

## Biochemical Progress

### Annual Review of Biochemistry

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THE three previous volumes of these reviews have proved of so much value to biochemists that the form of their continuation is a matter of general interest. In no branch of science is there a greater flood of published work, more need of analysis and a better chance of an unexpected discovery illuminating further progress. The subject is essentially fluid, and reviews under stereotyped headings may easily become sterile. Hence the editors have encouraged the policy of analysis of selected papers chosen on account of their intrinsic importance and significance. It is for the reviewers and the readers of reviews to co-operate, the former by selecting and the latter by suggesting subjects which are ripe for comment.

It should be remarked that the three trial years being completed, the enterprise of editing and publishing the "Review" becomes one and the same, and is established as a non-profit earning corporation. It is appropriate to hope that it will receive a generous measure of support from the ever-growing number of British biochemists.

Turning to the recognition of fields of immediate interest, this volume includes reviews on choline and allied compounds by Gaddum, the biochemistry of malignant diseases by Holmes, plant hormones by Thimann. In all, there are twenty-seven reviews by an international assembly of authors.

Enzymes are a subject in which there is annual progress; this time it is reported by J. B. Sumner that six enzymes and two zymogens have been isolated in the crystalline state. Enzyme chemistry is becoming more or less identified with protein chemistry, and we are perhaps on the road to clear up some of the facts relating to the higher molecular state of proteins.

The domain of carbohydrates is likewise never without new problems and new discoveries; it is handled by the sympathetic pen of Sir James Irvine, who confines his summary to the more purely chemical developments, leaving for the moment the striking observations connecting polysaccharides with immunological reactions. The synthesis and constitution of ascorbic acid is perhaps enough for one year, but there is much else to chronicle.

As to the proteins and their constituent amino acids dealt with by Edwin J. Cohn, it is noteworthy that progress owes much to physical measure-

ments, particularly X-ray diffraction studies which reveal both the distances between carbon atoms in the chain, and further, the relations between atomic groupings in the peptide and hydrocarbon chains and much else besides. This very important review seeks to set forth principles in terms of which a complete description of behaviour may ultimately emerge.

The sulphur compounds, reviewed by Howard B. Lewis, retain their interest, particularly glutathione with its role as activator or co-enzyme for enzyme activity. The evidence for, and against, the view that the sulphhydryl group is a specific stimulus for growth is summarised: it appears to be a promising line of research.

Plant pigments are summarised by R. Kuhn, who has contributed so much to their elucidation. He describes the carotenes with their established formulæ, and shows how the cleavage of the carbon skeleton of a carotenoid with forty carbon atoms yields in theory other natural products, the structure of which depends on the point of cleavage. Four natural pigments are now recognised as provitamin A. The flavins first obtained from milk have been characterised and synthesised; as much pigment has been made from 100 gm. of dimethyl-4-amino-5-methylamino benzene as from 750,000 litres of milk. This shows how advanced is the chemical technique of dealing with minute quantities.

The elucidation of the molecular structure of the alkaloids, particularly morphine and strychnine, is one of the most difficult problems which confronts the chemist. It is one in which he will not admit defeat, and to solve it he tries method after method of attack. The progress is, therefore, steady rather than spectacular; it is appropriately summarised by Robert Robinson.

A new subject for review is that of growth substances in plants, in particular auxin, of which the structural formula has been established. This field may be expected to yield remarkable results in the not too distant future.

Space will not permit of further specific reference, but enough has been said to indicate the utility of the annual reviews and the amazing amount of work which is in progress. The chemist has been accused of war-promoting activities: such are as nought compared with the attempts to understand living tissues which are being made in a thousand and more laboratories.

"Farther, deeper may you read,  
Have you sight for things afield."

E. F. A.