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ADDENDUM

Below is an excerpt from Syoten Oka's letter of 23 March 1990 to me. It was the last letter received from a very dear friend.

A. L. Copley

At the end of next June the annual meeting of Japanese Society of Biorheology will be held in Nara, an ancient city near Kyoto. I was invited to give a special lecture. I shall talk on some problems concerning the flow rate of blood in man under zero gravity. As you know, there are unknown factors at present. I want to point out two subjects: 1) Physiological adaptation of living things to the environment of weightlessness, and 2) The effect of plasma layer, or the slippage of blood flow at the vessel wall.

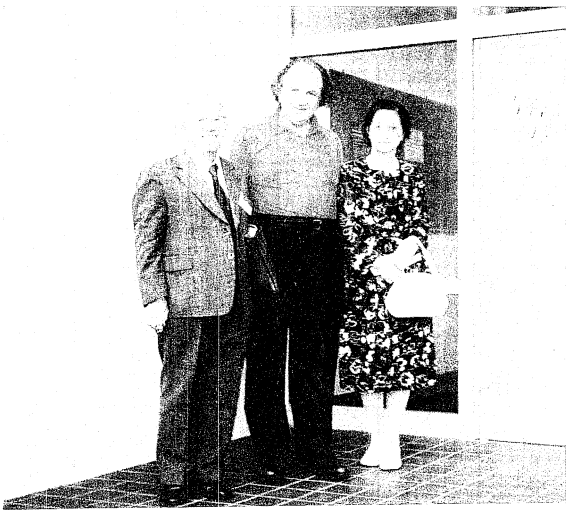
The Poiseuille's law had been derived under the assumption that blood flow shows no slippage at the vessel wall just as water does not slip at the glass wall.

I have read your manuscript: FLUID MECHANICS AND BIORHEOLOGY with great interest. The existence of slippage at glass surface coated with fibrin had been shown experimentally by you and Scott Blair. Morrison, Tordella, Benhow etc. have shown also slippage on other wall surfaces. The slippage of blood flow at the vessel

wall, or the effect of plasma layer may be characteristic point of biorheology, forming a link in the chain of life sciences. The problem of slippage was formerly of interest from the standpoint of rheology. The names of H.v. Helmholtz, Mooney, Oldroyd and so on may be referred. I found that the slippage of blood at the blood vessel wall is very important for the blood flow rate in man under zero gravity.

I was much interested with your description on Leonardo da Vinci, since I have great interest in the history of science.

Syoten Oka giving his Poiseuille Award Lecture at The Weizmann Institute of Science during the Congress in 1975.



Syoten Oka (left) with A.L. Copley and Mrs. Noriko Oka during the IV. International Congress of Biorheology, Tokyo, 1981.