siderations of the orchid family, orchids and their collectors, and acknowledgments. This is followed by the systematic section of the volume, which takes up all but 18 pages of the total.

The systematic section is excellent. The treatment of both the genera and the species is conservative. The account of a given genus includes a description of the genus; a key to the included species, if more than one; the accepted specific name, and synonyms for a much greater area than that covered by the volume; a specific description; flowering times; range of the species (Mexico is sometimes included in the term "Middle America," but more often given separately). The exsiccatae for Trinidad and Tobago are cited.

The illustrations are mostly excellent and very much more numerous than the "List of plates" would indicate—there are 97 plates although only 21 are mentioned. One photograph, by oversight, is used to illustrate species in different genera (opposite pages 70 and 78, where the illustrations belong with the Pleurothallis).

The volume can be recommended not only as a source of information on the flora of Trinidad and Tobago but also for the large number of plates illustrating plants of a much wider range. The volume is well and attractively printed on paper that appears to be of excellent quality. The price is rather high even considering the number of plates.

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Language's Role in Behavior

Language and the Discovery of Reality. A developmental psychology of cognition. Joseph Church. Random House, New York, 1961. xviii + 245 pp. Illus. $4.

Whatever their current research activities might suggest, many psychologists would profess their ultimate goal to be that of arriving at a satisfactory scientific account of such "higher mental processes" as classifying, thinking, and problem solving. There is today renewed interest in what has been called "cognitive psychology" and in speech, language, and communication. To mention some of the more prominent approaches within psychology, we have B. F. Skinner's uncompromising attempt to describe verbal behavior in terms of the principles of reinforcement, G. A. Miller's treatment of language in terms of information theory, and C. E. Osgood's use of a "mediation hypothesis" to explain the acquisition of meaning. From the fields of linguistics and cultural anthropology we have had a description of language as a formal system of meaningful sounds and the hypothesis—most closely associated with the name of B. L. Whorf—that the particular language one is brought up to speak conditions one's perception of objective reality and perhaps also one's modes of thinking.

Church's important contribution in this book is his clear formulation of a self-consistent, no-nonsense point of view concerning the role of language in behavior, derived largely from an analysis of the development of the child's use of language in relation to his perceptual and cognitive experiences. Arguing from a phenomenological base, Church states his opposition to what he regards as the gratuitous constructions of Skinner and also to the mystique of Whorf's linguistic relativity. He believes that the influence of language categories upon the child's awareness of reality is only indirect, but still traceable.

A substantial portion of the book is devoted to issues which are not immediately related to the theme advertised in the title but which are valuable and interesting as rightful subject-matter in cognitive psychology: the preverbal experience of the child, the "thematization" of experience, "upward" and "downward" logical classifications, varieties of thinking, tests of verbal functioning, and the nature of personal styles of thinking and acting.

The book is well organized and gracefully written. Church keeps much of his documentation and evidence behind the scenes; in his allusions to observations made of children, for example, he fails to identify the observers, the conditions of observation, the status of the children, and so forth. The reader has little opportunity to question the interpretations offered by Church. This is nonetheless a significant and provocative book, containing much insight and wisdom for psychology as a whole and many suggestions not only for research but also for the conduct of education.

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Carus Mathematical Series

Statistical Independence in Probability, Analysis and Number Theory (Carus Mathematical Monographs, No. 12). Mark Kac. Wiley, New York, 1959. xiv + 93 pp. $3.

This book is an outgrowth of three lectures delivered by Mark Kac at the summer meeting (1955) of the Mathematical Association of America; the general topic was "Familiar things from an unfamiliar point of view." Subsequently Kac was invited to prepare an expanded version for publication in the Association's Carus Mathematical Monograph Series, the aim of which is "to contribute to the dissemination of mathematical knowledge by making accessible . . . expository presentations of the best thoughts and keenest researches in pure and applied mathematics . . . set forth in a manner comprehensible not only to teachers and students specializing in mathematics, but also to scientific workers in other fields. . . ." Kac has made a signal contribution in this direction.

The concept of *statistical independence* stems from the commonplace notion of two or more things (events, propositions, and the like) being independent if they have "absolutely no connection with each other whatsoever." The concept of *probability* itself was long surrounded "with vagueness which bred suspicion as to its being a bona fide mathematical notion." Today both *probability* and *statistical independence* are precisely defined but in very general and abstract terms. The price of such generality and abstraction is "not only to submerge the simplicity of the underlying idea but also to obscure the possibility of applying probabilistic ideas and results outside of the field of probability theory."

The author's principal aim in the original lectures and in this enlarged version was to show that "(a) extremely simple observations are often the starting point of rich and fruitful theories, and (b) many seemingly unrelated developments are in reality variations on the same theme." In view of the aim stated in (a) perhaps one should not be surprised to find that the book starts with the formula

$$\text{Sin } x = 2 \sin \frac{x}{2} \cos \frac{x}{2}$$

The chapters "The normal law in number theory" and "From kinetic theory