D = diameter (inside) of pipe
V = average velocity
ρ = density
μ = viscosity

One can calculate the Reynolds number for blood from the above formula and determine whether the flow is in the streamline or turbulent range. According to such calculations for, say, the femoral artery of a dog, the flow is below the critical value for turbulence. However, I feel that it may, at times, become turbulent.

Practical. One may make an exact model of the hydraulic system in question and directly observe the nature of flow by introducing a contrasting color to the fluid at the desired location. This would be rather difficult to do for the problem in question. According to Franklin[2] and others nature offers conditions for the direct observation of the character of blood flow in certain veins. The blood flowing into the abdominal vena cava from the reproductive organs of certain animals is like arterial blood in color and serves as an excellent contrast to the venous blood already present in this vein. According to observations the arterial-like blood flowing into the vena cava at this site continues in its own channel without mixing with the blood already present. This indicates a streamline type of flow. The vein has a thin wall so that the contrasting color may be easily observed. The artery is not so transparent.

Artificial circulatory systems have been made and have proved useful in the perfusion of various organs with blood. I have observed that small constrictions in such systems give rise to turbulent flow. The degree of turbulence produced experimentally is dependent on the type of constriction. Blood vessels *in situ* may have such constrictions under certain conditions, for example, arteriosclerosis and coarctation.

It would be helpful to know exactly the nature of the flow of blood in any given blood vessel at any time. The character of the flow in the great vessels near the heart as well as that in the coronary vessels would be particularly interesting. Attempts have been made to study this problem in acute experiments where a general anesthetic, artificial respiration and anticoagulants are required. All these alter the normal conditions profoundly, so that one can not say the results of the study are maintained in the normal intact animal.

The hydraulic engineer usually works with fairly homogeneous fluids flowing in rigid pipes, so that a problem in which blood, a heterogeneous fluid, circulates in an elastic closed system might present new difficulties.

OBITUARY

RECENT DEATHS AND MEMORIALS

DR. CHARLES HORACE MAYO, emeritus professor of surgery in the Medical School of the University of Minnesota and in the Graduate School of the Mayo Foundation; founder, with his brother, Dr. William James Mayo, of the Mayo Clinic at Rochester, Minn., died on May 26 in his seventy-fourth year.

DR. WITMER STONE, emeritus director of the Academy of Natural Sciences of Philadelphia and a member of its staff since 1891 as conservator of ornithology and curator of vertebrates, died on May 23 in his seventy-third year.

ARTHUR E. WELLS, professor of metallurgy at Harvard University from 1926 to 1931, director of the American Cyanamid Company of New York, died on May 24. He was fifty-five years old.

DR. J. EDMUND WOODMAN, professor emeritus of geology at New York University, died on May 19 at the age of sixty-five years.

WILLIAM H. KAVANAUGH, for twenty-three years professor of experimental engineering at the Towne Scientific School of the University of Pennsylvania, died on May 6 in his sixty-sixth year.

FRANK W. DURKEE, since 1907 head of the department of chemistry at Tufts College, died on May 21 at the age of seventy-seven years.

PROFESSOR WILLIAM L. HUNTER, head of the department of industrial arts at the Iowa State College, died on May 23. Mr. Hunter had been a member of the faculty of the Iowa State College since 1927, having previously taught at the State University of Iowa and at the Bradley Polytechnic Institute.

DR. MAURICE BRODIE, laboratory director of Providence Hospital at Detroit, Mich., for the last two years, died on May 9 at the age of thirty-six years.

SIR FRANK DYSON, from 1910 to 1933 Astronomer Royal of England, previously from 1905 to 1910 Astronomer Royal of Scotland, died while on a voyage from Australia to South Africa on May 25. He was seventy-one years old.

DR. YOJIRO WAKIYA, the Japanese ichthyologist, was killed by an electric car near Tokyo, on April 21, at the age of sixty-seven years. He was known particularly for his studies of the Carangidae, Salangidae and Salmonidae of the Japanese Empire, but also published investigations on many other groups of fishes and on oysters. For many years he was director of the fisheries institute at Fusan, Chosen, which he de-

[2] K. J. Franklin, "Respiration and the Venous Return in Mammals." In "A Monograph on Veins," pp. 236–267. Springfield, Charles C Thomas, 1937.

veloped into a leading center of ichthyological and fisheries research.

