Biochemical Pharmacology, 1961, Vol. 8, pp. 256–258. Pergamon Press Ltd., Printed in Great Britain.

BOOK REVIEWS

Insulin. F. G. YOUNG (Editor). British Medical Bulletin **16**, No. 3, 1960. The British Council, London, pp. 175–264. 20s.

THIS number brings together an excellent collection of reviews on insulin and related topics. After an introduction in which Young summarizes the scope of the number with comment on some significant advances in the different fields, Best gives a fascinating glimpse of the history of the early work on insulin. A lucid account of the determination of the structure of ox insulin is given by Sanger, who follows this by listing the species differences so far known, and these lead to discussion of the relation of structure with activity. An unexpected and good editorial choice was to follow this with an article by Harris on the chemistry and the relations between structure and function of the other polypeptide hormones. This review was late enough to mention vasotocin, the third hormone of the oxytocin-vasopressin group, recently found in birds, amphibia and fish.

Turning to more biological aspects of insulin, its bioassay and catabolism are dealt with in articles by Stewart and Kenny. Randle and Taylor survey the measurement of insulin in blood and the forms it may have there, Vallance-Owen reviews insulin antagonists and Wright insulin anti-bodies. Between them these three articles give a remarkably disentangled account of a field where confusion arises easily.

In reviewing the action of insulin on carbohydrate metabolism, Fisher's power of destructive criticism is beautifully applied in leading up to the later article by Randle and Young on the mechanism of insulin's action, and he concludes "that if it be true that the major action of insulin in relation to carbohydrate metabolism is to regulate the access of glucose to peripheral cells, then in the biochemical sense it may well have no action at all on carbohydrate metabolism". FOLLEY and Greenbaum follow with "Insulin and the metabolism of fatty acids". The reader is given no warning that catabolism is omitted, and their excellent review concerns only biosynthesis. They have just had time to add in a footnote the discovery of a specific lesion in diabetes, the low activity of the enzyme that reduces unsaturated acyl CoA derivatives in mitochondria and microsomes, thus suggesting the point of interference with fatty acid synthesis. Since this, however, the position has become more complex by the finding (Gibson and Hubbard, *Biochem. Biophys. Res. Comm.* **3**, 531, 1960) that the soluble system that uses malonyl CoA for fatty acid synthesis, and which may by present evidence be a single enzyme, is also specifically lowered in diabetes. Folley and Greenbaum tell clearly the exciting demonstration by Chaikoff and coworkers that the block in biosynthesis is only secondary to the derangement of carbohydrate metabolism in diabetes and can be repaired without insulin. Korner and Manchester present the evidence that insulin affects protein synthesis, that the limiting step in this synthesis affected by insulin is at the level of the ribosomes and that such effects cannot be attributed to changes in the rate at which cells take in amino acids. Randle and Young end this section with a review on the mechanism of action of insulin. The development of the permeability theory is an exciting story and this they bring out well.

The final section is more clinical. Russell Fraser describes the relations of diabetes with other endocrine disorders and the use of some diagnostic tests, Oakley concisely deals with the actual use of insulin and its various preparations. Finally other hypoglycaemic substances are considered. It seems a pity that Mahler has been given their "chemistry" to discuss, since the only relevant chemistry that can be given is a list of their structural formulae, and although there is a brief statement at the end of each section to say how little is known of the mode of action of the group described, something a little fuller on their biology might lead better to the article by Nabarro on their clinical effectiveness.

A much greater failure in the dovetailing of the articles is the omission of any serious discussion of diabetic ketosis and its cause. Did it not fit under either fat metabolism or carbohydrate metabolism? Certainly it has been recently reviewed (Krebs, *Proc. Roy. Soc. Med.* **53**, 71, 1960); why not here too? It deserves the thought of those concerned with the metabolic action of insulin.

Once again, the British Medical Bulletin has published an issue that gives an excellent account of a field of study and combines a brief and readable form with a wealth of information. Besides insulin itself, a couple of fascinating tangents to its study have been followed up.

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