Book Reviews

Grobstein, C.: A Double Image of the Double Helix: The Recombinant DNA Debate.
San Francisco: Freeman 1979. 177 pp., 14 figs., Soft bound $ 3.50
This book is of general interest for everybody who is following the debates regarding recombinant DNA experiments. It is moreover recommended for all readers who are concerned about the future of free research. The final chapters 'The Issue of Research Regulation' and 'Agenda for the Future' raise fundamental questions concerning research and society and try to draw possible concepts for future attitudes in handling science and in dealing with its problems in a rational attitude, a requirement which has often been missing in the controversies on recombinant DNA experiments.

Much has been written about these problems in the course of the past three years. In my feeling this book has achieved the most substantiated and comprehensive level which can be imagined. Its unprejudiced and critical considerations of the events accompanying the recombinant DNA debate make it most informative and also most satisfying for the reader since it exposes the fact that it is now possible to approach these problems in a fruitful way. One of the basic reasons for this successful approach are the qualifications of the author: Clifford Grobstein has been actively working as a scientist on developmental problems. He then acquired a position in biomedical administration. As a consequence he is aware of viewpoints from both sides, the scientific and the more general, i.e. 'political', responsibilities.

The evolution of the recombinant DNA debate into public dimensions is described in detail. These already historical events serve to make the reader familiar with the problem. The biological and experimental background of recombinant DNA experiments are exceedingly well described and should also be clear to readers not familiar with questions of molecular biology. This is markedly in contrast with other comparable publications. The basic points of the meeting at Asilomar are explained and the problems of this approach of establishing self-regulation in science are critically and without extenuation discussed. It has often been critizised that even the most advanced researchers in this field were apparently not able to deal with their problems in a way which was adequate to their intellectual capacities. However, it seems to me that Grobstein has managed to show that the fundamental difficulties in this respect were due to the fact that the involved scientists had to themselves first become aware of the actual problems they were dealing with. In addition to this time consuming process, which evidently is now completed, the same people had to learn that politics has nothing to do with facts and arguments: What Grobstein calls 'Body Politics' is well outside their attitudes and sympathy. The book exposes all these points very clearly. It furthermore discusses possible future implications of the recombinant DNA experiments and tries to explain which major topics of applied research might be within the frame of possibilities of this technique. In all these chapters the discussion is extremely well balanced and without any tendency to move into extended speculations far from reality. And so to the final chapters mentioned before.

In the discussion of the 'issue of research regulation' the author introduces three significant levels of considerations concerning recombinant DNA experiments, i.e. the nature, degree and means of assessing risk, the general value to be assigned to new knowledge and special values generated by the practical application of knowledge.

Also, in assessing risks three categories of risks should be distinguished: A first category, which represents obvious danger, comparable to a highway accident or fire. This risk must be assessed and in case of a statistical character an adequate political process should take care of public awareness and participation in the decision. It is clear that we do not yet appear to have 'effective mechanisms for eliciting from either a selected or general public a reasonable equivalent to individual informed consent'.

A second category of risk is much 'more difficult to pin down'. This category is assumed to include risks as they might be equivalent to excessive alcohol consumption by pregnant women or similar problems which in their actual importance may only become evident in subsequent generations. The regulations required at this category are open to debate and are highly dependent on personal judgements.

In the third category all risk would be placed entirely on speculation or conjecture. The assumption that recombinant DNA containing sequences from pro- and eukaryotic organisms at once are dangerous 'violations of evolutionary barriers' belongs into this category. It is pointed out that the public is particularly afraid of such risks since they open a wide field for speculation. Risk in this category cannot be assessed. It is pointed out that selective breeding neglecting the rules of evolution has been carried out for a long time but we have successfully resisted the possible breeding of human characteristics. Thus, it 'is not means but consequences of intervention that appear to be subject of legitimate concern'.

In the subsequent discussion it is pointed out that not understanding per se but use might be dangerous: In fact, understanding might decrease risks rather than introduce risks. It is furthermore shown that several levels in DNA recombinant experimentation need different kinds of rules. A difference should be made, for example, between applied research and basic research. Industrial research would again fall into another category. The important question is raised whether 'the large public investment that gave rise to recombinant DNA research techniques should go uncompensated' into economic values acquired by industry, a question which has not yet been often asked in such a context.

There are other questions raised by the recombinant DNA debate: questions which cannot be considered as routine questions. Their discussion requires more attention.

In my opinion the author succeeds entirely in demonstrating the 'double image of the double helix': 'recombinant DNA epitomizes the challenge to find new ways to rejoin purpose, knowledge, and action, the essential ingredients for human survival in the long struggle with uncertainty'. W. Hennig, Nijmegen

Mayr, E.: Evolution und die Vielfalt des Lebens.
Berlin-Heidelberg-New York: Springer 1979. 275 pp., 12 figs., 1 tab. Hard bound DM 39,80
'Evolution und die Vielfalt des Lebens' represents the German translation of eleven articles from 'Evolution and the Diversity of Life' (Harvard University Press, 1976). Two more recently published articles have been added. This collection of well-chosen papers, presented by the famous evolutionary biologist, Ernst Mayr, is a very good source of information on modern problems of evolutionary biology. He particularly discusses new and important trends such as the role of the genetic program, efficiency of natural selection, evolutionary strategies, etc. In this book expertise is combined with ease and clarity of style. This collection of papers is highly recommended to evolutionary biologists, philosophers and biologists. It should become a useful reference for those wishing to be informed on the recent state of evolutionary biology. M.Ch. Herrmann, Erfurt