Lowell Fitz Randolph

October 7, 1894 — May 26, 1980

Lowell Fitz Randolph was born and raised on a farm near Alfred, New York, where he attended local schools and where he was graduated from Alfred University in 1916. He came to Cornell as assistant in botany in 1918, at a time when R. A. Emerson and L. W. Sharp and their students were beginning their intensive studies on the genetics and cytology of maize (corn). Randolph's Ph.D. thesis on the development of normal and abnormal chloroplasts in maize was completed under Sharp's direction in 1921. This was one of the first of a long series of studies and theses by faculty members and graduate students at Cornell that were to make corn the best known of all higher plants in these respects, a position which it still occupies today. Other students of maize who also went on from Cornell to become major figures in biology include Barbara McClintock, the Nobel laureate George Beadle, Harriet Creighton, Marcus Rhoades, and M. Demerec.

Randolph continued at Cornell as instructor in botany until 1923, when he took a position as cytologist with the Office of Cereal Investigations, United States Department of Agriculture. Fortunately, he was stationed at Cornell and continued his work with corn and his association with the Department of Botany. In 1939 he was appointed professor of botany, a title which he held concurrently until 1947, when he resigned from his position with the federal Department of Agriculture to devote full time to cytogenetics in the Department of Botany.

For his first twenty years Randolph gave his primary attention to certain unusual maize plants that had other than the standard twenty chromosomes. Some of these plants had one or more small extra chromosomes that seemed to have no visible expression in the plants. He gave these their name of B-chromosomes, and he found that by selective breeding he could produce plants with large numbers of them, still with no definite effects upon the appearance of the plants. Randolph's pioneer work with B-chromosomes is a classic in an area of investigation that is still active.

Other corn plants under study had extra chromosomes of one or a few or of all standard kinds. Using heat shock (applied at the critical time with an electric heating pad!) Randolph produced the first seedlings of corn in which the number of chromosomes had been doubled experimentally. This technique opened the door to a series of comparative studies of the morphological, chemical, and cytological differences between diploid and tetraploid corn that are classics still cited frequently today. He also was interested in the possibility of developing tetraploid corn that can be grown commercially and by intensive selection he developed some strains that approach this

goal. After World War II he was involved in the study of abnormal plants of corn that had been grown from seed exposed to atomic radiation at the Bikini testing grounds.

In later years Randolph shifted his attention to the problem of the origin of maize, a domesticated plant which cannot survive in nature without the intervention of man, and whose ancestry from wild plants has been a subject of much controversy. In this pursuit he made several trips to Mexico and Guatemala in search of wild relatives and possible ancestors of maize. After his retirement from Cornell in 1962 he continued his work with maize and its wild relatives, alternating between summers in Ithaca and winters as a research collaborator at the Fairchild Tropical Garden in Miami. This work culminated in a long review on the evolutionary history of maize, two parts of which he was still actively working on at the time of his death.

Beginning in the 1930s Randolph also became interested in the chromosomes and evolution of wild and cultivated iris. He was author or coauthor of a long series of papers on these plants and editor of a major book on garden iris. Together with his wife, he traveled widely in quest of wild species of iris for cytological study and for hybridization, collecting them in eastern Europe, the Balkans, the Mediterranean region, Russia, the Caucasus, Turkey, Iran, and India. The garden at his home in Cayuga Heights was famous for its iris and attracted many visitors in late spring.

He discovered that experimental breeding of iris can be greatly accelerated by removing the embryo from its inhibiting seed coat and culturing it on nutrient agar. This procedure also greatly increases the number of seedlings that can be obtained from a cross, and it makes it possible to obtain progeny from some crosses that are not otherwise successful. These techniques, in which he was a pioneer, are now also used widely with many other plants.

Many honors came to Randolph. For his work with iris he received the Vaughn Award for outstanding contributions to horticulture from the American Society for Horticultural Science (1944), the Distinguished Service Medal from the American Iris Society (1951), the Sir Michael Foster Award of the British Iris Society (1955), a citation for distinguished contributions to horticulture from the American Horticultural Society (1962), a bronze medal from the Internationale Gartenbauaustellung, Hamburg, West Germany (1963), and a special gold medal from the American Iris Society in 1970. He served as president of the American Iris Society in 1960-62.

He spent a year visiting several laboratories in Europe in 1926-27 under a traveling fellowship of the International Education Board and six months in 1957-58 at Aligarh Muslim University in India with a Fulbright Award. He also served as president of the Cornell chapters of Phi Kappa Phi (1947-48) and Sigma Xi (1953-54).

He is survived by his wife, Fannie Rane Randolph, who was also trained in botany at Cornell and who provided valuable support and technical assistance in much of his work; by three children, Robert Fitz Randolph of Manlius, Elizabeth Jane DeMott of Herndon, Virginia, and Rane Fitz Randolph of Ithaca; and by nine grandchildren.

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