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In Memoriam

In memoriam: Jean Plateau (1923–2019)

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Jean Plateau (SF2M Annual Meeting 2008)

A great figure of French metallurgical research, Jean Plateau passed away on January 10, 2019 in his ninety-sixth years. Jean Plateau was awarded the "Grande médaille" in 1995 by the French Metallurgical Society (now SF2M), as well as the Réaumur medal (1969) and Jean Rist medal (1958). He was Knight of the French National Order of Merit.

His career marked successively the first founding decades of two major industrial research centers. At IRSID in St Germain-en-Laye (from 1952 to 1965), he distinguished himself in particular by his work in microfractography for the study of steel fracture, and left a strong imprint on IRSID after his departure. At the Voreppe Research Center since its creation in 1966 by Pechiney, Jean Plateau made a major contribution to the development and the reputation of the center and the Pechiney group in the field of aluminum metallurgy and processing technologies.

After retiring in 1985, Jean Plateau also became a very active aluminum historian under the auspices of the Institute for the History of Aluminum (IHA) and built up a pioneering, unique in the world, collection of aluminum objects. He made a significant contribution to IHA's reputation.

A man of great scientific rigor, Jean Plateau was always open to research proposals and innovative approaches of researchers, like Charles Crussard whose career he accompanied for three decades. He placed great importance on the training of research engineers and their career development in industry. With paucity of words, discretion and reserve, he was of great relevance in his interventions, which he often punctuated with a fine touch of humor, always in the respect of his interlocutors. "Monsieur Plateau" was highly estimated by his collaborators, colleagues and research partners in metallurgy as well as by his friends historians of techniques and will therefore remain in their memories.

After studying engineering at the École des Mines de Paris (class 1944), Jean Plateau worked for some time at ONERA and joined C.R.M. (Center for Metallurgical Research), directed by Charles Crussard since 1948 and located in the École des Mines pending the construction of IRSID in Saint Germain-en-Laye.

Jean Plateau naturally followed Charles Crussard when the IRSID buildings were built in 1952. He joined the Physics department and then succeeded Charles Crussard at the head of the department. He participated in the launch of numerous studies, particularly those concerning the rupture mechanisms of steel. These included both ductile and fragile fractures and were very important at that time. They used the test machines developed by Chevenard and the Charpy test.

In 1953, he was in charge of starting the transmission electron microscope (TEM) with Guy Henry and of developing studies allowed by this instrument. In particular, he used TEM to develop the examination of fracture facies on carbon replicas, which led him and Guy Henry to the invention of electron microfractography in 1956. This pioneering technique provided superb, very informative images of fragile cleavages and ductile wells (Fig. 1) and allowed interpretations of the various mechanisms of ductile, brittle and intergranular fractures [1,2]. Generations of metallurgists worldwide have been familiar with their magnificent atlases.

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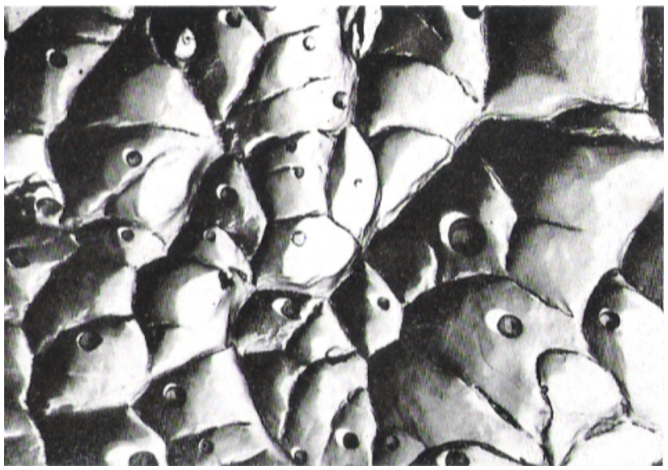

Fig. 1. Microfractography of Fe–Ni 30% alloy after tensile test at 20 °C showing ductile fracture with equiaxial dimples; TEM of carbon replica; image size $6.7 \times 4.6\,\mu m$ [2].

