



A. J. KLUYVER

IN MEMORIAM PROF. DR. A. J. KLUYVER  
1888-1956

Many scientists, and especially the numerous friends he had among them, were deeply moved when on the 14th May it became known that in the early hours of that day professor Dr. A. J. KLUYVER had suddenly passed away. Only two days before KLUYVER had attended the annual meeting of the "Hollandsche Maatschappij der Wetenschappen" at Haarlem. At the social gathering after the meeting he had keenly taken part in the discussion of scientific problems with several of his friends. Nobody at that time could think that his end was so near at hand.

ALBERT JAN KLUYVER was born on the 3rd June 1888 at Breda. After his father had been appointed professor of mathematics at Leyden University, KLUYVER followed the primary and secondary school in that town. From 1905-1910 he studied at the Technical University, Delft, where he graduated in chemical technology.

KLUYVER, however, had acquired a great interest in botany, and he therefore accepted a post of assistant to professor G. VAN ITERSOM. This post he occupied for more than five years. In 1911 he spent a semester at Vienna to study plant physiology in VON MOLISCH' laboratory, and in 1914 he obtained his doctor's degree on a thesis dealing with the biochemical determination of sugars. In a mixture of sugars the amount of each of them can be estimated by making use of the faculty of definite yeasts to ferment particular sugars.

In 1916 KLUYVER went to Buitenzorg (Java) as research worker in the industrial sector of the Department of Agriculture, Industry and Commerce. In 1919-1920 he was sent to Ceylon and Malabar in order to study the coconut fibre industry in those countries and from 1920-1921 he acted as consultant to a private company engaged in the production of vegetable oils.

In those years he investigated not only the digestion of maltose by fungi, the alcoholic fermentation, and the biochemistry of fungi in general, but also the chemistry of chlorophyll and the action exercised by ultra-violet radiation on higher plants. For industrial purposes he studied the preparation and the properties of vegetable fibres and oils.

KLUYVER therefore was not a specialized microbiologist when, in 1921, he was called to Delft to occupy the chair of microbiology thus far held so brilliantly by the late professor M. W. BEIJERINCK.

It is not unlikely that KLUYVER's knowledge and experience of plant physiology and his general interest in biochemistry may

largely have contributed to the notable and varied achievements of KLUYVER and his students, the "Delft school" of microbiology. Although the course given by him was an optional one, KLUYVER nevertheless attracted quite a number of talented students, who in search of a subject for a doctor's thesis found inspiration in his teaching and started working in his laboratory.

With a prophetic view KLUYVER in 1926 indicated a way out of the troubled discussions on the nature of biological oxidations. In his paper "Die Einheit in der Biochemie" he advocated the view that all types of catabolic processes could be explained in terms of coupled catalytic dehydrogenations and hydrogenations. Later on, based on C. B. VAN NIEL's work on the photosynthesis of purple sulphur bacteria, KLUYVER and VAN NIEL extended this theory over the whole field of the metabolism. In the photosynthesis of the green plant the hydrogen needed for the reduction of carbon dioxide, would be supplied by water. So photosynthesis is not only the source of the organic matter wanted by non-green heterotrophic organisms, but it is in addition a mighty hydrolytic process, by which the oxygen of the atmosphere has been produced, and in this way it created the conditions for aerobic life.

As he had done several times before at other universities, KLUYVER, together with VAN NIEL, delivered in 1954 at Harvard University a series of lectures which recently have been published under the title "The Microbe's Contribution to Biology". This book gives an up to date survey of our knowledge of metabolism seen in the light of the hydrogenation-dehydrogenation theory.

The isolation, in a crystalline state, of the tobacco mosaic virus by W. M. STANLEY made a deep impression on KLUYVER's mind. This is clear from the address he delivered two years later at the 26th "Nederlandsch Natuur- en Geneeskundig Congres" (1937), under the suggestive title "'s Levens nevels" ("The foggy Borders of Life"). The fading of the sharp border between the living and the non-living, together with the striking unity he saw in the structure and chemistry of all life, since then strongly occupied him. He cherished the idea of a single unity in the whole of Creation. Especially in the last years he liked to discuss with his friends this Unity and Man's place and vocation in it. KLUYVER's last speech in the combined session of the "Koninklijke Nederlandse Akademie van Wetenschappen" (4th April 1955) on "Microbe en leven" ("Microbe and Life") may be considered a philosophical testimony and an expression of his personal creed.

KLUYVER's scientific activities were not confined to the field just mentioned. Since 1922 the collection of yeasts of the "Centraal Bureau voor Schimmelcultures" at Baarn (Director

Prof. JOH. WESTERDIJK) is kept in the Delft laboratory under KLUYVER's supervision and since that time several important monographs on yeasts were issued from there.

In 1937, sponsored by the Rockefeller Foundation, a biophysical research team was established at the Physical Laboratory of Utrecht University. The direction was entrusted to KLUYVER and the late professor L. S. ORNSTEIN. This team has published a number of papers dealing with photosynthesis and bioluminescence.

Of eminently practical importance (e.g. for preparing antibiotics) has become KLUYVER's method of "shaking" or "stirring" cultures of micro-organisms.

Finally it has to be mentioned that KLUYVER took an important share in scientific organisations and in the organisation of science. So he has been President of the "Koninklijke Nederlandse Akademie van Wetenschappen" (1947-1954), of which he has been a fellow for 30 years.

With KLUYVER's death science has lost one of its outstanding scholars. Yet, for his friends the loss of his particular personality is not less grave. KLUYVER's merits and authority received manifold recognition, and numerous were the honours bestowed upon him. Still he always remained a simple person, easy of access, humane in his criticism, cordial in his sympathy. In the meantime he was endowed with an innate dignity of style, which found expression in his scrupulous sense of responsibility as well as in his mastery over the language in which he expressed his views. It is reverence for this style which exhorts those who have known him, not to persist in mourning his death, but to keep him in mind as an ever shining example.

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