

## The Harvard blood group

**Edwin J. Cohn and the Development of Protein Chemistry: With a Detailed Account of His Work on the Fractionation of Blood During and After World War II**

by Douglas M. Surgenor  
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**Charles Tanford and Jacqueline Reynolds**

In 1920, Harvard Medical School took the unprecedented step of creating a Department of Physical Chemistry, under the leadership of Lawrence J. Henderson, a professor in the parent institution, Harvard University. Members of this department, who had no teaching duties, were charged with the broad mission of conducting research related to medical problems. Henderson appointed as its *de facto* director Edwin J. Cohn, who decided to devote all of its research facilities to the study of protein chemistry.

Henderson had more or less disappeared from the scene by 1927, leaving Cohn in sole charge. Over the next 30 years, Cohn created a laboratory that provided training and sometimes a permanent home for many of the pioneers of protein physical chemistry. In 1950, the department metamorphosed into the grandiosely titled University Laboratory for Physical Chemistry Related to Medicine and Public Health, and Cohn became the first 'university professor', cutting himself free from both Harvard institutions.

After Cohn's premature death three years later, the laboratory underwent several reincarnations, and is known today as the Center for Blood Research, an entity with its own charter and governors, separate from, but affiliated with, Harvard.

Douglas M. Surgenor, who was president of the centre from 1972 until 1987, has written an account of the activities of this research group, with particular emphasis on its work in blood fractionation during the Second World War. He provides extensive discourses on sources of funding and on the machinations of its eccentric director in marshalling not only money, but also scientific collaborators from many other institutions. Every committee that ever met in the quest to provide the US military with an adequate supply of blood products seems to be deemed worthy of mention — the list of names, many of them unknown today, is mind-boggling.

The subtitle of this book is an accurate description of what it contains, but the main title is misleading. This is not a detailed biography of Cohn, although there is some



**Increased blood flow:** Edwin Cohn set up mobile laboratories to process blood for medical use.

introductory material that gives his family background, together with gratuitously interspersed snippets pertaining to marriages, children and deaths. Interviews with Cohn's surviving family are acknowledged, but events that one might expect to be among the most memorable milestones in the family's history are essentially ignored. For example, the suicide in 1948 of Cohn's wife of over 30 years — pictured throughout the book as consistently helpful to his career — is reported with no explanation of motive or other comment. (Cohn married again within three months of her death.)

Neither is this book a history of protein chemistry, nor even a coherent picture of the place of Cohn's laboratory in the then rapidly developing field of protein studies. Surgenor's interest is with the practical problems encountered in the separation and purification of the proteins of blood serum, specifically the methods and ideas in which he was personally involved, all based on differences in solubility or on centrifugation. But he fails to mention the contemporaneous development in other laboratories of partition chromatography, which would make the Harvard fractionation methods all but obsolete.

Likewise, Surgenor correctly stresses the importance of amino-acid composition in the characterization of individual proteins, and gives credit for this to the laboratory of Erwin Brand at Columbia University (an offshoot of Cohn's overall project). But he doesn't point out that Brand was still using cumbersome microbiological assays for some of the analyses, in which individual analytical

results were based on the growth rate of live bacteria on a Petri dish.

Another illustration of limited perspective is provided by the assertion that Cohn was a leader in the development (or, at least, the encouragement) of X-ray crystallography as a tool for the structural analysis of proteins. But his interest in this field reportedly vanished when he "became involved in a much larger venture": the provision of blood and blood products for military use.

That said, there is much of considerable interest in Surgenor's account of this "much larger venture". In the face of the "burns, burns and more burns" that accompanied the attack on Pearl Harbor, all segments of US society that were involved in providing blood or blood products for therapeutic use laid aside their traditional differences in a single unified campaign. Military officers, meat-processing plants and pharmaceutical companies worked together to convert the academic sector's pilot plant operation at Harvard University into an industrial assembly line. And they apparently put up willingly with the egocentricity and single-mindedness of Cohn and his often abrasive encounters with the minor mortals who inhabited the world around him. Even the somewhat ambiguous nature of the relationship between Cohn and the two great Harvard institutions, the university proper and the medical school, seems to have faded into the background, at least for the duration of the war. ■

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