

SCIENCE

VOL. LVIII JANUARY 5, 1923 No. 1462

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SCIENCE: A Weekly Journal devoted to the Advancement of Science, publishing the official notices and proceedings of the American Association for the Advancement of Science, edited by J. McKeen Cattell and published every Friday by

THE SCIENCE PRESS

100 Liberty St., Utica, N. Y. Garrison, N. Y.

New York City: Grand Central Terminal

Annual Subscription, \$6.00 Single Copies, 15 Cts.
Entered as second-class matter January 21, 1922, at the Post Office at Utica, N. Y., Under the Act of March 3, 1879.

CERTAIN ALLUREMENTS IN PHYSICS¹

THERE is no doubt as to the alluring nature of physics. We are led on as reasoning, imaginative dreamers who never attain full intellectual satisfaction but who are always sufficiently rewarded to be happy to participate either as workers or as spectators. The fascinating quality of physics is not our concern here, but in the atmosphere of the recognition of this drawing and compelling power, certain of our present problems will be briefly discussed.

It is doubtful if ever there has been a more inviting appeal to imaginative reason than can be found at present in atomic structure and radiation theories. The search in this field is, in fact, so exciting that we can easily forget the mysteries in our own hypotheses. The progress of the last decade has been rapid. Only thirteen years ago Professor Rutherford in his Winnipeg address set forth the claim that sufficient evidence had at that time been adduced to place the theory of the existence of atoms in the classification of accepted fact. To-day, with perhaps equal conservatism, several details as to the structure of the atom can also be regarded as accepted. The existence of the nucleus, with a diameter of about 10^{-12} cm. or less no one doubts, though our direct evidence is based upon but one type of experiment, namely, the impact of an α particle. The size of the charge of the nucleus, its sign and the fact that α particles and H particles exist in at least some of the nuclei are certainly just as true. But we would be willing to sacrifice a great deal to know more of the content of and arrangement in nuclei. We may be nearer the acceptance of the existence of α particles, protons and electrons as the units of structure

¹ Address of the vice president and chairman of Section B, physics, American Association for the Advancement of Science, Boston, December, 1922.

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