

Ivan Pavlov and Hans Selye: Two physiologists of towering historic repute

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Abstract. Apart from his best-known work on stress, Hans Selye, recognized as the father of the stress concept, made a plethora of highly original discoveries. This paper outlines some of his equally significant findings and highlights Selye's high esteem for Pavlov. It was a great honor for me to participate as one of the three course directors in the Seventh Summer School on Stress (SSS-2019) held at the Pavlov Institute of Physiology between 25 and 28 June 2019 in Saint Petersburg.

Keywords: stress, Ivan Pavlov, Hans Selye, history of physiology, pluricausal diseases.

Introduction

Ever since my early years at elementary school in Hungary, when I first heard our biology teacher speak about the work of a famous professor in faraway Russia and the scientific contribution he received the Nobel Prize for, I kept Ivan Petrovich Pavlov's name in my memory.

Only after many years of school and higher education could I really begin to comprehend and appreciate his overwhelming impact on biology and medicine in particular.

In my late 20s, when I received the privilege to join my deeply respected teacher Professor Hans Selye in Montreal, I encountered the name of Pavlov again, although in an entirely different context. Many Selye's admirers from all over the world sent him their portraits, often signed; thus, long corridors of Selye's institute, the Institute of Experimental Medicine and Surgery of the University of Montreal (fig. 1), were lined with innumerable paintings depicting prominent scientists, outstanding representatives of public life and other distinguished people. However, only two portraits decorated the wall above the main entrance of the institute, facing the director's office: one of them was of Pavlov and the other of Einstein (fig. 2).

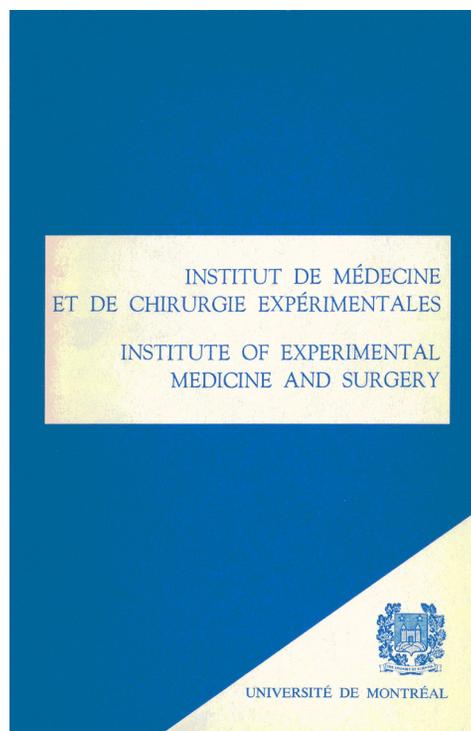


Fig. 1. Signboard of Institute of Experimental Medicine and Surgery of the University of Montreal

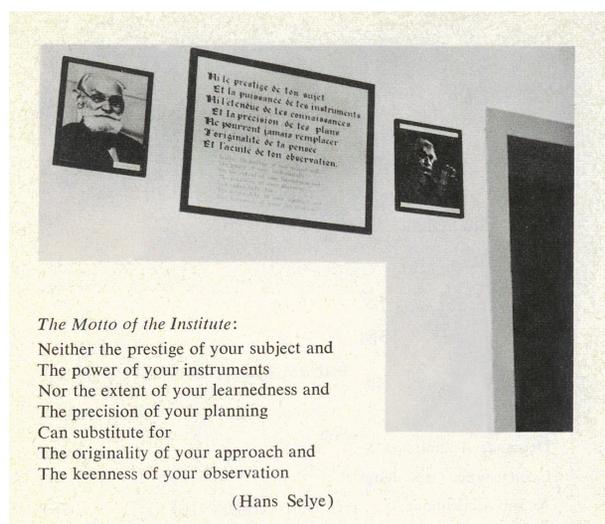


Fig. 2. Portraits of Pavlov and Einstein in the Institute of Experimental Medicine and Surgery of the University of Montreal

Pavlov and Einstein's portraits placed above the main entrance were a visible demonstration that Selye held these two giants of science in extraordinary high esteem.

The institute first greeted me with its pronounced science-driven atmosphere, created and relentlessly promoted by its director, in 1966, taking me in as a postgraduate student aspiring for a PhD degree.

Hans Selye – the father of the stress concept

Apart from his best-known work on stress, Hans Selye, the father of the stress concept, also made a host of highly original discoveries on various other fields of experimental medicine (Gabbiani 1967). He described, characterized and explored pluricausal diseases (e.g., various cardiopathies, calcergy, calciphylaxis, thrombohemorrhagic phenomenon, acute conditioned necrosis), anaphylactoid edema as well as catatoxic and syntoxic mechanisms (Selye 1966; Selye et al. 1967; Selye et al.

1968; Somogyi 2014). Selye also made a pivotal contribution to the broad field of endocrinology, especially to the classification of steroids, resulting in our better understanding of their mode of action. Moreover, he developed surgical techniques and experimental animal models suitable for studying pathogenesis and prevention of human diseases (Szabo et al. 2012).

Selye was an extremely well educated, highly intelligent and disciplined individual, an inventive and creative scientist, an outstanding teacher, a philosopher, a prolific author, and a fabulous communicator (Somogyi 2015). Furthermore, he was a gifted manager, able to successfully establish, develop and run a major world-famous academic research institution, as I mentioned earlier, the Institute of Experimental Medicine and Surgery of the University of Montreal. There, I had the great honor to work under his academic leadership for four years. I have enormously benefited from being exposed to his approach to science in general, the way he devised, conducted and evaluated experiments and arrived at conclusions. I never ceased to be amazed by his work ethic, extraordinary efficiency, brilliant organizational skills and a superb talent to communicate his thoughts in both scientific and popular articles as well as in oral presentations.

Conclusion

Working in Selye's institute was a full-time occupation characterized by long hours of hard work (seven days a week) in a stimulating and competitive environment, filled with moments of joy and success and occasionally overcast with clouds of failure and frustration. Ultimately, it was a great privilege that resulted in a lifelong memory of an unbelievably rewarding experience.

Regrettably, the Institute of Experimental Medicine and Surgery, founded and made world famous by Hans Selye, could not survive its creator.

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