the control experiments, we think that this technique for measuring the activities, and the modifications introduced in the technique of preparing the samples, as well as the choice of samples of active and inactive carbon for comparison, answer the requirements of the method. A fuller description of apparatus and method will be published elsewhere as soon as we have completed other experiments.

References and Notes

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E. C. Schneider, Pioneer in Aviation Medicine

AS a leader in studies of the physiological effects of high altitudes and of the physiology of physical fitness, Edward Christian Schneider became a pioneer in the establishment of modern aviation medicine. Beyond this, however, he was a great teacher of college undergraduates, who have acknowledged his influence not only in their personal tributes to him but also in the records of their careers in the fields of zoology, human physiology, public health, and medicine.

Ed Schneider, as he was familiarly known to his friends, was born (21 August 1874) and brought up in Iowa. He graduated from Tabor College in 1897 and taught there as an instructor in chemistry for 2 years immediately following his graduation. He then entered the graduate school at Yale University to study biochemistry under Lafayette B. Mendel and physiology under Yandell Henderson; he received his Ph.D. degree in 1901. His thesis and first published papers were in the field of biochemistry. Schneider then returned to Tabor College for two more years as professor of biology and physiological chemistry. During this period he married Elsie M. Faurote, who, with his two children and six grandchildren, now survives him.

In 1903 he accepted a position at Colorado College, where he remained for 15 years as head of the department of biology. Here he resumed his researches in biochemistry and also wrote two papers on botanical ecology which resulted from his interests and explorations stimulated by his teaching of botany. Of greater future significance, however, was the beginning, in 1904, of his researches on Pikes Peak on the physiological effects of high altitudes. In 1911 he was a member of the distinguished Anglo-American team, consisting of G. Gordon Douglas, J. S. Haldane, Yandell Henderson, and Schneider, that met in Colorado to continue these investigations. The results of these studies proved to be a landmark in this phase of human physiology.

In 1917, soon after the United States entered World War I, Dr. Schneider was called to Washington, D.C. by the Medical Research Board that had been established by General Gorgas to oversee the development of low-oxygen tests for aviators and later to supervise the physical examination of aviators. For this duty he was first commissioned a captain and soon was promoted to a major in the Sanitary Corps, U.S. Army. The work was shifted to Hazelhurst Field on Long Island, where, under Schneider as officer in charge of physiological research, tests of ability to withstand high altitudes were devised and personnel were trained to administer these tests at flying fields throughout the country. By March 1918 a school for flight surgeons was demanded. Dr. Schneider designed the first curriculum and, in this way, began the development that later led to schools of aviation medicine.

In July 1918 a summons came from General Pershing for men trained in the Hazelhurst School. Thirty-three officers and men headed by a research board of four, of which Major Schneider was a member, embarked on 6 August for service with the American Expeditionary Force. A laboratory was set up in Issoudan in France, with Schneider as officer in charge of physiological work. Here he not only worked in the laboratory but also went on flights with the aviators to experience the actual conditions. It was here that the Schneider test for physical fitness, which became widely used in the selection of aviators, was developed; its use continued through World War II and later. After 6 months in the European theater he returned to Hazelhurst Field and was discharged from service; later he became a lieutenant colonel in the reserve. However, from September 1919 until 1925, he continued in a civilian capacity as director of research at the School of Aviation Medicine that had been established at Mitchell Field.

It was also in 1919 that he accepted appointment as Daniel Ayres professor of biology at Wesleyan University. For 6 years he carried the double load, spending 2 days a week and vacations at Mitchell Field. At Wesleyan he became almost immediately one of the most influential members of the faculty. His teaching was in the fields of elementary biology, bacteriology, physiology, and public health. When the Shanklin Laboratory, of Biology was erected in 1928, many of

his ideas were incorporated in its design. After 1926 his research activity was transferred to Wesleyan University and centered especially on problems of physical fitness. This included studies on the effects of training of athletes, the physiology of the adolescent boy, and some studies on laboratory mammals. In 1933 he published a survey of his field of interest under the title *The Physiology of Muscular Activity.* This book has now gone through three editions. Schneider contributed about 50 articles on his basic research, most of which were published in the *American Journal of Physiology.* The balance of his 75 publications include review articles and a variety of other topics.

