groups at Leipzig with W Heisenberg



Edoardo Amaldi – human qualities.

and at Copenhagen with N Bohr. Another long chapter is devoted to the genius of E Majorana, describing his conversion from an engineer to a theoretical physicist, his ability to make complicated computations in his head, and his remarkable life, including his mysterious disappearance.

A reprint of the CERN John Adams Lecture summarizes the brilliant career of Adams not only at CERN, but also in plasma physics, and demonstrates again Amaldi's deep attachment to the laboratory that he helped to create.

Finally, several articles deal with the scientific work and personal careers of friends who have contributed to the development of Italian physics, including E Persico, E Pancini and G Placzek.

The editors did an excellent job in preparing this book. All of the articles, including those originally written in Italian, appear in English. For some of them it is not clear where they were originally published or presented. I also regret the omission of a good photograph of Edoardo. However, this also reflects his modesty. The book captures the personality of a remarkable man, a great scientist and a perfect human character whom I had the honour and pleasure to know.

Herwig Schopper / Director-General of CERN, 1981–88