

## Chapter 24

# Physics Between the Wars: Mobility and Exchange, Lisbon Physics Laboratories and Institutions Beyond the Iberian Peninsula



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**Abstract** This paper provides a contribution to the history of physics in the period between the two world wars, examining relations between the physics laboratories of the University of Lisbon Faculty of Science and the Instituto Superior Técnico in Lisbon on the one hand and the Laboratoire Curie, the Collège de France and other prestigious science institutions on the other hand. The location of the two Lisbon laboratories on the so-called European periphery did not mean that they did not produce knowledge. While the latter laboratory was equipped with the most advanced scientific instruments of the era, such as a spectrograph and a Zeiss microphotometer, at the former a research school with international standing was established from 1929 to 1947. Analysis is carried out in accordance with the historiographical methodology known as ‘following the money trail’, involving the study of funding, conducted in depth, from an impartial standpoint, which has the potential for producing new findings and leading to the reanalysis of established interpretations. In this paper, we examine the funding granted to these two Portuguese physics institutions by the Junta de Educação Nacional (National Education Board), established in 1929, which enabled Portugal to play a part in the European and American movement for the creation of scientific planning and funding institutions following World War I. This focus on the support provided by the dictatorial regime in Portugal to the two Lisbon laboratories also reveals the existence of resentment among scientists and resistance within these institutions, which limited the findings that they produced.

**Keywords** Funding for science · Physics laboratories · Scientific centres and peripheries · Circulation of knowledge · International science networks · Resistance in the field of science

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## 1 Introduction

In this paper, we analyse research in the field of physics during the period between the wars, examining the work of the first Portuguese institution which organised and funded science, the Junta de Educação Nacional (JEN)—National Education Board (1929–1936) (Lopes 2017a). We focus on the support that this state institution, and its successor, the Instituto para a Alta Cultura (IAC)—Institute for High Culture (1936–1952), provided to the physics laboratories of the Instituto Superior Técnico (IST)—Higher Technical Institute—and the Faculdade de Ciências de Lisboa (FCL)—University of Lisbon Faculty of Science. We assess how such support fostered the circulation of both knowledge and physicists between Portugal and Europe beyond the Pyrenees, and gauge its impact on the development of this field of knowledge. We also assess whether during the period under analysis research practices introduced to Portugal by physicists who had trained abroad gave rise to support or resistance to such within these institutions.

Exchanges with the Laboratoire Curie and the Collège de France are highlighted, not from a traditional perspective, according to which scientific peripheries are regarded as playing a passive role as being exclusively receptive of ideas originating at the centre, but from a perspective of the circulation of both knowledge and physicists in a Europe in which, despite the presence of nationalist tendencies, authoritarian political regimes and autarchy, international science networks were established during the period between the wars (Schroeder-Gudehus 2020; Crawford 1992; Roberts 2009).

## 2 The National Education Board: Science Planning and Funding in Portugal between the Wars

The outbreak of World War I had a profound impact on scientific activity at the international level, notably with the mobilisation of academia to aid the war effort. The profound scientific and technological nature of the conflict aroused the interest of the military authorities to the potential of specialists, particularly physicists, chemists, engineers, doctors, veterinarians, geologists and geographers for providing a contribution in this sphere. Associated with the academic world, they served as professors, researchers and technicians, and were now expected to respond to military needs through their work in the laboratory (Salgueiro 2015, pp. 83–86; Crawford 1988, pp. 163–201; Macleod 1993, pp. 455–481).

The predominant role of science in war-making and the consequent perception of its influence on the realignment of states in the post-war period led to the creation of numerous bodies, usually as part of state systems whose aims were to plan and promote scientific research in the countries in which they operated, coordinating this with economic development (Edgerton 2013, pp. 759–776; Vanpaemel 2013,