BIORHEOLOGY, 19; 491-494, 1982
0006-355X/82/040491-04$03.00/0 Printed in the USA.

EDITORIAL

HIGHEST HONOR, THE JAPAN ACADEMY PRIZE, AWARDED TO SYOTEN OKA FOR HIS OUTSTANDING THEORETICAL CONTRIBUTIONS TO BIORHEOLOGY

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Our Readers will be interested to learn that for the first time ever the science of biorheology was chosen as an appropriate field of study in which to honor a scientist with the highest national award. This great honor , the Japan Academy Prize, has been awarded to one of our Editors, Syoten Oka, for his 'Theoretical Studies in Biorheology'.

Every Reader of BIORHEOLOGY, I believe, will join me in congratulating my good friend Syoten Oka for this great distinction.

This national award is also meaningful to many young people who are about to embark on their scientific careers and who may be induced to choose to become students of biorheology.

The award-giving ceremony of the Japan Academy has been performed every year since 1911. The seventy-first annual award-giving ceremony was conducted in the presence of the Emperor at the Hall of the Japan Academy, Ueno, Tokyo on June 10, 1981. Research materials of each recipient of the Prize were shown in a show room of the Hall. Before the opening of the ceremony the Emperor visited the show room to hear a brief explanation of each recipient on his own research materials. The Emperor then put several questions to each recipient.

It has come to my attention that the Japan Academy Prize, presented every year to less than ten outstanding scientists, was also awarded to Professor Reiji Natori, President of the Jikei University Medical School, for his 'Studies on the Mechanism of Muscular Con-

traction by the Use of Skinned Fiber Method'. It was under the sponsorship of President Natori and his University that the 4th International Congress of Biorheology took place last summer in Tokyo. We congratulate Professor Natori on the occasion of this great honor.

Excerpts of the outlines of Syoten Oka's studies, for which the award was given, are as follows: 'Dr. Syoten Oka's earlier work was concerned with theories of solutions of strong electrolytes, the theory of liquid containing polar molecules, and the theory of dielectric properties of liquids and solids. In the late 1930's he became interested in polymer science. In 1942 he published a paper on a statistical theory of molecular shape of long chain polymers in which hindrance of free rotation around C-C bonds of the backbone was taken into account. The formula for the statistical average of the end-to-end distances given there, known as "Oka equation", was an important extension of Eyring's formula applicable only to the case of completely free rotation.'

During the past few decades Syoten Oka's interest has been mainly in rheology. He published numerous papers dealing with the flow of non-Newtonian liquids through tubes and cones. Since 1960 he has made theoretical studies in hemorheology (1). Some examples of this work were given in the above-mentioned outline, as follows:

'He derived a rigorous general formula for the circumferential tension in a hollow thick cylindrical tube in static equilibrium under given values of internal and external pressures. His formula revealed that the tension inside the wall can be positive or negative depending on values of pressures and outer and inner radii of the tube. This result led to revision of the previous theory of blood vessel walls which had assumed the tension to be always positive.

'Microcirculation of blood through capillaries connecting arteries and veins is an important problem in physiology, the main function of the capillary wall being exchange of water and other substances. Taking into account the transport of water through capillary walls by adopting Starling's law, he solved a hydrodynamic equation for blood flow in tubes of which a finite portion has a wall permeable to water, and thus developed a theory of interaction

of blood flow and permeation of water.

'Recently he has developed a new theoretical idea for diffusion of serum albumin and similar large molecules through tissues of blood vessel walls, combining Eyring's theory of reaction rate and a concept of micro-Brownian motion in aggregates of molecules in tissues. This theory may be vitally important for clarifying the basic mechanism for accumulation of cholesterol and other substances in blood vessel walls and thus the mechanism of atherogenesis.'

The monograph "Cardiovascular Hemorheology" by Syoten Oka, published a few months ago (1), gives a critical account on the basic concepts, major findings, and the present status of knowledge in this growing field.

Syoten Oka was the fourth recipient of the Poiseuille Gold Medal Award, the highest honor of the International Society of Biorheology, presented to him at the Weizmann Institute of Science, Rehovot, Israel (2-5). The award was given to him 'for his outstanding contribution to theoretical and experimental biorheology'.

Syoten Oka has been until his retirement last fall Director of the National Cardiovascular Center Research Institute, Osaka, and acted as Honorary President of our Congress in Tokyo. Since his retirement Professor Syoten Oka, who is a physicist, has been appointed Honorary Director of the National Cardiovascular Research Center, Osaka. He is now residing in Tokyo.

From his letter of February 3rd, which he sent me, I should like to quote the following: 'When I held a post in the National Cardiovascular Center I was quite occupied with the task of administration of the Research Institute so that I had only a little time to study biorheology. After my retirement much more time has become available for my research. I hope, I shall be more active in my own research than in the past, when I was working at the National Cardiovascular Center.'

I should like to share this information with our Readers as we all can expect many more contributions to theoretical biorheology from Syoten Oka.

More power to you, Syoten Oka, and best wishes from the growing family of biorheologists!

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