Fig. 2. Opera-glasses – chased aluminum (1860–1870); Jean Plateau-IHA Collection [6].

This work at IRSID from 1950 to 1965 gave rise to more than forty scientific publications authored or co-authored by him with notably Charles Crussard and/or Guy Henry.

Jean Plateau directed many trainees and trained many French and foreign researchers who spread throughout the metallurgical world, as well as several foreign university professors known for their specialty (J.S. Kirkaldy in Canada, A.W. Sleeswick in the Netherlands).

In 1965, he joined the Pechiney group, to work again with Charles Crussard who had taken in 1963 the scientific direction of the group with the first goal to create a large industrial research center in Voreppe, near Grenoble. The challenge was to face international competition (especially in the USA) and to complete the recent company mergers that made up the group.

After a period dedicated to becoming acquainted with the company and thinking about how the new center would work, Jean Plateau took over responsibility for the Division of Fundamental Studies (DEF) at the Voreppe Research Center (CRV), which started in the fall of 1966. It welcomed the Pechiney group's teams transferred from the metallurgical research center of Chambéry (CRMC) on aluminum processing and two laboratories transferred from Grenoble. The DEF consisted of sections on structural studies and analytical studies (physico-chemical and statistical methods). Another objective was to train high-level scientific engineers who would later evolve into metallurgical applications [3].

In 1971, Jean Plateau was appointed deputy director of CRV, on the occasion of its restructuring of the center in services gathering fundamental knowledge and industrial applications (products-processes) under the impetus of Marc Salesse (director of the center since 1968). He had a strong impact on the animation of the scientific life and the follow-up of the research, in particular the projects launched under CRV initiative, with the support of the Pechiney's scientific direction (Charles Crussard, then Michel Wintenberger from 1979 to 1984), and its external relations with academic laboratories and public research organizations.

In 1981, he was appointed director of CRV, which he managed until his retirement in 1985. Caring about the development of skills which are developed in industrial R&D, he kept attaching great importance to the recruitment and training of young engineers to irrigate production centers according to the "nursery mission" of CRV. Those years were marked by the launch of several major R&D projects on new alloys and manufacturing processes for aluminum products (particularly for aeronautics) and the integration of the Centre Technique de l'Aluminium (CTAl), transferred from Paris in 1984.

After his retirement in 1985, Jean Plateau maintained a relationship with Pechiney and metallurgical research for ten years as a part-time advisor of the group's corporate R&D department led by Yves Farge, particularly in the framework program of the European Union.

During retirement, Jean Plateau devoted himself very actively to the history and heritage of aluminum for thirty years. In 1986, he was one of the founders of the "Institut pour l'histoire de l'aluminium" (IHA). He chaired its permanent commission "Science and Research" from 1986 to 1995, aiming a facilitating links between experts from the world of aluminum and young researchers in History. He authored or co-authored some forty articles and books on the beginnings of aluminum industry, the consumption and uses of aluminum, as well as on the history of its metallurgical science and production technologies [4].

In parallel, in addition to his long-standing passion for the restoration and collection of old books, he built from 1986 an exceptional collection of 25 000 objects in aluminum, through purchasing in flea markets and sales. These objects, which are representative of the evolution of the techniques and uses of this material, constitute now the Jean Plateau-IHA Collection [5,6]. It is a unique conservatory, exhibiting especially an extraordinary set of prestigious pieces – medals, jewellery,

goldsmith's craft (Fig. 2), scientific objects – from the so-called "chemical aluminum" period (1854–1890), when the metal was rare and semi-precious.

The Collection highlights Jean Plateau's interest in sciences, techniques and manual work and provides an esthetic look at the material. It was exhibited in many museums around the world. In France, the "Arts et Métiers" Museum (in Paris), the "Espace Alu" (in Saint-Michel-de-Maurienne, Savoie) and the Museum of "Gueules rouges" (in Tourves, Var) present objects from the Jean-Plateau-IHA Collection in their permanent exhibition.

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