

## Rupert G. Miller, Jr., 1933-1986: A Tribute\*

Rupert Griel Miller, Jr., Professor of Statistics and of Family, Community, and Preventive Medicine at Stanford University, died on March 15, 1986 after a long bout with cancer. His illness began several years prior, but with much determination he endured aggressive therapy until he began failing in January 1986. This courageous behavior permitted him to teach and work as late as fall quarter 1986.

As a suitable memorial, his friends conceived the idea of an annual lecture given by an outstanding statistician who, like Rupert, worked in both theory and applications. Within months friends, former students and associates from all over the world had contributed enough to permanently endow The Rupert Miller, Jr., Annual Lecture. The first two Lecturers were good friends of Rupert's: Sir David Cox's lecture on October 1, 1987 was entitled "The Relation between Models and Statistical Analysis," and Professor John Tukey's lecture on April 26, 1989 was entitled "The Philosophy of Multiple Comparisons." The third lecture, "Quantitative Meanings of Qualitative Probabilistic Expressions: How Probable is 'Likely'?" was delivered by Professor Federick Mosteller on April 26, 1990.

Rupert was born on January 31, 1933 in Lancaster, Pennsylvania. He was the only child of Rupert G. and Anna Mary Hollinger Miller. In Rupert's childhood the family lived both in Marietta and in Lancaster, where he attended the local elementary school. He attained the rank of Eagle Scout, and his interest in nature continued throughout his life. He attended The Hill School in Pennsylvania from 1947-50. After graduation from The Hill School, Rupert entered Princeton University in 1950, a choice based on the reputation of its wrestling team. He was a varsity wrestler at Princeton and was graduated Phi Beta Kappa in 1954 with a degree in mathematics. Rupert entered the graduate program in the Department of Statistics at Stanford in 1954 and received his Ph.D. degree in June 1958.

Immediately after his doctoral degree he taught at The University of California, Berkeley, and then joined the faculty at Stanford in September 1959 as

an Assistant Professor. He was promoted to Associate Professor in 1962 and was made Full Professor in 1967. Rupert was an Associate Editor of the *Journal of the American Statistical Association* from 1967-1972 and Editor of the *Annals of Statistics* from 1977-1979. He was elected a Fellow of the Institute of Mathematical Statistics in 1968, and a Fellow of American Statistical Association in 1969.

His broadly respected scholarship and contributions to statistical theory were complemented by a keen interest in the application of statistical procedures to biomedical research. He helped hundreds of medical students, staff and faculty who came to him for advice on statistical aspects to their research. He refused to give superficial advice, immersing himself in each problem, familiarizing himself with the experimental procedures, studying data in detail and giving deep and thoughtful advice. The seminars he gave on his consulting were an inspiration to faculty and to hundreds of students aiming at careers in applied statistics. His approach led to many close and productive joint collaborations with medical investigators over the years. A notable instance is his collaboration with the late Professor Judy Pool, in her groundbreaking work on clotting mechanisms.

As numerous and broadranging as his professional activities were—editing, writing books, new contributions to theory, teaching, thesis guidance, collaboration and consultation with medical investigators—Rupert always found time to talk with any student or colleague who sought advice or help, personal or professional. And the attention he gave was always thoughtful, deliberate and without regard for his own time.

He was the principal investigator of a National Institutes of Health grant, funded first in 1974 and renewed every three years thereafter, dedicated to bringing new statistical procedures into use in biomedical applications. Under his ever-watchful scholarly and practical direction, this grant resulted in more than 100 technical reports circulated around the world, most of them subsequently published in the medical or statistical literature. One volume of case studies was published under hard cover and is familiar to statisticians and biostatisticians for its illustrative data sets and approaches to statistical analysis.

Rupert was a quiet person who made a deep impression on those who knew him well. The im-

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\*This biography was prepared by Byron Wm. Brown, Jr., Brad Efron, M. Vernon Johns, Jr. and Lincoln E. Moses, all of Stanford University.

pression followed from his clarity of mind and depth of character. Clear and economical thought is vital to all scientists, of course, but it is a particular necessity in statistics, where problems present themselves as a tangled web of theory, facts, numbers and prior beliefs. Rupert's ability to efficiently organize complicated situations made him the department's best teacher, writer and statistical consultant. Even his casual lecture notes, freely loaned (and gratefully accepted by his colleagues), flowed with amazing ease from problem to idea to solution. At a seminar his friendly but incisive questioning, always carefully phrased to avoid the implication of superior knowledge, usually aided both speaker and audience.

The natural clarity of Rupert's mind seemed based on his character. He had a simple view of his own place in life. Responsibility, duty and loyalty always came before personal gain. There was a complete absence of jealousy. His constant encouragement and appreciation for the work of others made him a treasured colleague. Here is an excerpt from the introduction to his book on multiple comparisons, a subject in which he was a recognized world authority:

The three statisticians primarily responsible for the fundamental ideas of multiple comparisons and simultaneous confidence intervals are David Duncan, Henry Scheffé, and John Tukey. It would be natural for one of them to produce an opus on this subject, but this has not come to pass. . . . I have taken it upon myself to remedy (successfully or unsuccessfully) this situation. If to no one else, at least to me this will be an aid. To students I can now cite one source where they can begin to study this field. To my clients I can now give a reference on the procedure I applied to their beloved data. This reference may or may not be intelligible to them, but at least it is not in some obscure (to them) statistical journal.

Published in 1966 with a second edition in 1981, the book is still considered the standard in the field.

One long departmental meeting revolved around

the star quality of a potential new appointment. Rupert's calm advice was "You can't build a department with all stars." He was the only person who ever refused election to Fellowship in the American Statistical Association on the grounds that such honors were not distributed in a fair way. (They made him a Fellow anyway.) The fact that Rupert was indeed a star of considerable magnitude—for example, serving as Editor of the leading mathematical statistics journal—seemed obvious to everyone except himself. In addition to his professional interests, Rupert enjoyed hiking, skiing and rock climbing, especially in the Sierra Nevada Mountains. He was also an avid fan of the Stanford football team.

At age 50, Rupert Miller was diagnosed as having a rare form of lymphoma. Despite heroic treatment, this was to prove fatal within three years. If anything, his illness seemed to increase his dedication to duty. There was never a complaint or request for special treatment. He continued to teach the department's largest and most difficult courses, with his usual deft skill. (Tests given near Halloween were likely to include a special joke question relating to the holiday.) He supervised a heavy load of doctoral dissertations, characteristically sharing his best ideas, and not just the leftovers, with his many students. Not until the last two years of aggressive therapy did he show any outward sign of diminished health. Even then it took the concerned demands of his friends and colleagues to reduce his self-imposed workload.

The last three weeks of Rupert's life were spent in the Millers' Menlo Park home near the creek and bicycle bridge, where they had lived since 1959. Advance copies of his last book, *Beyond ANOVA, Basics of Applied Statistics*, arrived on March 11. Individual inscriptions to his colleagues were dictated, and then signed personally by Rupert. He died peacefully on March 15, at age 53. More than half of that time had been spent at Stanford, in the devoted service of both his profession and his university. He is fondly remembered and sorely missed by those of us who had the good fortune to know him well.