

SCIENCE

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THE PROBLEM OF DEVELOPMENT.*

THE selection of such a subject as the problem of development for a general address to this academy as a whole suggests a word of explanation. Within the privacy of our sectional meetings we are permitted to dig and delve as much as we please among the dry bones of specialization; but on this occasion a righteous tradition imposes upon the president the duty of laying aside his special tools in order to address the whole scientific body over which he has for a time had the honor to preside. In offering a brief general dis-

* Annual address of the president, New York Academy of Sciences, December 19, 1904. The critical reader will, I hope, be willing to bear in mind the conditions under which this address was delivered. My endeavor was to convey to a scientific body, composed only in part of biologists, some individual impressions of a student of embryology and cytology regarding the general bearings of recent researches in his special field. It was not consistent with this purpose to give a critical résumé for biologists, nor could authorities be cited in detail. The general conception here developed will recall certain views contained in Driesch's 'Analytische Theorie der organischen Entwicklung,' published in 1894 (themselves traceable to earlier conclusions of de Vries), but afterwards rejected by him in favor of an explicit theory of vitalism. The rediscovery of Mendelian inheritance, the newly produced evidence, on the one hand, of morphological and physiological diversity among the chromosomes; on the other, of protoplasmic prelocalization in the egg, have, however, placed the whole problem in a new light. I wish to acknowledge my indebtedness to Professor Whitman's fine essays on the questions that center in Bonnet's doctrines, published in the 'Wood's Hole Biological Lectures,' for 1893, which suggested the quotation from Huxley.