If this is so, there may yet further be molecular modifications of such a relatively simple substance as malic acid, and *a fortiori* idioplasm may be capable of an enormous number of modifications.

THE SIDE-CHAIN THEORY OF INHERITANCE.—The mode of the atomic arrangement in the idioplasmic molecule may, therefore, in part, explain the variation in the properties of that idioplasm seen throughout the animal and vegetable kingdoms. I say in part, for if we assume that the structure of the individual is primarily the outcome of the structure and properties of the idioplasm, then for each different form of living being, nay, for each individual being, we have to assume a different atomic structure of the idioplasm. Or, otherwise, we have to assume that the modifications of this idioplasm are infinite in number. This, it seems to me, asks too much. The matter cannot be quite so



simple. Such molecular modification may play some part, it is true, but our conception of the structure and modifications undergone by the idioplasm must be more elaborate. We must, I think, formulate a theory of structure somewhat akin to that laid down by Ehrlich (9) in his now well-known theory of the nature of immunity. We can picture to ourselves the primitive idioplasm as composed of a mass of material each molecule of which is formed of a central ring, in which there can be attached side chains and from which sundry side chains can be detached without the central ring being destroyed.

This conception, which upon first encounter appears revolutionary and opposed to our ordinary chemical ideas, is, after a little deliberation, recognized as being but a statement, in chemical terminology, of what has been for long years the accepted physiological conception of the nature of protoplasm. It is, if I may so express it, the fundamental the essential—conception of the constitution of living matter; it follows logically and inevitably the postulate of assimilation and growth. Whether we agree, with the majority, to distinguish between the idioplasm and the cytoplasm of the cell, or prefer to speak simply of protoplasm, it must, I think, be recognized by all that we are bound to assume—for the process of assimilation and, again, in order to cxplain

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