ally results in a condition of competitive coexistence following a period of active conflict. His table illustrating the similarities and differences of the modern western ideologies of Christianity, Marxism, and nationalism in their orthodox and liberal forms, as well as that of "worldliness," may be compared with the analysis made by Charles Morris of the leading value systems of both West and East.

Ways and Means

In the third part of the book, which deals with the resolution of conflicts, Boulding distinguishes resolution by a mutually acceptable procedure from resolution by avoidance or segregation and from resolution by conquest or absorption of one party by the other. He makes fruitful suggestions concerning negotiation, bargaining, conciliation, mediation, law, adjudication, legislation, and other mutually acceptable procedures, noting that the problem is most difficult to solve in international conflicts. Prevention of violence, he notes, may not lead to resolution as indicated by the number of half-states divided by supposedly temporary cease-fire or armistice lines. Conflict has continued between the halves, with little progress toward resolution, for over a decade, despite efforts by the United Nations and other international agencies, in Germany, Palestine, Kashmir, Korea, Vietnam, and China.

In the present situation, Boulding finds that the major difficulty is "reconciling the universal ethics that both science and high religion imply with the particularistic loyalties to existing institutions and responsibilities" (p. 331). The concept of defense has broken down because of uncertainty, whether it is a territorial state, an ideal way of life, or an ideology that is to be defended. In this connection, Boulding might have given more attention to resolution of conflict by avoidance and segmentation or peaceful coexistence. Should international law and the United Nations seek to maintain the peaceful coexistence of territorial states, each free to experiment with its own economic, political, and ideological system within its territory, affecting others only as they may be influenced by study of the virtues and vices of that system as it develops? Or should these universal institutions seek to maintain the dignity of man and human rights with the probability that this will lead to a continuance of high tension and conflict among adherents of diverse ideologies, each convinced that its system will best promote the dignity of man?

Although he hopes that general acceptance of the findings of science and high religion, concerning the dignity of man, will eventually result in synthesis, Boulding evidently favors the first solution in the present era of international politics. He believes religious wars should be ended by the separation of church and state, and that this should include recognition, in the secular world of politics, of the state's priority and of its freedom to determine the policy and economy within its territory, but should permit religious organizations freedom to communicate ideas, even across national frontiers (p. 339). He evidently hopes that in a peaceful world, where the use of international violence as an instrument of international politics is prevented by perceptions of national interest, disarmament, and the United Nations, the better ideas will eventually prevail. Given peace, the potency of the present technology of communication may universalize the forum of discussion, which was the root of Jefferson's optimism.

In conclusion, it should be said that the book represents a great deal of thought and brings together a great many pertinent ideas on the subject of conflict. In spite of its abundance of homely illustrations, it is not easy to read, but it is a must for all serious students of the problem of war.

Genetics, Drugs, Psychology

Experiments in Personality. vol. 1, *Psychogenetics and Psychopharmacology* (274 pp.); vol. 2, *Psychodiagnostics and Psychodynamics* (341 pp.). H. J. Eysenck, Ed. Humanities Press, New York, 1961. $16.

The broad range of recent psychological research at Maudsley Hospital is presented in these volumes. There is genetic research with rats, in which the methods of selective breeding and diallel cross are used to estimate the heritability and dominance of emotionality as indexed by defecation and ambulation; psychopharmacological research designed to study the effects of the depressants, Doriden and Meprobamate, on measures of conditioning, perception, performance, and autonomic functioning; psychodiagnostic research indicating the importance of overinclusiveness and retardation in the thought disorder of psychotics; psychodynamic research, in which measures of learning, performance, and perception are employed to study the excitation-inhibition balance in both normal and neurotic subjects. Heuristically useful sections on factor analytic techniques and the role of theory in psychology are also included.

Taken as a whole, the volumes have considerable merit. Virtually all sections include careful, rather complete reviews of the relevant research literature, with due attention given to important issues and problems. That the appreciation of these issues and problems is not merely academic is reflected in the research procedures and designs, which are generally quite good. Of course, concessions are made to practicality, but even in such instances the authors take responsibility for communicating their decisions.

The large range of material included prompts concern over the extent to which it is integrated. The major integration is provided by various attempts to test Eysenck's related hypotheses: (i) that the introversion-extraversion dimension of personality is related, at the level of the central nervous system, to the excitation-inhibition balance, in such a way that inhibitory tendencies and excitatory tendencies are characteristic of the extrovert and the introvert, respectively, and (ii) that depressant drugs by increasing cortical inhibition and decreasing cortical excitation produce patterns of extroverted behavior. As unifying principles, however, these hypotheses are not entirely adequate, and as a result the volumes read somewhat like a collection of rather discrete findings. Why was the research on emotionality, and that on thought disorder, included in this work? For that matter, some of the measures of behavior, which are used in sections clearly meant to test the hypotheses, seem to have been chosen primarily because they are part of the stock of experimental psychology and only secondarily for their theoretical relevance.

