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DIELECTRIC CONSTANT AND MOLECULAR STRUCTURE¹

As I recall the scholarly and witty addresses delivered by my predecessors of the past n years, I am forced at the outset to confess to an inferiority complex of n dimensions. Three years ago Stewart initiated us into the mysteries of acoustical filters and made me wonder if it might not be possible to devise filters to exclude from our hearing those sounds made at night by the street cars and fire departments of Kansas City. Two years ago Saunders, though with characteristic modesty, made us all feel the importance and charm of spectroscopy. Last year Swann spoke on electrodynamics—I do not recall just what he said, but I remember the rapture with which I listened to this his "swan" song. I can not compete in wit or scholarship with these precedents, but I do claim a unique position in that I have the temerity to speak on a subject to whose development I have made no contribution, though I have encouraged some others to investigate it. In daring to speak on this subject, I fear that I place myself in a class with that officer, early in the war, who was commissioned to organize a committee to investigate one of the most highly technical and mathematical problems of the war and who carefully picked a committee of non-scientific men in order that its findings might not be prejudiced in favor of scientific methods of investigation.

My subject is "Dielectric Constant and Molecular Structure." Only twenty-five years ago the atomic structure of matter was held by some eminent scientists to be only a convenient hypothesis, accounting well for observed phenomena of chemistry and physics, but unsupported by direct unequivocal proof. In my college text-book of chemistry are the words: "It (the atomic theory) is not a statement of anything found by investigation. It is not an established fact. It may or may not be literally true, but . . . it furnishes a very convenient means of interpreting the facts of chemistry." Since that time atoms and molecules have been counted, individually weighed, dissected and their parts studied in many aspects. The question in these days is not, "Do molecules exist?" It is rather, "What is their structure and what forces hold their parts together and account for their properties?" In answer to this question we say

¹Address of the vice-president and chairman of Section B, American Association for the Advancement of Science, Kansas City, December 30, 1925.

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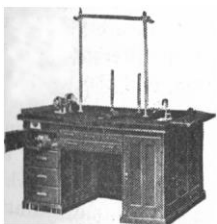
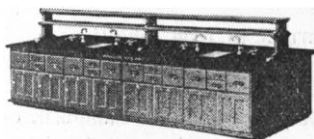


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