A Guide for Use in a Laboratory Course in Histology

HISTOLOGICAL TECHNIQUE

BY

B. F. KINGSBURY, Ph.D., M.D.

AND

O. A. JOHANNSEN, Ph.D.

Cornell University, Ithaca, N. Y.

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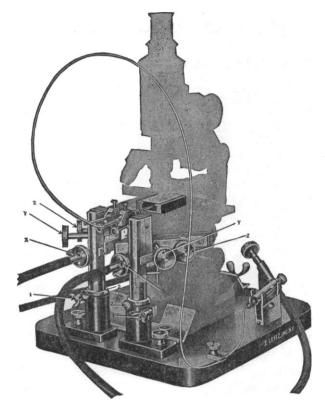
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THE GENE AND THE ONTOGENETIC PROCESS¹

THE problem of the relations of genetics and physiology of development is essentially a modern problem much discussed of late, and recently expounded in very concrete form in Goldschmidt's "Physiologische Theorie der Vererbung." It was not visualized by Darwin and by Weismann, because, for each of them, the theory of development included the theory of heredity. However, their theories of determinants, both of development and of heredity, died on the field of battle in the "nineties" and the early years of this century. Mendelism arose, and the theory of heredity became by degrees the modern doctrine of the genes with its denial of representative particles and unit characters; but the determinant theory of development died childless, with no successor except a field of investigation which no single theory can compass.

Since Weismann, physiology of development and genetics have pursued separate and independent courses. Have these courses increased the divergence which became pronounced in the nineties of the last century when the untenability of a determinant theory of development was demonstrated experimentally to the point of silencing all former adherents? Or, on the other hand, has the immense progress made in both disciplines in the present century been of such a nature as to lead to an expectation of their ultimate reunion? There can be no doubt. I think. that the majority of geneticists, and many physiologists certainly, hope for and expect a reunion. The spectacle of the biological sciences divided permanently into two camps is evidently for them too serious a one to be regarded with satisfaction. The essays of Spemann, of Morgan, of Jennings and of Goldschmidt are symptomatic. The voice of Bateson on the other side, now unhappily silenced, is relatively lonely. I do not perhaps need to protest my love for both fields of work, nor my admiration of the investigations that have so widened our biological horizon in recent years. I would ask only to consider with you their mutual relations, whether to one another or with a tertium quid in the organism.

What are the reasons why geneticists and physiologists alike agree that there is present promise of a

¹ Evening lecture delivered at the Marine Biological Laboratory, Woods Hole, Mass., July 22, 1927.

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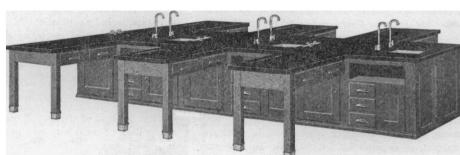
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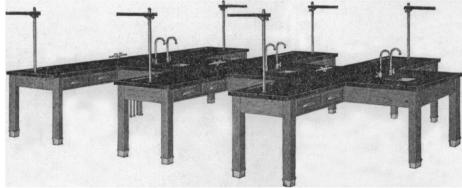
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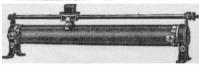
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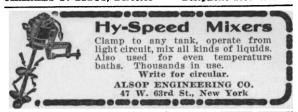
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