Testing Eysenck's hypotheses yielded some confirming, but also some disconfirming and confusing, results. It is certainly true, as he indicates, that this outcome must be understood in

terms of the fact that his theory is in the early stages of formulation and hence does not lead to very precise predictions that recognize all relevant variables. In such cases negative results do not necessarily demonstrate the inadequacy of a theory so much as they provide a basis for its development. Thus, it is unfortunate that the contributors do not make more use of their negative results.

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Behavior and Ecology

The Exploitation of Natural Animal Populations. A symposium of the British Ecological Society (March 1960). E. D. Le Cren and M. W. Holdgate, Eds. Wiley, New York, 1962. xiv + 399 pp. Illus. $10.75.

Animal Dispersion in Relation to Social Behaviour. V. C. Wynne-Edwards. Oliver and Boyd, London, 1962. xi + 653 pp. Illus. Plates. 55s.

Like most symposia, this one, which has for its general theme man as predator, makes available a valuable but heterogeneous assemblage of research. It would be a mistake to relegate the role of these papers solely to the applied. Unquestionably a major reason why this subject was chosen is that its implications transcend both the organisms involved and the immediate problem of getting the most for the least. As was true earlier in demography, where life insurance predated its probabilistic theory, practice and malpractice in this area of ecology have greatly stimulated fundamental work. The symposium as a whole is praiseworthy for clearly revealing the theoretical framework that is the common characteristic of most of the individual contributions.

The majority of the chapters are concerned with economically important fishes and marine mammals. Additional papers on shellfish, game birds, and mammals and more strictly theoretical contributions to the theory of maximum sustained yield complete the intended range of the symposium. One is tempted to complain that other populations subject to predation—for example, forest trees and pest insects—might have been included. It is hard to say whether the gain derived would have made up for the increased centrifugal forces that might well have destroyed the symposium's functional unity.

Despite gaps, the book serves as a succinct summary of the progress made in empirical knowledge and theory during the period since World War II. It also indicates the multitude of economic, political, and biological difficulties that attend sustained-yield *régimes*. Primary stress is on the biological, and sampling problems emerge consistently as limiting factors to more rapid advance. For many of the most intensively studied food fishes, important premises have inadequate support because no means exist for procuring the required data; in other cases, methodology suffers simply from lack of sustained interest or from lack of funds. The edited informal discussions serve to emphasize the problems and add to the interest of the work.

One of the premises that underlies much of the work on optimum yield, and for which good evidence exists in several cases, is the capacity of populations to regulate their numbers in accordance with population density. In *Animal Dispersion in Relation to Social Behaviour* Wynne-Edwards propounds a closely related thesis that gains novelty by the breadth of its outlook. According to his view, animals in nature themselves practice an effective, maximum, sustained-yield program by substituting social competition for the more destructive, direct competition for food. Most of social behavior is thus regarded as an inventory of conventions evolved by group selection for the regulation of numbers. He postulates that such diverse phenomena as caste formation and sexual dimorphism, territoriality and peck order, the vertical migration of plankton, the swarming of locusts and palolo worms, synchronized crepuscular and auroral bird song, and the many other forms of social display have arisen in this way and serve this function. The author, in a manner reminiscent of Darwin's, documents his thesis copiously. Its very generality makes his thesis attractive, and it may be expected to reorient some of the research in social behavior. Since much of his thesis is difficult to subject to crucial testing, however, it may, if adopted uncritically, have the negative effect of keeping us from asking other pertinent questions. My personal reaction is that the author has overstated his case: the niceties of the social adaptations often cause one to expect to find a better degree of population regulation than in fact exists.

Quite aside from the major thesis that pervades his book, Wynne-Edwards also provides an excellent and unhackneyed review of social behavior, and the book is worth study on this account alone. It is unfortunate that the dual function of this work causes some awkwardness in organization and results in repetition and numerous cross references to details. Unexpectedly, the two themes detract from each other to an extent. But, even though the organization of the material is not completely successful, the book is nonetheless important. It is certainly required reading for any ecologist who puzzles about the relationships between behavior and ecology.

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Chemical Cytology

The Organization of Cellular Activity. C. M. A. Kuyper. Elsevier, New York, 1962. x + 272 pp. Illus. $7.

The author of this short volume has attempted "to give a synthesis of morphological and biochemical data in so far as they relate to the functioning of cells." Chapters are included on the production and storage of energy, membranes, synthetic activity, mechanical activity, heredity, specificity and diversity, and regulation. In each area, the author presents a short résumé of pertinent biochemical reactions and mechanisms and then discusses, where possible, the correlated morphological structures within the cell. There are numerous illustrations, both halftones and line drawings. Although many topics are touched upon, few are developed extensively, and the result is a rather disconnected, staccato presentation of the material. In several places Kuyper expands private views without adequately covering general thought and experiments in the field. This is particularly true of the sections that deal with the structure, coding, and reduplication of DNA. For instance, in discussing DNA and chromosome replication, he does not describe the experiments of Meselson and Stahl or those of Herbert Taylor.

There are very many factual errors