MEMORIAL RESOLUTION

# TRACY M. SONNEBORN

(October 19, 1905--January 26, 1981)

In the summer of 1976 Tracy Sonneborn's seventieth birthday was honored with a Festschrift celebrated by his present and former students, staff, and colleagues. Asked to characterized Tracy's guiding philosophy in research, one of these students responded with a quotation from Robert Frost:

> Two roads diverged in a wood, and I--
> I took the one less traveled by,
> And that has made all the difference.

That, indeed, was Sonneborn's benchmark.

He was born in Baltimore, Maryland and received the A.B. degree from Johns Hopkins University in 1925. An undergraduate major in English, Tracy chanced to take an introductory biology course which exposed the young scholar to the excitement of discovery and experimentation. This encounter led to a Ph.D. degree in Zoology from Johns Hopkins University (1928) under the guidance of Herbert Spencer Jennings, renowned philosopher, educator, and geneticist who exploited the protozoa (single-celled animals) as tools for elucidating basic biological problems. Believing in minimal direction of students, Jennings encouraged each to find an organism, to contemplate the unsolved problems of biology, and to note which of these problems might be attacked using that organism; thereafter the student was on his own. Appreciative of this independence, Sonneborn, in turn, pursued a similar approach with his more than three dozen Ph.D. students.

The years from 1929 to 1938 spent as post-doctoral student and research assistant at JHU were fertile, formative ones. Early during this period, Sonneborn quickly perceived that the single-celled paramecium could be used as a powerful tool in genetic analysis. Its exploitation, resting on Sonneborn's crucial discovery of mating types and their control, led rapidly to his early recognition as the founder of modern genetics of the protozoa. It led also to a lifetime of innovative and important contributions enriching a much broader field of biology. (Tracy always delighted in recounting how, on that exhilarating night in 1937, he first demonstrated the mating type discovery to his only audience, a thoroughly bewildered janitor making late evening rounds of the laboratory!)

Sonneborn's pioneering work excited leading geneticists and, in turn, attracted the attention of Fernandus Payne. As Dean of the Graduate School, he persuaded Tracy and Ruth, with their two little boys, Lee and David, to come to Indiana in 1939. Thereafter, although he held temporary positions at numerous other universities and research institutions and was enticed by offers over the United States, Sonneborn never really wanted to leave the Bloomington Campus. Here was a place in which he felt biology was flourishing, many of its faculty enjoyed an international reputation, and he could be challenged by a steady stream of ambitious, stimulating students. Here was a place where his laboratory was charged with excitement and constantly filled with a fertile (occasionally explosive!) mix of dedicated, bright students, staff, post-docs, and visiting scientists.

In such an environment, Sonneborn's most notable contributions to genetic research were realized: the extension of the gene theory to unicellular organisms, the demonstration of cytoplasmic (non-genetic) inheritance for the first time in any animal, the discovery of remarkable model systems of nucleo-cytoplasmic interaction in the control of hereditary traits, the demonstration that existing, non-nuclear cell parts can decisively determine their own hereditary perpetuation, evidence for cytoplasmic determination of genetic effects. These and other contributions in the areas of human genetic research and molecular biology opened up new vistas for an understanding of the interactions between genes, cytoplasm, and environment in controlling cellular heredity, differentiation, and evolution.

The pattern of his discoveries remained the same: he would uncover a new phenomenon; quickly grasp its theoretical importance and impact on biological processes in higher organisms; and inspire students, associates, and colleagues to exploit his lead. Scattered over the world are scientific granchildren pursuing fruitful investigations in many disciplines based on Sonneborn's far-sighted and perceptive researches. The extent of his influence remains to be determined in future decades. Evolutionist Ernst Mayr spoke to the recurrent theme in a beautiful letter of tribute:

> He was not running with the herd but enjoyed opening new frontiers.

With his classical genetic background, keen grasp of modern molecular biology, and vision of the broad perspective linking these two areas, Tracy was uniquely suited to serve the public as a critical interpreter of the recent biological revolution involving these disciplines and its implication for the future of man. This he undertook in general lectures and publications and as part of numerous national committees.

For his life-long achievements, he received many high honors, cherishing perhaps more than the rest the AAAS prize (1946); membership in the National Academy of Sciences, the American Philosophical Society and Royal Society of London; the Honorary D.Sc. degrees from Johns Hopkins (1957) and Indiana (1979) Universities; the Kimber Genetics Award (1959); and the Mendel Medal (1965). A day-long posthumous tribute by a gathering of colleagues in conjunction with the International Society of Protozoologists' meeting in Poland attests to the esteem in which he was held by his friends the world over.

A master teacher and recipient of the Lieber Memorial (1967) and Brown Derby (1971) Teaching Awards, Tracy was stimulating, intense, enthusiastic, incisive, provocative. Always his presentations were colored and enhanced by a hypnotic charisma and a bit of showmanship, downplayed but eloquent and effective. He found it difficult to tolerate mediocrity, yet he sympathetically listened to and counseled even the poorest student. He was, on the one hand, a Renaissance scholar, holding that all students should be exposed--among other subjects--to cosmology, ancient history, comparative religion, language, and philosophy; on the other hand he was a man of his times, including in his lectures the most recent, relevant happenings for comments and discussion. His style was for the most part analytic, his thoroughness often causing him, in his graduate courses, to cover in great detail only a portion of what had been planned for in the scope of the course! No matter: any exposure to his masterful presentations and insistent demands for good exposition was regarded as a first-rate learning experience by the students who, whether in the formal classroom or gathered in his home for the famous Friday evening seminars, frequently broke into spontaneous applause.

In addition to research and teaching, Tracy Sonneborn pursued with equal vigor and dedication a multitude of other professional obligations calling upon his time and energy: editorial activities, including service on the Science Book Award Committee of Phi Beta Kappa, governmental and Society committee assignments such as the National Academy of Sciences Committee on Science and Public Policy and its Committee on Human Rights, national and international tours and lectureships, as well as administrative duties on the Bloomington Campus In the latter capacity he served, e.g., as the first chairperson of the Division of Biological Sciences and, in retirement, was called upon to aid in the selection of a new Dean for the College of Arts and Sciences.

What was behind Tracy's enjoyable life in science? There were, as he puts it:

> the essential ingredients: a devoted wife who has done so much in so many ways to make my way of life possible; my children--at first just a joy and then also a further inspiration; my colleagues in Jordan Hall . . . and my many brilliant and hardworking research associates and students . . . .

Omitted was another essential ingredient: the multifaceted, complex personality of this man of contrasts who had an insatiable curiosity about life--he was an outwardly objective scientist; a cryptic, biased Romanticist delighted by mathematical puzzles and Beethoven Sonatas, essays in theoretical physics, and books on identification of weeds and wild flowers. When self-indulgence permitted, his many enjoyments and wide-ranging interests included opera, bird-watching, concerts, theatre, reading, rambling through the countryside with Ruth and friends, and--especially--quiet get-togethers with companions and associates.

But always there was the compulsion or conviction to create, to write, to look forward. Found on his clipboard a few days before his death was the last page he wrote: an outline for an invitational, keynote address to the American Academy of Arts and Sciences: "The Place of Genetics in Biology: Yesterday, Today, and Tomorrow."

> . . . How dull it is to pause, to make an end, to rest unburnished, not to shine in use.
> As though to breathe were life.
>
> ---Ulysses

Ruth V. Dippell
John R. Preer