

## SCIENCE AND STOCKBREEDING

### Animal Breeding

By Dr. A. L. Hagedoorn. (Agricultural and Horticultural Handbooks.) Second edition. Pp. 304+15 plates. (London: Crosby Lockwood and Son, Ltd., 1946.) 15s. net.

### The Milch Cow in England

A Plea for Constructive Breeding. By E. R. Cochrane. Pp. 348+16 plates. (London: Faber and Faber, Ltd., 1946.) 16s. net.

**D**R. HAGEDOORN'S book is a second edition of one first issued in 1939, reprinted four times, and now emerging as a further contribution to the field of genetics applied to livestock improvement; Miss Cochrane's is an entirely new analysis of problems of cattle-breeding in Great Britain. The texts are alike in that they are intended to stimulate, and the authors' techniques are somewhat similar in that they both attack some of the vested beliefs and interests in stockbreeding and, rather unfortunately, find it necessary to repeat statement and argument too much and too often. But there resemblance ceases, and the effects of the stimuli differ; Dr. Hagedoorn sets out to be educative and ends in being provoking, Miss Cochrane to be critically provocative and becomes distinctly educative.

Moreover, the authors' backgrounds are in great contrast. Dr. Hagedoorn has come by what might fairly—nowadays—be called the easy road to an exposition of applied genetics: from small-animal breeding, via poultry, past some view-points of possible applications in the larger animals to a stance from which an almost complacent dogmatism can be readily enunciated for the benefit of stockbreeders and students eager to add something from the new science to the old art. The process of instruction is to some extent simplified, if the results of recent work and their implications are not appreciated; and the clarity of presentation becomes more superficial. Now, in one sense Dr. Hagedoorn has served a useful purpose. In 1939 there were few simple texts available to arouse the practical man's interest in applied genetics, and his almost conversational, almost inconsequential, style held attraction to the acquisitive reader. His book was, is, and this new edition no doubt will be, widely read. There lie the dangers.

Even allowing for the difficulties and the distressing isolation under which Dr. Hagedoorn has pursued his own work since 1939 (and from which we, together with many other animal breeders and geneticists, welcome his safe reappearance), it must be said fairly that the slight annotations by which this edition differs from the first do not remove its weaknesses, confusions and misleading statements. These are too numerous to specify here; however, the insistence on the presence and absence idea was inept even in 1939, and to use the reduction in number of ancestors as a measure of inbreeding is outmoded, to say the least; the discussion of domestication and adaptation is confused and not always plausible. Further, the author's own arguments for progeny-testing and his 'nucleus scheme' of breed improvement on the basis of genetic uniformity are not very convincing or acceptable, and should be re-examined in the light of recent genetical work and practical requirements. Dr. Hagedoorn's text, therefore, provokes not only criticism at many points but also serious concern that, having been widely read, it has apparently been accepted by many readers as a

completely authoritative statement of modern genetics in relation to stockbreeding.

Fortunately, Miss Cochrane is not one whose approach is limited to that signposted by Dr. Hagedoorn. She has come by the hard road from dearly bought experience in pedigree cattle-breeding, through the doubts and disappointments of hoping that pedigree and practice might give performance and efficiency, to a point at which a critical exploration of many routes was needed. She has obviously made wide reconnaissance of the possibilities of collecting material for a sound path for the future from the fields of physiology, economics, nutrition, genetics and practice. Here is a frankly personal, often outspokenly critical, but always well documented, inventory of what she has found so far and hopes may come.

The result is extremely provocative; the reactions are bound to be varied in intensity as well as kind, according to the reader's vested interest or predilection. But surely, no matter how annoyed, disturbed or sensitive, no one should accuse Miss Cochrane of complacency, of intellectual dishonesty, or of narrow-mindedness, except in so far as she is determined to improve the average cow of the average breeder in England (and Scotland and Wales and everywhere!), perhaps too quickly, but ultimately. No two readers will agree. Her own criticism is given, so that she obviously invites it, in her turn, especially if it can be constructive and would help her to rewrite in some future edition the last three chapters ("Enterprise and the Breeder"; "Security and the Farmer"; "The Responsibility of the State").

Unity of aim, absence of humbug and close cooperation of scientific workers, administrators, breed societies, breeders and the State, she sees as essentials towards the establishment of a sound progressive (not static), efficient and satisfactory cattle industry. We are confident that Miss Cochrane herself would be well satisfied if she could find the average great-granddaughter of the present average English cow a higher producer of a better quality milk over a longer, healthier life-time, even if she had to withdraw some of the contentious and perhaps extravagant conclusions she now makes. Meantime, we feel that the almost impetuous presentation of the case should not be met with any impetuous reaction, but should be widely read and considered as indeed "a plea for constructive breeding".

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## METALLURGICAL ATOMS

### Atomic Theory for Students of Metallurgy

By Dr. William Hume-Rothery. (Institute of Metals: Monograph and Report Series, No. 3.) Pp. viii+286. (London: Institute of Metals, 1946.) 7s. 6d.

"**E**XPERIENCE has shown," Dr. Hume-Rothery cautions remarks, as though introducing a statement which would arouse incredulity, "that students of metallurgy are greatly interested in the new theoretical work [on the structure and properties of metals and alloys] but are often quite unable to understand the papers or text-books written by mathematical physicists." In this book, therefore, he has attempted to provide a bridge by means of which the student of metallurgy may be led to an understanding of the general ideas on which the