

Samuel Randall Detwiler, Neuroembryologist

Samuel Randall Detwiler died suddenly in his office on the afternoon of 2 May 1957, in his 67th year, in an environment where he had spent the last 30 years of his distinguished career as professor and executive officer of the department of anatomy, College of Physicians and Surgeons, Columbia University. On 14 May his close friend and colleague, W. M. Copenhaver, paid a tribute to his memory at a memorial service held in the Pauline A. Hartford Chapel, Presbyterian Hospital, New York City. A Samuel Randall Detwiler scholarship gift has now been established at the College of Physicians and Surgeons, Columbia University, to perpetuate his memory.

Dr. Detwiler was born in Ironbridge, Pennsylvania, on 17 February 1890. After finishing preliminary school at an early age, he taught for a year in an old red country schoolhouse in Lancaster County, not far from his father's farm on which he had spent his youth. It was here that his early enthusiasm for teaching was aroused when, on the second day, he gave a thorough thrashing to the school bully and thus provided the atmosphere for a successful year in dealing with the three R's.

While still pursuing heavy duties on the farm, he attended nearby Ursinus College for two years. Then he transferred to Yale, where he obtained a B.S. degree in 1914. Here he came in contact with the distinguished embryologist Ross Granville Harrison, who very early directed his fertile mind into fields of research that later gained him a world-wide reputation as a neuroembryologist.

His doctoral thesis under Harrison dealt with experimental studies on the development of the anterior limb of the salamander, *Amblystoma punctatum*, in which he introduced the use of a vital dye, Nile blue sulfate, that soon became widely employed by experimental embryologists. Since it was always characteristic of Detwiler to have many successful research projects in progress simultaneously to satisfy his inquisitive

mind, it is not surprising to learn that, while he was working on his doctoral thesis, he published two papers on the effects of light on the retina of reptiles. He retained an interest in this field over a long period, and at various times in subsequent years, on down to the time of his death, he published 34 papers on the retinae of all classes of vertebrates, studying particularly the structure of the rods and cones in nocturnal and diurnal animals, pigment migration in light and dark adaptations, photochemical responses, and induction of the neural retina from embryonic retina pigment cells. He epitomized his studies in 1943 in a monograph entitled *Vertebrate Photoreceptors*.

Early in his career Detwiler gained wide experience through working with distinguished scholars. At the time he received his Ph.D. degree from Yale, in 1918, he was also engaged in research on gas warfare with the well-known physiologist Yandell Henderson. Later, while on sabbatical leave in 1927, he worked with Hans Spemann in Freiburg, Germany. He gained wide experience as a teacher in several institutions. After two years as instructor in anatomy at the Yale University School of Medicine, he became a member of the faculty of the Peking Union Medical College, where he remained for three years. In 1923 he returned to the States as associate professor in zoology at Harvard—a position which he held until 1927, when he was called to Columbia University to accept the chair in anatomy previously held by Huntington. Here he built up one of the largest departments of anatomy in this country and in many ways played an important role in the development of the Columbia-Presbyterian Medical Center.

The largest portion of Detwiler's publications lies in the field of neuroembryology. Many of his 155 published papers and one book, *Neuroembryology*, dealt with the developing urodele limb bud, in connection with which he devised numerous clever experiments to show the guiding influence that the end organ ex-

erted upon outgrowing spinal nerve fibers as the limb was shifted to new positions along the spinal cord. The normal nerves of the brachial plexus were eliminated, one by one, by the conditions of these experiments, and other spinal nerves took their places. Through his studies of coordinated limb movements he found that there was a central limb-coordinating mechanism. Among his many studies of the development of coordinated movements in salamander larvae he included studies of the role of the Mauthner's cell in the medulla and revealed its relation to sustained swimming movements.

He performed many experiments to show that hypoplasia of the sensory elements in the spinal cord and ganglia took place in the absence of a limb, while hyperplasia occurred in the presence of a peripheral overload created in the limb area. He also exchanged various regions of the embryonic spinal cord and the medulla and revealed the influence of developing fiber tracts upon cellular proliferation within the central nervous system.

His ingenious experiments, which showed that the number of spinal ganglia and the number of spinal nerves were dependent upon the number of somites, are classic examples of an imaginative solution of a long debated question. In fact, the role and influence of the mesodermal somites in development was the subject of his last investigation, made in collaboration with Mrs. R. H. Van Dyke with whom he had published many papers in recent years. This paper came to press after his death.

Detwiler's numerous scientific achievements brought him many honors. Yale awarded him an honorary degree in 1931. In 1954–1955 he was president of the American Association of Anatomists. He was also a member of the editorial boards of the *Journal of Experimental Zoology*, *Experimental Biology* (Monograph Series), and the Columbia Biology Series.

"Det," as he was known to his numerous friends, was endowed with many talents. He possessed a warm, friendly personality and a great sense of humor. His success as a lecturer and teacher is well known by all who came in contact with him, for he threw the same intense energy and drive into these undertakings that he brought to all his other activities. He was a gifted musician. His students and friends will long remember his fine tenor voice as he joined or led them in song. His talents as a sculptor are revealed in the numerous portrait busts he made of many of his colleagues. He also

created over a hundred fine wood carvings.

