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A century of fluid mechanics: 1870–1970 / Un siècle de mécanique des fluides : 1870–1970

Foreword



This dossier of the *Comptes Rendus Mécanique* presents contributions by historians, mathematicians, physicists, and fluid mechanicians about a very fruitful period of discoveries in fluid mechanics. These contributions are a selection of the papers given at a colloquium organized in October 2016 by the “Institut de mécanique des fluides de Toulouse” (IMF) to celebrate its centenary. The success of this colloquium, which gathered nearly one hundred persons from six different countries, demonstrates that the history of our discipline arouses great interest and enthusiasm.

Emerging from the separate practices of empirical hydraulics and formal continuum mechanics, fluid mechanics in the period 1870–1970 progressively bridged the gap with the development of new concepts such as the boundary layer, with new measurements methods implying in particular flow visualization, and with the appearance of electronic computers. The role played by national R&D organizations also increased, with notably, in France, the creation of four “Instituts de mécanique des fluides” by the “Ministère de l’Air” in the 1930s, and the foundation of CNRS and of ONERA.

The present collection comes in three volumes. The first volume gathers presentations of some of the major figures of the period: Joseph Boussinesq, Henri Bénard, Ludwig Prandtl, Horace Lamb, and Tullio Levi-Civita, and finally George Batchelor and the *Journal of Fluid Mechanics*. The second volume, focusing on institutions, opens with an history of the “Institut de mécanique des fluides de Toulouse”. The influence of Henri Villat at the IMF in Paris is then discussed and that of Joseph Kampé de Fériet at the IMF in Lille. The volume closes with the development of hydraulic turbines and of wind tunnels since Eiffel. The third volume begins with an article on the growing role played by images in fluid mechanics. It then discusses the role of Paul Germain in renewing the problematics of French fluid mechanics. The following articles deal with the history of boundary-layer separation and asymptotics, and with aspects of the history of turbulence, including the birth of the concept, the transition problem in pipes, and the contribution of Antoine Craya in Grenoble. The volume ends with the history of flows in porous media after Darcy.

Researchers at the forefront of knowledge are all the more creative when they are aware of the great steps and missteps of the history of their field. They need to remember how crucial questions arose in fundamental or applied context, how they were solved and gave birth to new series of questions, how debates and controversies contributed to the developments, all of that in connection with the social, political and cultural environments. We hope that the present dossier will contribute to this memory and to the vigor of research in fluid mechanics.

The Editorial committee:

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