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 Book reviews
 

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**Johansson, I.**, unter Mitarbeit von **Müntzing, A.**; aus dem Schwedischen übertragen von **Gravert, H. O.**: **Meilensteine der Genetik. Eine Einführung dargestellt an den Entdeckungen ihrer bedeutenden Forscher.** Hamburg Berlin: P. Parey 1980. 252 pp., 89 figs., 8 + 12 tabs. Soft bound DM 58,-.

The author, Ivar Johansson, has tried with his book to provide the reader with a "short and generally understandable overview" of the development of genetics. This goal has been amply achieved. By way of introduction Johansson presents in a concise way some ideas about genetics from the pre-mendelian period, with the main emphasis on the contributions of Darwin and Galton. The historical attention then turns to Mendel who, together with the rediscoverers of his laws, stands at the first and most significant milestone of genetics. Here the author lingers and discusses the questions which arise when the too precise crossing data of Mendel are considered. He also shows with delightful thoroughness the very different weights that should be attributed to the contributions of the three rediscoverers. The breakthrough and extension of mendelism, which reached its climax in the discoveries of the Morgan school, is subsequently presented and fundamentally analysed.

The general composition of the book is then decidedly influenced by the fact that already before the first third of the book is finished, the history of biochemical genetics, the discovery of the genetic code, and the role of structure-, operator- and regulator genes – that is the most recent milestones – have been discussed. Only afterwards, as if straying from his path, does the author deepen some insights which make complex genetical action understandable, for example, the inheritance of qualitative and quantitative properties. The fact that only then cytogenetics is dealt with seems to be better justified, because it is along these lines that the history of chromosomal aberrations obtains its connection with the consequences of aberrant chromosome numbers for mankind. At this point begins the part of the book which is devoted to the application of genetics in plant and animal breeding. It occupies about two-fifths of the book and leads the reader into a goldmine of many genetical breeding phenomena and data, which are otherwise difficult to obtain.

The chapter entitled "From the development of the population genetics" deserves to be specially mentioned. It demonstrates the significance of this often neglected area of genetics in an extensive and simultaneously pleasantly understandable way. In this orientation towards practical aspects this part of the book can be considered to be the strongest one. Here one senses how the practical application of genetics best reflects the author's personal engagement.

Not everyone will judge the significance of the individual milestones in the same way as Johansson does. Quantitatively considered, the "biochemical genetics" and the "genetical code" are treated in an extremely condensed way. Indeed, the 12 Noble prize winners whose pictures decorate these milestones demonstrate how eminent the discoveries in this area of molecular genetics really are. However, in spite of this criticism, it should be noted that the Swedish title translated into German yields "Pages from the history of genetics". It's a pity that the German edition has not stuck to this literal translation. For many of the subjects "pages" would have fit better. As an example one should mention the extremely interesting inheritance of the Habsburger family type, i.e. the long face with the nutcracker chin, a topic that has been allotted four pages. One could also mention the many-sided treatise on the performances in cattle and pig breeding, especially the selection on thick, and thin back-fat respectively, and many other achievements of animal breeding – all examples of great breeding interest and enormous practical importance, but not milestones! Nevertheless this reservation does not apply to the contribution "Development of Modern Plant Breeding". This chapter, written by A. Müntzing, limits itself to the main developments in plant breeding. The character of hybrid breeding, the contribution of polyploidy breeding, and the world-wide success of the wheat varieties of Borlaug are mentioned. Here the "cytoplasmic factor", which can be important in the application of male sterility, is also treated. Apart from this, the history of extranuclear genetical elements is not treated by Johansson.

Every scientist who is nowadays engaged in genetics can master only but a part of it. The treatises in "Milestones of Genetics" should be profitable for every one of them. Thanks to his profound and unusually broad knowledge of genetics, the author has assembled basic experiments in great variety and built upon them the development of certain fields. This historical view is crowned by the first-class professional treatment of the application of genetics in breeding. This fact alone sets the book of Johansson apart from other historical treatments of genetics. Related to this is a second positive feature of this book: in its examples the eukaryotic organism dominates. This might remind many of our brave molecular geneticists that the discovery of the DNA double helix and the nucleotide sequence was neither the start of, nor the only important thing in genetics. Johansson can teach us how many bright people, through relentless and long-standing efforts in all areas of the animal and plant kingdom, have assembled our present impressive knowledge of genetics.

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