

# Philip J. McCarthy

*February 9, 1918 — October 10, 1994*

Phil McCarthy was born and raised in Friendship, New York, a small village in western New York known for its dairy products. His father was a rural postman and dairy farmer and one of Phil's tasks was to help out on the family milk route. His mother was the teacher in a local one-room school.

He won a Regent's Scholarship from the state, then a distinct honor for a high school student, which made it possible for him to attend Cornell during the late Depression era. He was an excellent mathematics student. Like many of the brightest undergraduate mathematics students of that time, he prepared for the actuarial exams as well as the possibility that he might become a high school mathematics teacher. An important portion of the actuarial training was conventional probability, mostly counting theorems.

Upon graduation from Cornell in 1939, he was accepted as a student in the Mathematics Department at Princeton. There was little graduate statistical training in the United States or elsewhere at that time and even less in mathematical statistics, which was then nascent. Fortunately, Professor Samuel Wilks, one of its few early distinguished scholars, was in the Princeton department and took the young McCarthy under his wing. Phil studied the standard mathematical subjects, but once free of the requirements, he became one of a number of Wilks' students of that period who went on to make substantial contributions to statistics.

He worked very closely with Wilks when the latter was editor of the *Annals of Mathematical Statistics*. Then, with the outbreak of the Second World War, major concentrations of statisticians developed in Princeton and New York—and Phil was in both. Among the figures at Columbia were Harold Hotelling, Milton Friedman, Abraham Wald, and Jack Wolfowitz. In the Statistical Research Group at Princeton, there were William Cochran, Theodore Anderson, Fred Mosteller, Fred Stephan, and John Tukey. Other scientists McCarthy met at that time included John von Neumann and Dale Corson. It was a rich experience.

At the end of the war, Fred Stephan recruited Phil to come back to Cornell. Sample surveys had become a major tool as sociologists sought to put their work on a firm empirical base. But the then current designs for most of these studies had major weaknesses, and modern sampling methods were needed. Phil was hired on a Social Science Council Research grant to clarify design and related issues. When Stephan went to Princeton the following year and the quantitative sociologist Louis Guttman took an opportunity to go to Israel, Phil took over the sampling course in their department. He left for a permanent position on the faculty of the new School of Industrial and

Labor Relations at Cornell where he remained from 1948-88, continuing part-time for some years thereafter. His last published paper was in February 1994.

Before the War, statistics played only a minor role at Cornell, although Walter Wilcox held the first professorship in the subject in the United States and Professor Edmund Ezra Day, who was to become our fifth University President, was president of the American Statistical Association a generation earlier. But by the late 1940s, an extraordinary group of probabilists was present at Cornell, rivaled in the world perhaps only by Moscow. The development of mathematical and applied statistics came then and shortly thereafter, with major appointments in mathematics, plant breeding and biometry, engineering, and Industrial and Labor Relations. Phil was one of the founders of the Statistics Center and did backbreaking work in directing it, without compensation, for many very difficult early years.

His research in sampling continued, of course, and he was constantly sought as a consultant by government agencies. Whether one thinks of price statistics and index numbers or of the measurement of employment and unemployment, his mark is there. He played a considerable role when criminal justice statistics were moved from a collation of police blotter reports to the modern surveys designed to elicit information on the frequency of crimes actually experienced by the public. He played a similar role when medical reporting moved from a collation of cases which the states required physicians to report to measurement of actual disease incidence and related matters.

When the Social Security Administration sought out researchers to analyze their one percent sample of enrollees, he and a colleague used the opportunity to develop a probability model new to the social studies. The resulting ILR Press publication on labor mobility was more widely cited in the social studies than the totality of all other ILR faculty published research.

One anecdote reflects how Phil's life connected with significant statistical developments. In 1946, he, John Tukey, and Ted Anderson, published a report based on their wartime research. The military was dropping bombs from different heights to estimate the response and sensitivity of detonating mechanisms. From a statistician's point of view, this is equivalent to estimating the level of insulin which is necessary to obtain an appropriate frequency of reactions. The new approach had some use. Then a graduate student and his teacher at another university published an innovative modification which later came to be called the "stochastic approximation" method. The idea was to improve efficiency as one built up experience by making ever small changes in one's test level to approximate median dosage. The steps had to be small improvements but ones large enough so that you were sure

you were going to get to the correct value eventually. It involved some delicacy in the face of the uncertainty with which statisticians must deal.

There was a journal club run within the Mathematics Department, and Phil naturally offered to report on the paper. The report excited Wolfowitz, who had earlier been brought from Columbia to lead Cornell's group of theoretical statisticians. His paper and those which followed from a number of Mathematics Department faculty led to an extraordinary number of variations of the problem, to new theory, and to significant developments in probability. Phil was a quiet and essential link.

In 1942, Phil married Mary Ann Aselin. Phil was a fond husband and father, spending almost all of his free time with his family. He loved to walk with them in the state park near which they lived in the children's early years. And he thoroughly enjoyed ballroom dancing.

He was a competent pianist and had great skill in tennis and squash. It was a source of considerable dismay to him that joint problems made playing these sports difficult, and eventually impossible, in his later years.

In 1967, Mary Ann died in an automobile accident which also seriously injured a daughter, Nancy. Two years later he married Jane A. Lisberger, the widow of an ILR graduate student who was a former General Electric executive.

In his later years, Phil's affection for sports continued and he was an avid Cornell sports fan. He was also able to continue his extraordinary reading of mystery novels, which led to frequent consultation with literary scholars.

He was a teacher of great clarity in the classroom, in his books, and in the monographs he wrote both for statisticians and other professionals. His colleagues valued his fairness, his intelligence, and his diligence. His family, the faculty, and his students will miss this modest, gentle man.

*Ronald G. Ehrenberg, Paul Velleman, Isadore Blumen*