Possibly even more important than his research achievements was Schneider's influence on his students. This is attested by the striking proportion who went on to distinguished careers in such diverse fields as zoology, parasitology, preventive medicine, public health, physiological research, and medical-school administration. His unusual success in the training of premedical students was noted when he was at Colorado College and at Wesleyan University. His students were impressed with his scholarship, his exacting standards, and his earnestness in instruction. As they came to know him better, they became aware of his warm personal sympathy, and many students came to him with their most intimate problems.

Dr. Schneider's interests extended beyond the college to the local community and to the state. He was a member of the Exchange Club and a director of the Middlesex Hospital, and he was active in the affairs of the Nurses' School and in his church. He was a director of the State Experiment Station at New Haven.

Public recognition of his achievements is shown in the conferment on him of the M.P.E. degree by the International Y.M.C.A. College in 1923 and the honorary D.Sc. degrees by the University of Denver in 1914 and by Colorado College in 1932. In 1942 he received the John Jeffries award from the Institute of Aeronautical Sciences for outstanding contributions to the advancement of aeronautics through medical research. Perhaps most gratifying to him, however, was the receipt of more than 150 letters, chiefly from former students, on his 70th birthday. When he reached the formal age of retirement at 68, Wesleyan University accorded him the unusual recognition of an appointment to a university professorship and retained his services into his 71st year.

Dr. Schneider died 3 October 1954. Members of the college, the local community, and many others have lost an unassuming friend who could always be counted on for support and wise counsel and who, in their memory, will always be an inspiration.

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Henry K. Benson, Wood Chemist

HENRY KREITZER BENSON, emeritus professor of chemical engineering and retired chairman of the department of chemistry and chemical engineering at the University of Washington, Seattle, died on 27 September 1954.

He was born on 3 January 1877 in Lebanon, Pennsylvania, attended schools in Pennsylvania, and received his B.A. degree in 1899 and his M.A. degree in 1902 from Franklin and Marshall College in Lancaster. In 1903 and 1904, he continued graduate study at Johns Hopkins University in the field of chemistry under the guidance of Remsen. In 1904, he was appointed assistant professor of chemistry at the University of Washington, thus beginning an association with this university that continued for 50 years. During 1906 and 1907, he was on leave from Washington and continued his graduate study at Columbia University, which in 1907 granted him the Ph.D. degree. Dr. Benson then resumed his work at the University of Washington and in 1919 was made professor and head of the department of chemistry and chemical engineering.

In 1926, Franklin and Marshall College bestowed upon him the honorary D.Sc. degree. Dr. Benson served as chairman of the Division of Chemistry and Chemical Technology of the National Research Council in 1931–32, and during this year wrote *Chemical Utilization of Wood.* In 1938 he was a delegate to the International Conference of Chemistry in Rome, Italy.

Dr. Benson was a member of the American Chemical Society, American Institute of Chemical Engineers, Technical Association of the Pulp and Paper Industry, and many other organizations. He was instrumental in bringing about the organization of the Pacific Section of the Technical Association of the Pulp and Paper Industry which held its first meeting at the University of Washington in 1928. He was author of a textbook, *Industrial Chemistry for Engineering Students.* Throughout his life, he contributed more than 100 papers concerned with wood chemistry, chemical engineering, and other subjects. Problems related to the pulp and paper industry were of special concern to Dr. Benson, and in recent years several of his papers have dealt with the pulping of woods by ammonium bisulfite solutions and with various aspects of sulfite-spent liquor. In 1947 he retired from his administrative and active academic duties but continued to serve the university as professor emeritus of chemical engineering and as research consultant.

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