

milk secretion of breast-feeding mothers, in treating alcoholics, and in other examples. In some instances the results of follow-up study over long periods are reported.

But indiscriminate use of hypnosis is not recommended. One author (Miasishchev) cites the need for "deep psychotherapy" in cases of complex psychogenic causation; deep psychotherapy apparently means discussion between the therapist and the patient, which is aimed at helping the patient to understand his past (including its traumatizing aspects) and his present life situation. One paper presents (among others) the case of a seven-year-old girl who was a domestic tyrant and a stutterer. She was sent to the outpatient department of a hospital and there joined a group of children who were having meetings at which they discussed each other. The patient became enthusiastic about the group and changed her behavior at home so that she would deserve the group's praise. Her stuttering disappeared within a few weeks.

In two papers nonhypnotic suggestion techniques are presented and are said to be about as effective as hypnosis.

One paper, which deals with psychotherapy of the smoking addiction, presents examples of the need for exact formulation of posthypnotic suggestions; thus, in one case, the patient was told that henceforth she would find smoking disgusting, but she was not told that her craving for smoking would disappear; as a result, she came to experience smoking as something she both craved and found disgusting. The author's (Povorinsky) preferred therapeutic technique included, as its principal component, the keeping of detailed records of all acts of smoking, including all the components (for example, striking a match) of these acts. The author states that smoking is a complex habit with many semiautomatic components and that keeping a record trains the patient to become conscious of the semiautomatic components and eventually to acquire conscious control over them.

Only one paper reports the utilization of classical conditioning as a therapeutic technique.

It should be noted that the translation is not always exact and that it is not complete. Nineteen papers out of 55 in the Russian book have been omitted by Winn, and the translated papers

are sometimes incomplete. In one instance, about three-fourths of a paper is omitted. A number of omitted passages were found to contain references to Pavlovian theories of disturbed relations between stimulation and response, which may be the result of over-strong stimulation, of over-strong drive, or of pathological factors. These theories ("of phase phenomena"), which are very influential in Soviet psychiatry, are underrepresented in this book of translations. The omissions are not mentioned in the preface.

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Change and Alteration

Mutation. An introduction to research on mutagenesis. vol. 1, *Methods*. Charlotte Auerbach. Oliver and Boyd, London, 1962. xii + 176 pp. Illus. Plates. 12s. 6d.

"The ultimate aim of mutation research," writes Charlotte Auerbach, "is a full understanding, in chemical, physical and biological terms, of mutation and its consequences for the genic material." This is the first of three projected volumes; the succeeding ones are to cover the results of mutation research and statistical methods. The methods considered in this volume are biological, and the usefulness of different organisms for mutation research is considered against a background of particular life cycles. This consideration of the life cycles and biology of the organisms should be of considerable value to the nonbiologist attempting to evaluate data obtained from research on unfamiliar organisms.

Auerbach spends about a quarter of the book discussing the methodology of research on *Drosophila*. The evaluation of lethal and visible mutations and of deletions and translocations in this material is discussed at some length. A larger portion of the book is spent discussing a variety of methods useful with bacteria, fungi, algae, and viruses. *Paramecium* and the mouse are considered in the chapter "Animals other than *Drosophila*," while the advantage of using flowering plants for certain types of analysis is discussed in a separate chapter. Although most of the author's work has been with *Droso-*

phila, she illustrates the possible difficulties of work with other organisms with real understanding. As she indicates in the preface, the details of the methods are not given, as befits a volume intended to be an outline and guide to the literature rather than a handbook of techniques.

Some space is given to a justification for using the measurement of lethal mutation as an estimate of general mutagenic effects. The author points out that recent work has shown that different sites may respond in specific ways to treatment with mutagens: study of specific sites may give a false picture if the results are generalized to all sites, mutagens, or organisms. Consequently Auerbach concludes that "the general mutagenic situation" may be best studied by the technique of measuring lethal mutation, since this technique samples many different genes and can give some sort of average response. Actually, and properly, the author concludes that particular systems must be selected for particular purposes.

As a result of work done in the past few years, it seems that in the foreseeable future it will be possible to define mutagenic change more precisely as a particular base change at a particular location in the deoxyribonucleic acid. The problems that this type of formulation raises are different from those historically considered as part of mutation research, and they require a set of methods different from those discussed in this book. Considerations of the rate and mechanisms by which one base is substituted for another will require knowledge not only of the chemical mechanisms involved, but, in view of the existence of "hot spots" for mutation, also a detailed structure of the neighboring nucleotide sequences. Information of this sort may possibly be obtained as modern methods of protein analysis are applied to specific proteins obtained from mutants induced by particular chemical mutagens and checked against a genetic code elucidated by the techniques of modern enzymology and by the genetic fine-structure analysis of bacteriophage. These are methods which have only recently been applied to the mutation problem and which must be superimposed upon proper biological methodology. Certainly these chemical methods are, as yet, of no particular importance to workers attempting to apply mutation research to

the practical ends of breeding programs. Perhaps, too, they are properly considered as results rather than methods.

