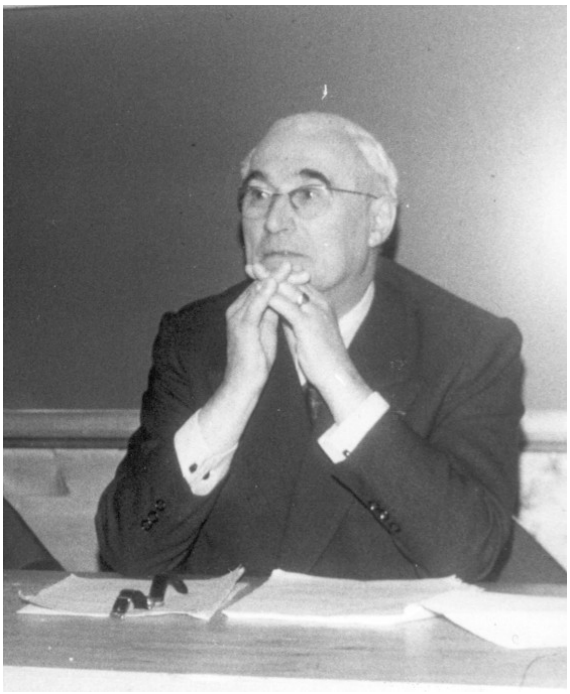
Jean Bricard
4 April 1907 - 4 December 1988



Professor Jean Bricard is known to all as the Father of Aerosol Science in France. He received, in addition to prestigious French decorations such as Legion of Honor and some important scientific awards: Guynemer Prize in 1946, the Rovel Prize in 1949 and in 1977 he was awarded by the French Academy of Sciences.

Jean Bricard was born 4 April 1907 in Caen in Normandy. His father was an agricultural engineer. At Caen, Bricard finished his studies in a high school and at the University.

It is possible to separate the career of Professor Bricard into two main parts:

- Atmospheric Physics (1937-1957)
- Aerosol Physics (1957-1977).

Atmospheric Physics

One can consider that the career of Bricard started in 1937 in the Observatory of Puy de Dôme where he served as assistant physicist. He noted that this site, being precisely at the level of low clouds, was very favorable for studying fogs and, in 1938, he published his first paper in the *Comptes Rendus de l'Académie des Sciences.* On the basis of this work, he defended his thesis of doctor ès Sciences degree in physics at the Faculty of Sciences of the Paris University in 1940. In 1941, Bricard joined the staff of the Observatory of the Pic du Midi and began new investigations on atmospheric and cloud droplets and atmospheric optics. In this way, he worked with Alfred Kastler (Nobel Prize in Physics, 1966) and studied the mechanism of excitation of the yellow D line of the nocturnal sky. Through various experiments made in the Pic du Midi, they concluded that two different mechanisms for excitation of this yellow D night line exist. This work was so important that, in his three-page Nobel Prize summary, Alfred Kastler mentioned his collaboration with Bricard.

In 1944, Bricard became assistant physicist in the Geophysical Institute of Paris where he made a systematic study of the transfer of visible and infrared radiation (between 0.35 and 11 μm) in fogs and clouds. At the beginning of the 1950s, Bricard was already famous as a specialist of cloud physics, and in 1953 he published the book "*Physique des Nuages"* in the Presses "Universitaires de France".

Bricard had also become a noted specialist of atmospheric electricity, mainly electricity in lower clouds and thunderbolts. From 1944 to 1949, he led the observation of electrical properties of the atmosphere in the Observatory of Chambon la Forêt, near Orléans. In 1948, he published his famous paper on the ionic equilibrium of the low atmosphere. This work was the real beginning of his fruitful research in the field of aerosol particles and made his name yet more renowned in atmospheric sciences.

His scientific qualities and fame meant that he was elected professor at the "Faculté des Sciences" de Paris in 1957. This was the beginning of the second part of his career.

Aerosol physics

In 1957, Bricard became professor and created the laboratory of cloud physics situated at the Optical Institute of Paris. This laboratory moved in 1969 in the University Paris VI and was renamed Laboratory of Aerosol Physics. During twenty years, the main works of the team around Bricard were the following:

- On one hand, basic research on: atmospheric natural radioactive aerosol (electrical charge, size distribution), nucleation of ultra-fine particles promoted by photolysis of gaseous impurities (SO_2, NOx…), aerosol filtration, nature of atmospheric small ions;
- On the other hand, development of aerosol measurement techniques such as continuous flow condensation nucleus counters (CNC), optical counters, and diffusion batteries.

Much of this work was performed within the framework of collaboration with the French Atomic Energy Commission in Fontenay-aux-Roses. Among many things, one can single out the determination of the size distribution and electrical charge of radioactive aerosols, the characterization of the formation of ultra-fine particles by photolysis, and the development of a new continuous flow condensation nucleus counter commercialized later by TSI in Minnesota, USA.

During this period of time, Bricard directed the thesis work of PhD students who would play important roles in the development of aerosol science in France. One can mention: A. Renoux, G. Madelaine, M. Cabane, M. Pourprix, and D. Boulaud.

One can also draw attention to many famous aerosol scientists who made sabbatical visits in the lab of Bricard: S.K. Friedlander, J. Brock, B. Liu, D. Shaw, and others.

But in 1977, the time came for Bricard to retire. He then decided to stop all his scientific activities. On 4 December 1988, Prof. Jean Bricard passed away in Paris.

(This brief bio, prepared by Denis Boulaud, is draw from the paper of Prof. André Renoux (2000) Jean Bricard, pioneer of the French aerosol research, his life and work, *History of Aerosol Science,* O. Preining and J. Davis, editors, Verlag der Österreichischen Akademie der Wissenschaften, Vienna, pp 221-231.)