His enthusiasm for creative work continued during his summer vacations, which were spent on his farm in New Hampshire among several of his lifelong

friends. Here he built a laboratory for his scientific work and a studio where he spent many hours enjoying the pursuit of art with his wife Gladys, who is a talented painter and etcher. The farm played a major role in his life, and it

will always be a reminder to his friends of the happy summer days in the place Det loved so well.

LEON S. STONE
*Yale University School of Medicine,
New Haven, Connecticut*

News of Science

College Enrollments in 1957

College enrollments set a new record in 1957 for the sixth year in a row and will climb substantially with the opening of the second semester, according to the U.S. Office of Education in its January issue of *Higher Education*. A total of 3,068,000 students enrolled in 1890 colleges and universities early last fall, an increase of 4.1 percent over the 2,947,000 who enrolled in the fall of 1956.

Last fall's enrollment was 45 percent above fall enrollments in 1951, the year of lowest enrollments since World War II, and 25 percent above 1949, the peak year for enrollments in the immediate post-war years. During the remainder of the school year, college and university enrollments are expected to climb to an all-time high of approximately 3,460,000. The 45-percent increase in college enrollments since 1951 compares with an increase of only about 2 percent during the same period in the number of persons 18 to 21 years of age. Nearly two-thirds of the 1957 college student body—2,003,000 of the total 3,068,000—are men.

Because of an unprecedented increase in the number of births during the mid-1940's, the number of college-age persons in the population will start to climb steeply in the early 1960's. In the next decade, the number of young people seeking enrollment in college is expected to double. Despite the larger proportion of young people going to college in recent years, there are still large numbers of able students who do not obtain a college education.

The ten institutions which led in the number of students this year are as follows: University of California (all campuses), 41,598; University of Minnesota

(all campuses), 35,852; New York University, 31,068; State University of New York (all campuses except the Agricultural and Technical Institutes), 29,883; City College of the City of New York, 28,181; Columbia University, 26,787; University of Michigan, 26,370; University of Illinois, 25,920; University of Wisconsin (all campuses), 24,873; and Ohio State University, 22,611.

Total opening enrollment in liberal arts colleges increased 6.5 percent over 1956; in junior colleges, 6.2 percent; in teachers' colleges, 6 percent; in technological schools, 3.4 percent; in separately organized professional schools (other than teachers' colleges and technological schools), 3.3 percent; in universities, 2 percent; and in theological and religious schools, 1 percent.

The greatest increase in first-time students last fall occurred in other separately organized professional schools, in which enrollment increased 9 percent over 1956. Increases also were reported for teachers' colleges (4.4 percent), junior colleges (2.9 percent), theological and religious schools (2.5 percent), and liberal arts colleges (2.4 percent). Decreases were reported by universities (2.9 percent), and technological schools (0.6 percent).

Publicly controlled institutions reported a 5.9 percent gain in number of students over the fall of 1956, while privately controlled institutions listed 1.8 percent more than last year. First-time enrollment in both types of schools increased 0.9 percent. Of the total college population, 58 percent were attending publicly controlled institutions in 1957 and 57.1 percent in 1956.

States with increases of 10 percent or more included Delaware (14.4 percent, including enrollment in a newly reclassified institution not counted in 1956 en-

rollments), Virginia (13.9 percent), Maine (12.8 percent), Arkansas (11.7 percent), and New Mexico (10 percent). Fewer college students were reported in three states. The largest decrease was in Nevada (5.2 percent).

Delaware—the reclassified institution mentioned above was again a factor—reported a 47.2 percent increase in first-time enrollment. Also reporting a gain of 10 percent or more were Arizona (24 percent), Oregon (14.2 percent), Maine and Massachusetts (12.1 percent each), and New Jersey (11.1 percent).

The number of students attending college for the first time declined in 17 states and in the service academies. Decreases of 5 percent or more were reported in South Dakota (9.7 percent), Indiana (8.2 percent), Ohio (7.8 percent), Virginia (7.4 percent), Utah (7 percent), Georgia (6.2 percent), Oklahoma (5.3 percent), and New Hampshire (5 percent), the U.S. service academies (15.9 percent).

Fellowships in Science Journalism

An advanced Science Writing Program, financed by a pilot grant of \$70,000 from the Alfred P. Sloan Foundation, is being established at Columbia University's Graduate School of Journalism. Promising young reporters and writers will be invited to spend an academic year at the university on fellowships that cover their class, tutorial, and seminar costs, plus approximately \$550 a month for living expenses. Most recipients will have scientific interests as well as three to six years of experience on newspapers, magazines, wire services, radio, or television. The program will draw upon specialists from the other faculties of Columbia University and will be kept flexible to meet individual interests.

Commenting on the grant, Edward W. Barrett, dean of the Graduate School of Journalism, said: "While only four to five full fellowships a year can be financed under the initial grant, it is hoped soon to expand the program to provide for ten fellows a year. The school also hopes later to experiment with writing courses for selected young scientists and to initiate short-term conferences for established science writers."