REVIEWS

SCIENCE AND LIBERAL EDUCATION. By Bentley Glass. Louisiana State University Press, Baton Rouge. 1959. Pp. 115. \$3.00.

This book, based upon a series of three lectures given at Tulane University in 1958, deals with the role of science in a modern civilisation and the need for a greater knowledge of science in a liberal education. Since the author is a geneticist it is only natural that he stresses the role of genetics in human affairs. The introductory chapter on genetics in the service of man includes some of the major contributions of genetics to agriculture and modern medicine. The value of ionising radiation to produce desired mutations in bacteria and plants is discussed, but the genetic hazards to man are also considered. Modern medicine has greatly increased the life span of modern man, but it too has created problems by preserving certain deleterious genes in the human population.

In dealing with a liberal education in the age of science the author joins C. D. Darlington (*The Conflict of Science and Society*), C. P. Snow (*The Two Cultures*) and other eminent scientists in an appeal for a better understanding of the functions of science. Science has enabled man to acquire enormous amounts of inanimate energy. This acquisition of energy leads to enormous power, which can be used for either good or evil. It can be used for man's benefit or it can be used to enslave or destroy the human race. Thus it is necessary to effect a proper balance between the sciences and the humanities to insure the wise use of science.

In the final chapter the author deals with evolution and human values, and the role of science in freeing the human race from poverty, ignorance and superstition. Early in human evolution some degree of co-operation became of value in survival. Co-operation and ethical values are even more essential for the survival of modern man because of the vast power he has acquired through the application of science to material progress. The author has dealt with these problems in a concise and effective manner.

KARL SAX.

PRACTICAL HEREDITY WITH DROSOPHILA. By Gordon Haskell. Edinburgh and London: Oliver and Boyd. 1961. Pp. xli+124. 10s. 6d.

This book deals in an introductory way with the use of *Drosophila* as a tool for illustrating the principles of genetics. It is intended for the use of schools and colleges, and includes information on the apparatus required, the techniques used in handling and feeding the flies. In addition the author has compiled a list of practical exercises together with details of mutant stocks suitable for carrying them out: the introduction includes a list of places where these stocks may be obtained. A special chapter deals with cytological procedures.

Bearing in mind that this book will be used widely in schools, issue may be taken with some of the apparatus and handling techniques which are described. A full explanation of a bottle washing machine is given. A hair-grip bent at right angles and attached to a pencil is recommended for separating the flies; and forceps for picking them up by their wings.

But does not a camel-hair brush do both with fewer fatalities? A watch-glass fitted with a gauze pad stuck on by strips of adhesive plaster and well ethered is recommended for re-anaesthetising the flies should they wake up before the examination is completed. But would not a Petri-dish top be more suitable? And are not most types of plaster easily unstuck in the presence of ether? It is stated that "etherised female flies are reputed not to lay eggs for 48 hours afterwards" (p. 18), yet later (p. 32) the author recommends that flies should be transferred to a fresh tube two days after mating to avoid overcrowding of the resulting progeny.

Again, it is well known that better preparations of both salivary gland and ganglion chromosomes are obtained if the larvae are dissected directly in a drop of stain on a slide rather than in saline first as described (p. 108). This direct method has the added advantage of recognising the glands more easily since the large nuclei can be seen in the cells.

Most of the tricks of the trade are mentioned, and these should prove invaluable for beginners. Yet, one simple but important point is omitted—that of not allowing anaesthetised flies to fall directly onto the food in a culture bottle. It is surprising the number of students who fail to realise that flies stuck to the food will not mate or lay fertile eggs!

The mutant stocks recommended for the exercises have been well selected, and the ground covered by them is comprehensive. It is refreshing to see that exercises demonstrating polygenic inheritance together with the statistical procedures necessary for evaluating the results are included. But why place such exercises in a different chapter so giving the impression that this type of inheritance is exceptional? It is a pity that an exercise dealing directly with selection is not included.

Although this is meant to be a book dealing essentially with practical methods, one feels that the principles demonstrated by each experiment could have been more forcibly brought out. For example, in the cross of brown $\times$ scarlet-eyed flies which give a proportion of white-eyed flies in the F_2 ($bw/bw, st/st$) no mention was made that this illustrates that the same phenotype can be given by different genotypes (cf. the sex-linked white-eyed gene). A list of the principles demonstrated by the results of each cross, even at the risk of repetition, would have been well worth while.

Probability is a difficult concept for many beginning students to grasp. The presentation of statistical methods is admirable, but the author does not attempt to convey in simple terms the meaning of the answer derived by their application. For example, what is " p " the probability of when derived by the chi-square method? It would have been so simple to state this together with the reminder that the element of chance operates at both meiosis and fertilisation.

These defects do not distract us from recognising the usefulness of the book. There can be little doubt that its contents will be fully appreciated by teachers and students alike.

E. A. BEVAN.

DARWINISM AND THE STUDY OF SOCIETY. Ed. M. Banton. Tavistock, London: Quadrangle, Chicago. 1961. Pp. 191. 21s.

A group of historians, social scientists and biologists are here introduced to us by Dr Bronowski as discussing the connection between Darwinism and the study of society. Three show us that, at least in Darwin's opinion,