A CORRESPONDENT writes: "It is with deep regret that we record the untimely death of Dr. I. C. Wen, which occurred in the Peiping Medical College Hospital on Monday morning, April 17, after a prolonged illness. Dr. Wen was born on October 16, 1899, a native of Hupeh. He graduated from Tsing Hua College in 1922. Subsequently he took his Ph.B. in 1924 and Ph.D. in 1927 at the University of Chicago. He became a laboratory assistant in neurology in 1926–1927 at the University of Chicago and a Rockefeller Foundation fellow in anatomy in the department of anatomy at the Johns Hopkins Medical School in 1927–29. Dr. Wen was a member of Sigma Xi. Upon his return to China, Dr. Wen joined the Peiping Union Medical College in 1929, first as assistant in anatomy and then associate in 1931 and assistant professor of anatomy from 1934 until his death. Dr. Wen was a brilliant student in the fields of embryology and neurology."

A PLAQUE was unveiled recently at the Ohio State University in honor of Dr. John A. Bownocker, who died on November 2, 1928. At the dedication services Dr. Charles Foulk, of the department of chemistry, and Dr. Wilber Stout, successor to Dr. Bownocker as state geologist, were the principal speakers. Dr. J. Ernest Carman, of the department of geology, formally presented the plaque to the university. It was accepted by Acting President William McPherson. The tablet, the work of Professor Erwin F. Frey, of the department of fine arts, carries this inscription: "John Adams Bownocker, 1865–1928, BSC 1889, DSC 1897, Ohio State University, Professor of Geology Ohio State University 1898–1928, State Geologist Geological Survey of Ohio 1906–1928. The consuming interests of his life were his native state of Ohio, its geology and its university. He gave to them 30 years of devoted service as teacher and geologist. To Ohio State University he bequeathed his entire estate as an endowment for the work of the department of geology. To his students and his colleagues he left the memory of a rugged unswerving character, rough hewn like the rocks of his own geology."

SCIENTIFIC EVENTS

THE LAKE LABORATORY OF THE OHIO STATE UNIVERSITY

THE Lake Laboratory of the Ohio State University on Gibraltar Island near Put-in-Bay has now a year-around program, with continuous study of problems important to the Lake Erie fishing industries. Formerly the laboratory was open only in the summer for courses in advanced biology. Dr. Thomas H. Langlois is director of the laboratory, which has a special staff of instructors and lecturers.

The laboratory serves as headquarters for administration of the fisheries of Ohio, with Dr. Langlois as chief of the Bureau of Fish Management and Propagation of the Ohio Division of Conservation. The operation of twelve inland fish farms is directed from there, fish management agents from eleven districts report to Dr. Langlois, and commercial fishermen make reports of their catches to the laboratory.

Studies of the trends of the fisheries and the success of the fishermen thus are combined with studies of the life-histories of important species, to the end that the laboratory "may discover the factors limiting the abundance of important species of fish and point the way toward an effective conservation program."

Three quarters of the year are devoted to this phase of its work. In the summer the laboratory turns its attention to courses for students in advanced biology. Provision has been made this summer for living quarters for couples and small families, making it possible for students to take their families with them to the lake.

The staff, in addition to Dr. Langlois, includes Dr. Charles F. Walker and Dr. David C. Chandler, who work at the laboratory all the year. Several other members of the faculty of the Ohio State University will work there during the summer. Dr. Ralph V. Bangham, Wooster College; Dr. William F. Hahnert, the Ohio Wesleyan University, Delaware; Dr. Bertil G. Anderson and Dr. Earl L. Core, both of Western Reserve University, Cleveland, will also join the staff of the laboratory. There will be week-end lectures on the bird-life of the lake regions.

Expansion of the program of the lake laboratory has come as a result of an agreement completed last year between the university and the Ohio Division of Conservation, whereby the laboratory assumes responsibility for the division's fisheries research program. In return the conservation division has helped to provide new living quarters for faculty and students, and conservation hatcheries have been made available to the laboratory.

THE BATTELLE MEMORIAL INSTITUTE

CONTRACTS have been let by the Battelle Memorial Institute, Columbus, Ohio, for the construction of a new research laboratory to take care of the expanding volume of industrial research.

Clyde E. Williams, director of the laboratory, points