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## SOME PHYSICAL PROBLEMS IN THE FIELD OF MEDICINE<sup>1</sup>

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It is not so very many years ago that the well-educated physician, as a gentleman of broad culture, was expected to possess an easy familiarity with the entire field of natural science as well as a training in the disciplines of the ancient classics and the gems of modern literature. I need only remind you that one of the leading physicists of the preceding generation, Hermann von Helmholtz, was at the beginning of his career a physician. The famous essay on the "Erhaltung der Kraft" was published in 1847 while he was still on active duty in the German army as a military surgeon. After a brilliant career as a professor of physiology, he finally became professor of physics at the University of Berlin. His activities in that capacity and the record of the brilliant pupils whose work he stimulated are well known to all of you. I mention this example to indicate the magnitude of the change which less than half a century has wrought in the subject of physics. It is no longer possible for the medical man to be a master in the fundamental sciences, physics and chemistry. The very existence of the Optical Society evidences the increasing content of a single branch of physics. Moreover, the fact that in the meetings of the Physical Society we now have groups of papers on related subjects presented before sections of the society, emphasizes the difficulty of keeping up with the progress of the science. When the professional physicist is obliged to admit that he experiences difficulty in understanding the content of papers which deal with matters outside the particular field of his personal research activity, it will be readily appreciated that never again may we expect to see a physician possessed of such breadth of culture in this branch of science as Helmholtz had unless it may become possible through some trenchant generalization which shall bring back comparative simplicity. As a matter of fact I do not visualize the future of natural science as a labyrinth of ever-increasing complexity. Each new generation starts off with the best of what its predecessors possessed and does not hesitate either from habit or sentiment to discard what seems less fit to serve its purpose. We who are older have accumulated a miscellaneous lot of

<sup>1</sup> Read before a joint meeting of the American Physical Society and the Optical Society of America, at Columbia University, New York, February 23, 1929.

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