assessing the effects of drugs on the central nervous system. This list of guidelines and the rationale for these guidelines constitutes the preamble and first chapter of this book.

Most of the presentations utilize computerized analysis of EEG data. The analog EEG signal for these data has been collected from two to over forty separate scalp recording sites. Some studies examine simple averaged evoked potentials from a limited array of scalp electrodes. Others attempt a toposcopic assessment of various evoked potential components. Many of the papers are based on digitization of the analog EEG signal and derivation of power spectral data using a fast Fourier transform for initial data reduction. The spectrum is then divided into "classical" (alpha, delta, theta, beta) frequency bands and the spectra in these bands is viewed as a probability density distribution. Relative and absolute power of these bands and their variabilities following drug administration are correlated and profiles or "fingerprints" for various classes of drugs and their dose-response-time relationships studied. (Drugs studied include tranquillizers, hypnotics, enkephalins, as well as antidepressant and antiepileptic preparations.) The conclusions based on these EEG statistical manipulations should be viewed with skepticism since complex changes within these frequency bands are difficult to interpret in a meaningful way. In other words the physiological and behavioral correlates of these changes are tenuous at best.

Some studies also utilize toposcopic and temporal profiles of changes in the various parameters with drug administration. A variety of statistical measures are utilized to massage the derived EEG data. These include linear autoregressive modelling of the spectra and identifying spectral peaks by computation from regression coefficients.

A number of the studies reported, correlate computerized EEG data or indexes derived from this data with positron emission tomography data, regional cerebral blood flow data, various measures of vigilence and physiological profiles.

Most of the reported studies in this book are based on human data although some, such as the studies of enkephalins and the antiepileptic effects of benzodiazepine derivatives following cortical application of penicillin are in animals.

A few chapters in the book are concerned with analysis of analog EEG data primarily, relating to sleep studies. One chapter in particular deals with the problems of quantitation of sleep data using the limited number of scalp leads classically applied. The difficulties in automated analysis data using this format are discussed but few solutions are proposed. There is also a section on the use of EEG data in the evaluation of drugs utilized in dementia and the geriatric population.

Introductory remarks in this book suggest it embodies the "state of the art" using EEG data for assessing the effects of drugs on the central nervous system. The diverse approaches to methods of data collection and analysis and their correlations with drug effects points to the need for a better understanding of the physiologic substrate of EEG data before guidelines in this field can be established.

Several of the chapters in this book are written in a clear, concise manner. Many, unfortunately, are confusing by virtue of the complex and convoluted presentation of the methods and/or results. It is clear from reading the papers in this book that mathematical manipulation of EEG data has reached a new peak but the meaning or clinical import of this data is often doubtful. For example, some studies reported claimed to use the EEG data as an index of the therapeutic efficacy of various drugs. This may be partially true with drugs such as hypnotics and antiepileptic drugs but even in these cases requires a careful clinical correlation. Drugs affecting the central nervous system may be associated with EEG changes but these EEG changes are complex and often due to multiple factors including changes in vigilance, mood, personality, etc. Complex computerized EEG data is often used to infer therapeutic efficacy of drugs but seldom is as suitable a parameter as objective clinical improvement measured by other means.

Overall, this book is an interesting volume and highlights the many problems inherent in analysing complex physiological data in a meaningful way.

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"TEST YOUR UNDERSTANDING OF NEUROPHYSIOLOGY". 1st Edition. Murray, R.W. (1983). Cambridge University Press, Cambridge. 291 pages. $62 (Cdn. hardback) $21 (Cdn. paperback).

This fascinating and diabolical book belongs in the library of every self-respecting neurophysiologist. On reading the title, I feared that I would have to wade through another list of trivial multiple-choice questions, oversimplified and unexplained. Instead, I was delighted to find a rigorous, quantitative and experimental approach to neurophysiology, coupled with painstaking explanations. Intended primarily for the senior undergraduate or beginning graduate student, the first part of the book explains the fundamental physics of electricity, devoting special attention to the concepts of capacitance and exponential wave forms, which many biological science students (who have tried to avoid exposure to mathematics) find difficult. There follows a valuable series of chapters on the physical basis of recording techniques, often glossed-over in conventional texts, such as voltage-clamps and sucrose-gap. Instructions for answering problems are followed by a series of 80 problems, the majority of which employ actual experimental data, usually in the form of oscilloscope tracings. Areas covered in the problems include: experimental techniques; membrane potentials; passive electrical properties of membranes; ion-channel conductances; sensory transduction and synaptic transmission. You will need graph paper, ruler and calculator to get the answers, and you can check yours against the comprehensive answers provided in the final section of the book. Here, further explanations allow you to see where you went wrong, or highlight some additional point of interest.

All of us who profess to understand and teach the cellular aspects of neurophysiology should submit to the challenge of this book: for most of us, I believe it would show that remedial work was required. I hope that the publishers will regard this as the first in a series. Similar books on, for example, acid-base or respiratory physiology would do much to clarify the teaching, and accelerate the learning, of medical physiology.

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