proved, because what we have in this work is a series of verbal descriptions of placement on several variables, not precise measurement. But these are tasks that are made more apparent and can more readily be begun because of this thoughtful study.

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Personality and Sensory Intake

Individuality in Pain and Suffering. ASENATH PETRIE. University of Chicago Press, Chicago, Ill., 1967. 171 pp., illus. $5.

This book fails to redeem its promise. The author, a British psychologist who has worked in both London and Boston, has studied individual differences in response to pain. In this book she reports that tolerance of pain can be predicted from performance in non-pain-producing situations. She postulates a central regulation of perceptual experience, including pain, that operates by augmenting or reducing sensory intake. The predictor task involves kinesthetic aftereffects: if one rubs one's fingers along the edges of a 2½-inch block for about 60 seconds and then is asked to judge the width of a 1½-inch block, judgments will differ from those in which there was no prior finger stimulation. The author reports that some subjects respond to the stimulation by increasing their judgments over the base line (no stimulation) and others by diminishing their judgments. The former subjects she calls "augmenters," the latter "reducers." There are, of course, "moderates" who show no consistent over- or underestimation with respect to their own baselines.

Using performance on this kinesthetic aftereffect task as the criterion, Petrie discovered that augmenters had a lower tolerance for pain than did reducers, when pain tolerance is measured by the Hardy-Wolff-Goodell dolorimeter. Provoked by this finding are several fascinating hunches and leads for further research. For example, the author reports that a case of painless peptic ulcer was a reducer; that augmenters tend to have high scores on the hypochondriasis scale of the Minnesota Multiphasic Personality Inventory, an indication that they are hyperaware of their bodies; that reducers tolerate sensory-isolation experiences poorly and seem to prefer pain experiences to being alone. Thus certain personality characteristics which control the intake and processing of perceptual data affect a host of sensory experiences.

So far the promise, for most of this experimental work was reported at various times in the past, beginning in 1958. In these early reports, the data were considered as preliminary results, and one could therefore overlook the fact that the principal experiment linking perceptual style and pain included only seven augmenters and six reducers; that the sensory-isolation experiment included only nine subjects, with four least tolerant and five most tolerant of the isolation; and that the extensions to other perceptual experiences were anecdotal.

In this book the author mentions no replications of those experiments. Such replication would be crucial for bolstering the certitude with which one can regard these results, for the early experimental work is marred by a number of serious methodological faults which can be minimized in a first exploratory effort, but not in a definitive survey of the work after so many years. For example, there is some evidence that men and women respond to the kinesthetic-aftereffects task differently; yet the experimental groups include disparate numbers of men and women, so that in the results the possible contribution of sex to the variance is confounded with the central regulatory function being studied. Another serious fault concerns the criterion score, which is a computed difference between a base-line score and a post-stimulation score; there is evidence that a relationship exists between these two scores, yet no effort is made either to control for base-line levels by covariance or regression techniques or to measure the exact contribution to the criterion score of the base-line measurement. There are, furthermore, no studies reporting the consistency over time of a person's position as an augmenter or a reducer. One also searches in vain for a discussion of how the author understands the kinesthetic aftereffect or of how she reconciles her view of this phenomenon with those of others who, like Koehler and Wallach and Klein and Krech, also used this task and speculated about it.

There is a potentially exciting finding with reference to schizophrenia, in which most schizophrenic subjects are classified as reducers. But we discover that the testing techniques used with the schizophrenic subjects are different from the standard techniques used with the matched control group. And there are no data on whether the schizophrenic patients were on drugs. Here again, the experiment was performed on a small number of patients (17) and no replication with refined techniques is reported. Inasmuch as only a small section of the book concerns pain, the title misleads those who would look to it for a systematic investigation of individual responses to pain.

Even with these exasperating faults, this book cannot simply be dismissed. The clinical insights are intriguing, sometimes even brilliant; they generally make good sense. The promise of those insights obliges the author to have refined her techniques, replicated her results, expanded her sample groups, and pinned down the generality of the kinesthetic aftereffect. She has not met those obligations. The appearance of the book may stimulate others to perform with the required rigor the definitive search for individuality in the regulation of sensory input.

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Phytochemistry

Terpenoids in Plants. Proceedings of a Phytochemical Group symposium, Aberystwyth, Wales, April 1966. J. B. PRIDHAM, Ed. Academic Press, New York, 1967. 269 pp., illus. $12.50.

For countless centuries the terpenoids have provided man with some of the most pleasing and satisfying scents and tastes encountered in this world. Yet despite their ubiquity and general usefulness, little investigation of these materials was made until Otto Wallach entered the field in 1879. Until Wallach's death terpenoid chemistry seemed to flourish, but then a period of relative inactivity set in. Investigations of terpenoids became so limited that such barren suggestions as that terpenes were "waste products of plant metabolism" were advanced. It seems strange that there was such a lag in the investigation of these compounds, for in what other field of chemistry can one encounter dozens of structural isomers of a single, simple empirical formula, a prodigious facility to undergo cyclization and novel rearrangements, and even a bright blue hydrocarbon?

In the past decade improved analyti-