Auerbach has written a useful compilation and evaluation of a number of the biological techniques important in mutation research. I look forward to reading the succeeding volume that will describe her evaluation of the results of research in a field to which she has contributed so much.

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Australasian Conference

Radiobiology. Proceedings of the Third Australasian Conference on Radiobiology, held at the University of Sydney, 15–18 August 1960. P. L. T. Illery, Ed. Butterworth, Washington, D.C., 1961. xi + 313 pp. Illus. \$11.

This volume consists of the proceedings of a very heterogeneous symposium which, according to the foreword, was held “to stimulate further research in radiobiology” in Australia. Judging from the tremendous variety of fascinating topics that are introduced in the 29 separate papers presented in the volume, I assume the symposium was a great success insofar as its stated objective is concerned. The published proceedings, however, leave much to be desired, and the reader is left in frustration by the brevity and incompleteness of many of the papers. What the symposium gained by the wide variety of topics represented, the proceedings lost in profundity through overdiversification. It is my perhaps prejudiced opinion that publication of symposia should be restricted solely to those dealing with some single, specialized topic.

In spite of the cursory and sketchy nature of the papers and the lack of any single unifying theme in the meeting, the breadth of subject matter is impressive. Topics range from basic studies of the action of radiation on the molecular and chromosomal level to problems in clinical radiology and agriculture which are strictly of an applied nature. Typical of the basic approach are specific papers on the nature of radiation damage at the cellular level, the action of γ -rays on the enzyme ribonuclease RNase, and the all-too-short discussion of the size and structure of

chromosomes. Other particularly interesting papers, which are of a fundamental nature, deal with such specific topics as the effects of radiation on the immune response and comparisons of the biological action of radiation with that of the radiomimetic chemical agents.

Little of the material presented appears to be entirely new, but the volume may be useful as a convenient report on current progress in a number of fields of radiobiology. Since this appears to be the fate of many other proceedings volumes of this type, it again raises the question of whether such volumes are worth the effort and money required to publish them.

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Reference Source

Quantum Theory. vol. 1, *Elements*. D. R. Bates, Ed. Academic Press, New York, 1961. xv + 447 pp. Illus. \$10.

According to the preface, this three-volume set, of which *Elements* is volume 1, is intended as an advanced text and a reference source on the fundamentals and applications of quantum theory, primarily intended to meet the needs of postgraduate students. Twenty-one authors contributed a total of 22 chapters; of these, nine chapters, covering the fundamentals, are contained in volume 1. Volume 2 deals with particle systems: complex atoms, molecules, chemical binding, solids, liquids, and quantum statistics, and volume 3 with radiation and high-energy physics.

There is always the risk, in such a collective enterprise, of both a lack of cohesion or coordination and of an imbalance in “weight” among the various contributions. In volume 1 the first-mentioned difficulty has been quite successfully avoided; two initial articles, “Preliminaries” (mathematical and historical) and “Fundamentals,” by H. Margenau are followed, in orderly fashion, by two chapters, “Soluble bound state problems” and “The continuum,” by R. A. Buckingham. Then follow 3 chapters on approximation methods: “Stationary perturbation theory,” by A. Dalgarno; “The variational method,” by L. Moiseiwitsch; and “The asymptotic approximation method”

(familiarily known as W-K-B-method), by R. S. Jeffreys. The section entitled “Transitions,” by D. R. Bates, written within the framework of perturbation theory, and a long chapter, “Theory of collisions,” by H. S. Burhop, conclude this volume.

This is in general the choice and order of topics one would expect to find in a conventional text on quantum theory. The level of presentation is amazingly uniform in all nine chapters, and rather elementary; any graduate student with a little bit of previous exposure to the subject should be able to use this volume without difficulty.

But, by virtue of the very fact that it is the result of a collective enterprise, this work is much more in the nature of a reference volume than a textbook. There is too much attention to detail and not as much emphasis on fundamental principles as one might wish to see in a text used at the graduate or postgraduate level. It is regrettable, for instance, that more space was not devoted to presenting the fundamentals (only 80 pages were allotted to this topic, in chapters 1 and 2). This part is definitely too slim: a basic theme like the transformation theory of representations is hardly developed at all. The extent of this handicap is illustrated quite drastically in the awkward section on electron spin. The lack of any statement of the universality of the principles of quantum theory is also regrettable; it will not do to single out electrons but to omit the electromagnetic field and to leave out any discussion of the conceptual unity that quantum theory has introduced into phenomena which, classically, are as far apart as particle motion and wave propagation.

The chapters on perturbation and approximation methods, by and large, present the essentials in a clear and readable way, with the exception of the section on perturbation theory of degenerate systems; in this section the relations between degeneracy and symmetry properties of the system are not clarified. The last and bulkiest chapter, on collision problems, gives a well-balanced survey of an enormous field; it is well supplied with suitable references to original literature and comes perhaps closest to fulfilling the ideal purpose of this book.

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