the world is facing problems caused by the population increase in our own species, improvement in both quality and quantity of agricultural output, and therefore any literature describing methods and technics contributing to this end, is of great importance.

Significant developments have taken place in the last three or four decades in breeding technics and in the study of the heritability of traits affecting yield and performance. Johnsson and Rendel's summary of the extensive literature dealing with both breeding theory and results is most useful, in fact provides an excellent basis for a first course in animal breeding. The authors point out that estimates of heritability unquestionably vary between herds or flocks for the same traits, owing to differences in management, season variations, and sampling variations. It seems that lack of understanding of the genetic determinants for such quantitative traits as growth and performance may be another factor. Several chapters are devoted to individual discussions of congenital abnormalities, sterility or infertility, and the inheritance of traits of especial value in each species of farm animals.

The incorporation early in the book of some of the modern developments in molecular genetics, including a discussion of the Watson and Crick model of the nucleotide, and recent concepts of genes and mutations, is a good feature. Although some students using the text may already have had elementary genetics, a chapter combining formal and molecular genetics makes a good introduction to the book. Later on, examples are cited on erythrocyte antigens, isozymes, and serum and milk protein variations which pertain to some of the most exciting developments in genetic research in various species including man, and which are perhaps major areas for further development in animal breeding.

The book would be more useful to research workers as well as to students of animal husbandry if a more complete bibliography had been given. In many places the names of the original authors of important concepts are omitted. For instance, the polygenic concept was introduced by Mather and the theory of evolution of dominance by Fisher, yet neither name is cited. Many breeding results are reported but no authorship is given. Similarly, certain results from experiments with laboratory animals which are cited are essential for illustrative purposes; but the work of Thoday on the location of polygenes affecting hair bristle in the fruit fly, an important recent contribution in quantitative genetics, is not mentioned. In the discussion of the homology of mutations among farm animals it would have been well to include some other species: the white spotting in cattle affecting both pigment formation and germ cell development, for example, is very comparable with the white spotting (due to single gene mutation at the *W* locus) in mice. The primary purpose of animal breeding is of course the improvement of yield and performance; but such information is also of theoretical and practical importance to both genetics and evolution. Some theoretical discussions appear rather vague. For instance, in their explanation of inbreeding depression and hybrid vigor, the authors' reference to the consequence of gene interaction would be strengthened by the use of some example, such as the hybrid antigens demonstrated by Irwin in pigeons, and the codominance of many different serum proteins and isozymes reported in various species. I am fully in sympathy with the difficulties which the authors inevitably faced in their attempt to fit the vast amount of genetic literature into their book; I mention the above points only because the role played by animal breeding in the whole discipline of genetics is so important.

Johansson and Rendel have presented a well-balanced summary of the recent developments in animal breeding. I think they have done a great service to students of animal husbandry and genetics, and the translation should prove most useful to English-speaking readers.

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Useful Species

Dictionary of Economic Plants. J. C. Th. UPHOF. Second edition. Cramer, Würzburg, 1968 (distributed in the U.S. by Stechert-Hafner, New York). viii + 591 pp. $9.75.

Since 1959, when the first edition of the *Dictionary of Economic Plants* was published, a large amount of additional information in regard to useful plants in all parts of the world has become available. The second edition incorporates this new material and consequently is greatly enlarged and has more extensive coverage. The number of pages has been increased from 400 to 591 and the number of species listed from 6000 to 9500. Several of the original descriptions have also been rewritten.

The format of the book is similar to that of the first edition. For each species the geographical distribution, products, principal uses, and family are given. The genera, species, common names, and many synonyms are listed alphabetically. In most cases the economic genera are listed under their respective families. Also, various categories of useful plants are given with the genera concerned in each case.

Several new categories have been added, among them plants used in ceremonies, hallucinogenic mushrooms and toadstools, hallucinogenic and narcotic plants, and ordeal plants. The category of medicinal plant genera has been broken down into plants used as abortives, in Chinese medicine, for eye ailments, in Hindu medicine, among primitive peoples, for snakebites, for tooth ailments, and in Western medicine.

The bibliography is greatly expanded. The section dealing with categories of economic plants lists 836 titles compared with 179 in the first edition. The section organized on a regional basis has 504 entries as against 330.

The book is attractively printed and is remarkably free of typographical errors. Its principal defect is the use, in some instances, of incorrect names for the species listed. Taxonomists and students of nomenclature will find this a drawback, but for others it does not detract too much from the value of the work. The magnitude of the task confronting the author and the time element involved must have precluded any attempt at evaluating the names appearing in the literature, and they had to be accepted at their face value.

In spite of the large number of species included, there are some surprising omissions which perhaps will be obvious only to those who are familiar with the useful plants of some particular region. For example, residents of northeastern North America may wonder at the failure to include such species as the ostrich fern (*Pteretis pensilvanica*), cattail (*Typha latifolia*), hazelnut (*Corylus americana*), water lily (*Nymphaea odorata*), sorrel (*Rumex Acetosella*), wild sarsaparilla (*Aralia nudicaulis*), water hemlock (*Cicuta maculata*), and hobblebush (*Viburnum alnifolium*).

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