a single mechanism can account both for the frequency-
driven response and for the irregularities ("stochastic
component") in the spike train.

I believe that similarly detailed knowledge of the an-
tomy and static physiology of neural structures will probably
not be available and may even be a misleading goal in the
individually variable and intrinsically more complex nervous
systems of animals less conservative than Limulus. Thus I
believe it will be essential to integrate the techniques of
testing of models into the techniques for reduction of data,
in order to progress to mammalian neural models.

Two papers on quantitative neuroanatomy make rich
reading. The first, by Haug, is on macro-measurements, and
the second, by Smit and Colon, is on micro-measurements.
I hope that the obvious contrasts between types of results
from these two approaches will not lead to so great a diver-
gence as between the analogous fields of EEG rs. (unfortu-
nately "vs.") single-cell recording. The definitions of the
basic symbols used in Haug's paper are not easy to under-
stand. Throughout, his concentration on expected values
consistently ignores the difficult but essential questions of
variability and possible biases due to the techniques employ-
ed. A sample of such difficulties is Haug's estimate of 1.05
× 10^{14} nerve cells in the (presumably cerebral) cortex of man,
contrasted with an estimate of 8.2 × 10^{9} for cortex of one
cerebral hemisphere (giving 1.64 × 10^{10} for two hemispheres),
attributed earlier in the book to "Haug 1959". Clearly, errors
and variabilities need to be estimated as carefully as do the
major values, in reporting quantitative neuroanatomy.

Smit and Colon report simultaneous micro-measure-
ments in the spirit of some of Bok's work. Again lacking are
concurrent estimation of errors, both due to sampling variabil-
dity and due to systematic properties of the methods used.
But an additional source of error arises here: the authors
assume various models, for instance concerning the "law"
of branching obeyed by a single cell's dendrites, and use these
models for interpretation and extrapolation from measured
values. But they do little checking on the models, for instance
by measuring dendritic trees at another distance from the
cell body, to see how accurately their model is likely to extrap-
olate. I am being severe with pioneers in new areas, which is
easy and a little unfair, but because the methods are new,
they risk being taken to be more accurate than later ex-
perience will probably prove them. Thus, more care about
error estimates now will avoid a possible disappointment
later.

The remaining papers in this volume are either very
general or outside the probable range of interest of readers of
this journal. A general comment on this series is in order:
after a number of brilliant early volumes, succeeding publi-
cations seem to have become less and less exciting. The one
under review is passable and collects some interesting ma-
terial which is otherwise scattered, but librarians should re-
think their automatic subscriptions to this series, possibly
finding more worthwhile books on which to spend their
money. This journal's reviewer of an earlier volume in this
series expressed a similar caveat.

LIONALD O. WALTER
Faculté de Médecine, Marseille (France) and
Brain Research Institute, University of California,
Los Angeles, Calif. 90024 (U.S.A.)


An introduction to psychopharmacology. — R. H. Reeh and
K. E. Moore (Editors). (Raven Press, New York, 1970,

Twelve authors have contributed to this book, which covers
a remarkably wide range of information. It is organized into
nine chapters. The first deals with the fundamentals of
pharmacology and psychology and is written in an under-
standable fashion so that the reader of average intelligence
but little background will grasp the material easily. This
chapter is followed by a second chapter on the essentials of
neuroanatomy and neurophysiology. Again, a short survey
of pertinent information is presented as background for
the neurological aspects of drug action. The third chapter
reviews many of our current ideas regarding the neuro-
chemical aspects of behaviorally active drugs. It emphasizes
the interaction of drugs with such putative neurotransmitters
as acetylcholine, catecholamines, 5-hydroxytryptamine, and
\(\gamma\)-aminobutyric acid and other amino acids. Chapter 4
is concerned with the pharmacological aspects of drugs affect-
ing the limbic system. Again, the material is presented in an
easy-to-read fashion. The next chapter deals with the electro-
physiological correlates of action of various psychoactive
drugs and of special interest to the electroencephalographer.
There is a brief description of EEG, evoked potentials,
single unit activity and the effects of drugs on sleep. A large
amount of material is covered in a most adequate manner.
Chapter 6 is concerned with the effects of drugs on learning
and memory. In accord with the philosophy of this text, only
the high points are covered. The reader is also given an intro-
duction to the details of animal testing and screening proce-
dures used in evaluating psychotropic drugs. The book ends
with a chapter covering the more clinical aspects of psycho-
pharmacology, including a review of terminology and clas-
ification.

The editors have integrated a vast body of material in
biochemistry, pharmacology, physiology, psychology and
psychiatry. No attempt was made to devote separate chap-
ters to the major classes of psychotropic agents. The lack of
emphasis on hallucinatory agents and drug abuse is inten-
tional.

This book is not intended for the sophisticated researcher
but rather for the introductory student, irrespective of
whether he be in graduate or medical school, in residence or
simply a lay person interested in a knowledge of this subject.
It is a pleasure to see the editors, two former students of the
University of Michigan, develop into mature investigators
and teachers and bring together in a very meaningful manner
a large body of material. This short text is a welcome ad-
dition to anyone's library and serves as a source for the inter-
ested reader to pursue both the pleasure and hazards of the
interdisciplinary endeavor of psychopharmacology.

E. F. DOMINO
University of Michigan,
Ann Arbor, Michigan 48104 (U.S.A.)