A. J. Kluyver, Microbiologist

During the night of 13 May 1956, Albert Jan Kluyver, director of the Institute of General and Applied Microbiology at the Technological University of Delft, Holland, died at his home of a heart attack at the age of nearly 68 years. Those who have had the privilege of knowing him, personally or merely through his work, realize that his death is a great loss to humanity.

Kluyver was admired by his acquaintances, and his associates were devoted to him, for he possessed a rare combination of personal and scientific attributes that charmed even the most casual visitor. A more prolonged association with this noble personality inevitably stimulated the desire to cultivate similar traits. Thus he generated benevolence by being a living example of it—veritably, the only way in which a lasting influence can ever be produced.

Endowed with a strong sense of responsibility, Kluyver accepted the appointment of the chair that had been vacated by M. W. Beijerinck in 1921, with the clear recognition that his was to be a difficult task. Through unremitting application, he hoped to justify the confidence placed in him by the authorities. This attitude caused him to lead a life of incessant study, up to the very end, which also accounts in part for his great achievements.

His critical approach, often expressed in gently ironical form, his enthusiasm, compassionate nature, and deep understanding of human behavior were responsible for the warm, inspired atmosphere and for that spirit of generous and effective collaboration in his institute that has impressed visitors and students alike. Hence, the laboratory was always occupied by eager workers until midnight and later. Add to this Kluyver's mastery of words and his insistence on perfection, and the characteristics of the superb educator that he was will become apparent.

In this atmosphere originated the many contributions for which he has become justly famous. In an early survey of the metabolic activities of microorganisms, Kluyver reviewed the impressive variety of patterns encountered ["Eenheid en verscheidenheid in de stofwisseling der microben," *Chem. Weekbl.* **21**, 266 (1924)]. But his philosophically inclined mind was never content with mere collections of data; invariably he strove toward greater comprehension through the formulation of general principles. This has led to the enunciation of the great concepts of the "unity in biochemistry" and "comparative biochemistry" ["Die Einheit in der Biochemie" (with H. J. L. Donker), *Chem. Zelle und Gewebe,* **13**, 134 (1926); *The Chemical Activities of Micro-organisms* (University of London Press, 1931); "De stofwisseling van de plantaardige cel," in *Leerboek der algemeene Plantkunde,* V. J. Konigsberger, Ed. (Scheltema & Holkema, Amsterdam, 1942); pt. II, pp. 198–347; *The Microbe's Contribution to Biology* (with C. B. van Niel) (Harvard University Press, Cambridge, Mass, 1956)].

These concepts provided the impetus for a long series of extensive studies that were carried out in his institute on a large variety of microbes. The wealth of material collected in the monographs forms the solid foundation for future advance. Since many of the monographs were written in Dutch, it has become almost mandatory for microbiologists to familiarize themselves with this language.

The aforementioned principles have been immensely fruitful, as is shown by the tremendous advances in biochemical understanding since, and owing to, their inception. In addition, Kluyver keenly realized that microorganisms represent ideal experimental material for the study of metabolic processes and repeatedly instigated their use for this purpose. This notion has gained much ground; during the past 10 years, the number of biochemical investigations in which microbes have played a leading role have come to exceed by far those utilizing higher organisms.

The synthesizing ability of Kluyver's mind, coupled with his vast factual knowledge, have further yielded important contributions to the problems of classification, notably of yeasts and bacteria.

Kluyver's eminence as a biochemist and microbiologist has been widely acclaimed. He was elected to membership in many foreign scientific societies and was recipient of several honorary degrees and other signal distinctions. The award of the Copley medal by the Royal Society of London may be especially mentioned. Recognition in the United States is evidenced by sizable research grants from the Rockefeller Foundation; by the honorary degrees conferred upon him by Iowa State College and Rutgers University; by his election as foreign associate of the National Academy of Sciences, as a foreign honorary member of the American Academy of Arts and Sciences, and as an honorary member of the Society of American Bacteriologists.

Although Kluyver's inspiring influence will no longer be experienced directly, the impact of his vision and personality will continue to be felt. His publications are true classics of scientific reasoning; they will be read and studied for a long time to come. And the many scientists who have worked in his institute possess a priceless heritage that will make them realize the responsibilities imposed upon them by this very fact. Through them, his spirit will continue to live and to guide man along his path toward a richer and more humane life.

C. B. VAN NIEL
Hopkins Marine Station of Stanford University, Pacific Grove, California

The way in which the persecution of Galileo has been remembered is a tribute to the quiet commencement of the most intimate change in outlook which the human race had yet encountered. Since a babe was born in a manger, it may be doubted whether so great a thing has happened with so little stir.—A. N. WHITEHEAD.