

ADOLFO FERRATA: ONE OF THE FATHERS OF HEMATOLOGY ON THE 50th ANNIVERSARY OF HIS DEATH

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Early in the morning on March 9, 1946, while working in his office at the Clinical Medicine Department of the University of Pavia, Adolfo Ferrata died of a heart attack at the age of 66. The preceding day had been very strenuous and he had given one of his always-wonderful lectures.

Professor Ferrata was one of the great masters of clinical medicine but, above all, he was unquestionably the founding father of Hematology in Italy, and his theories, which had remarkable influence on the progress of the entire field of hematology, are still valid today.

His first fundamental notion was an intuitive insight into the ontogenesis of blood cells, the so-called *monolineage theory of Ferrata*. As early as 1910-1912 Ferrata was using the term *hemocytoblast* to indicate a cell that was capable of generating all the cells of the blood, and from the very beginning he spoke of the *stem cell*. The idea of a hemocytoblast produced a remarkably clarifying effect: one need only think of how back then scientists faced with the polymorphism of myeloid cells had formulated the most disparate hypotheses regarding the origin of the different families of blood cells. At that time Ferrata's theory was more the product of his great intuition than the result of direct evidence, which cellular morphology alone rendered extremely problematic.

In the last 10-15 years we have witnessed the demonstration of the full validity of Ferrata's theory as well as its remarkably practical importance.

The second fundamental contribution was Ferrata's *hemohistioblastic* theory, namely the presence in bodily tissues of a primitive, undifferentiated, totipotent mesenchymal cell, an idea which many scientists of his day referred as *Ferrata's cell*. Ferrata had imagined then what we know to be certain today: the existence of

stem cells in the circulatory system and connective tissues. Thus, these theories represent authentic milestones in the progress of the science of hematology.

In order to appreciate more fully the enormous merit Prof. Ferrata deserves in the formation of Hematology as an important independent science, we must return to that far-away period that was the first decade of the 20th century, when Hematology was an extremely confused and obscure branch of medicine, neglected by almost all clinicians and pathologists because of its inherent difficulties.

And to this end Ferrata's prolific activity as a treatise writer contributed greatly.

He began in Berlin in 1910 at the Institute of Pappenheim, an illustrious pioneer of hematology, by publishing together with Prof. Pappenheim a 112-page monograph, complete with beautiful lithographic tables, in which the problem of the lymphatic cells in normal and pathological blood was addressed. Soon thereafter, having returned to Italy, Ferrata published *The morphology of normal and pathologic blood* (1912), a book that enjoyed considerable success in the field of Hematology for the clarity of its insights.

In 1923, at a time when there was only one treatise in the entire world on clinical hematology – written in German by the great Swiss hematologist O. Naegeli – Ferrata published the first edition of his work, *The Hemopathies*, in two volumes. It was to be completed later (1933-1935) in a total of 5 volumes with the collaboration of many of his students.

Ferrata continued his treatise-writing activity without interruption right up to the time of his demise.

Another important contribution made by Ferrata was the creation in 1920 of the journal *Haematologica* (see Figure 3), which followed,



Figure 1. Adolfo Ferrata.

after 5 years, the only other existing hematology journal, *Folia Haematologica*, published in German.

Haematologica has represented one of the most powerful vehicles for disseminating hematological knowledge in Italy, and abroad as well. From its inception, *Haematologica* has continued to appear uninterruptedly to the present day and, since *Folia Haematologica* ceased publication decades ago, it is the oldest hematology journal in existence in the world today.

Finally, still in the field of Hematology, it is interesting to note that Ferrata, in a paper on the pathogenesis and essence of pernicious anemia in 1920, while speaking of the pernicious anemia bone marrow and its typical megaloblastosis, pointed out, emphasizing its importance, the fact – already well known from embryologic research – that the megaloblastic erythropoiesis of the pre-hepatic period disappears completely as soon as the hemopoietic

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HAEMATOLOGICA

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Sulla struttura dei globuli rossi dell'uomo e di altri animali. (*)

(con una tavola litografica a colori)

per il prof. Camillo Golgi

Figure 2. The first article published on *Haematologica* by Nobelprize Camillo Golgi; the title was "On the structure of red cells humans and other animals".

function of the liver begins. The validity of this insight was confirmed 7 years later by Minot and Murphy's great discovery (1927) of the hepatic treatment of pernicious anemia.

But Ferrata was also an important pioneer in the field of immunology. In fact, in 1907 a very young Ferrata working at the Pathology Institute of the eminent immunologist from Berlin, Morgenroth, made a fundamental discovery in the field of serology by demonstrating that complement, which until then had been a single entity, could be fractionated into two components that were inactive singly and only regained their activity when reunited. The finding was published in the *Berliner Klinische Wöchenschrift*.

This observation attracted considerable attention at the time, so much so that years later, in important treatises, it was cited as «*das von Ferrata entdeckte Phänomen*» (the phenomenon discovered by Ferrata).

On the 50th anniversary of his death, I feel it is my duty to remind hematologists, especially the youngest ones, of the towering figure of Adolfo Ferrata, who was not only one of the fathers of Hematology but a consummate master of clinical medicine and an erudite humanist as well.

on next page: Figure 3. The cover of the first issue ever published by *Haematologica* (January 1920).

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PUBBLICATO
DA
A. FERRATA E C. MORESCHI

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