DISCUSSION AND CORRESPONDENCE

THE SEMI-CENTENARY OF WILLARD GIBBS' PHASE LAW (1876–1926)

THE issue of the *Chemisch Weekblad,* of September 18, 1926, published by the Netherlands Chemical Society, is of particular interest to American scientists. Thanks to the interest in the history of science by the editor of that periodical, Dr. W. P. Jorissen, at Leyden, we are reminded in these pages of what science owes to Josiah Willard Gibbs, who occupied the chair of mathematical physics at Yale from 1871 until his death in 1903.

Doubtless this man has been the greatest scientific genius produced by the United States of America. His paper "On the Equilibrium of Heterogeneous Substances," published in 1876 in the Proceedings of the Connecticut Academy, has not only governed to a great extent the development of chemistry since 1886 but it has also included a program for the future. When J. D. van der Waals at Amsterdam had grasped the deep significance of Gibbs's work and after he had drawn Bakhuis Roozeboom's (then in Leyden, later in Amsterdam) attention to its importance, the phase law was very readily developed. Almost all branches of chemistry to-day are reaping the fruits of the accomplishments of this deep genius of New Haven, who through his modesty was so little known even to his countrymen.

The detailed treatment of this part of the history of science would yield a most fascinating narrative, full of variety and stimulation to our future generations. Not only this issue of the *Chemisch Weekblad* and the list of books and pamphlets on the phase law and its applications added to it by Dr. Jorissen but also Donnan's discourse held in September, 1924, on the occasion of the centenary celebration of the founding of the Franklin Institute, as well as Lash Miller's paper in the *Chemical Reviews* (January, 1925), would supply abundant material. The jubilee issue of the *Chemisch Weekblad* commemorates at the same time the fact that twenty-five years ago F. A. H. Schreinemakers, to whom the development of the phase law owes so much, was appointed a professor in the University of Leyden.

After a short historical introduction of W. P. Jorissen, Henry Le Chatelier (Paris) gives a paper on "L'oeuvre de J. Willard Gibbs." Wilhelm Ostwald (Grossbothen, Germany) informs us why he translated Gibbs's papers into German. J. D. van der Waals, Jr. (Amsterdam), son of J. D. van der Waals, treats Gibbs's influence on the theory of mixtures; W. Lash Miller (Toronto) "The Fundamental Equation of Willard Gibbs." F. A. H. Shreinemakers expresses his gratitude and deep appreciation towards his friend and teacher, Bakhuis Roozeboom, who passed away too soon; Gustav Tammann (Göttingen) gives us an insight into the development of metallurgy. Norway is represented by J. H. L. Vogt (Trondhjem) who pictures the significance of Gibbs's life work for petrography, and J. J. van Laar (Holland) gives a paper on a "Limiting Case in Phase Equilibria." J. W. Terwen (Delft, Holland) calls our attention to the significance of the phase law to the study of allotropy; F. G. Donnan (London) to the influence of Gibbs's work on industry.

The issue closes with a paper of F. A. Freeth (Hartford, England) on "The Scientific Work of F. A. H. Schreinemakers" and Miss W. C. de Baat's (Leyden) personal reminiscences of the time during which Schreinemakers was a professor at Leyden.

The whole issue of the *Chemisch Weekblad* (illustrated with seven portraits) may be considered as a publication worthy of the man to whose genius science is so deeply indebted.

ERNEST COHEN

ANN ARBOR, MICH.
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SECOND ORDER STARK EFFECT IN HYDROGEN

THROUGH the kindness of Dr. T. Takamine, I received some information about very accurate experimental determinations of the second order Stark effect in hydrogen, carried out by Professor M. Kiuti. Unfortunately this material came too late to be used in my article on the Stark effect (*Phys. Rev., 28,* p. 695, 1926), therefore, I should like to make these beautiful observations available to a larger public through the agency of SCIENCE.

Professor Kiuti measured the shift of the central ⊥ component of Hγ in very strong electric fields and obtained the following results:

(1) Result of most recent experiments:

Field	Shift	Shift reduced to 100,00 volt/cm
140,000 volt/cm	.64 Å	.33 Å
156,000 "	.67 "	.28 "

(2) Result of previous experiments (*Japanese Journal of Physics, 4,* p. 13, 1925):

Field	Shift	Shift reduced to 100,00 volt/cm
95,000 volt/cm	.35 Å	.39 Å
103,000 "	.33 "	.31 "
107,000 "	.39 "	.34 "
124,000 "	.57 (?)	.33 (?)
161,000 "	.67 "	.26 "