

SCIENCE

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SURFACE STRUCTURE AND ATOM BUILDING¹

By Professor W. D. HARKINS

UNIVERSITY OF CHICAGO

I. INTRODUCTION

I WISH to express my great appreciation of the unexpected honor which is conferred upon me by the award of the Willard Gibbs medal, established through the generosity of William A. Converse, and bestowed by a jury chosen from the American Chemical Society. For many years Gibbs has been one of my heroes of science, and I am very proud to have my name associated with his in this way. As you know, he was the greatest of American chemists without being, in the technical sense, a chemist at all. The student of chemistry who shies at mathematics may well take this fact into account, for Gibbs at his desk discovered in a few years more concerning the relations of chemical phenomena than has been

¹ The Willard Gibbs lecture delivered in connection with the award of the Willard Gibbs gold medal by the Chicago Section of the American Chemical Society, May 25, 1928. Revised May 18, 1929.

learned in the whole life work of dozens of other prominent chemists.

The number of facts which may be found in experimental work in any science is so great, and at the same time so limited in scope, that their discovery is seldom worth while unless they can be correlated with other facts to give general relations. The most general of these relations are often dignified by their designation as laws of nature. Thus scientists may be classified as those who discover facts and those who classify or correlate them, or as experimentalists and theorists. Usually the experimentalist needs to be, at least in a limited way, a good theorist, though it is not essential that the theorist be an adept in experiment. For this reason, Gibbs was able to become the greatest of theoretical chemists without the acquisition of any of the ordinary experimental technique of the science.

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