

Abnormality; (3) Explanation; (4) Psychopathology and; (5) Diagnosis and Therapy. In the first section are many interesting historical passages, the triad on Kraepelin, Teyler, and Freud being especially well done. Section 2 is a good short description of the various psychiatric syndromes. "Manic-depressive psychosis" and "schizophrenia" are described separately as if they were entirely different entities. Only a few lines express the fact that there are many mixed cases, in other words the very common schizoaffective states are given no emphasis. Chapter 34 on "Mental Hygiene" gives some good practical advice to persons who have relatives suffering from psychopathological states. The book is readable and useful for both medical students and students of psychology. S. C.

### Carbon Dioxide Therapy: A Neurophysiological Treatment of Nervous Disorders

L. J. Meduna

Springfield, Ill., Charles C Thomas, Publisher, 1950, 236 pp., \$5.00.

The recent history of psychiatric therapy includes many forms of violent treatment introduced without apparent rationale; sometimes a justification for the method follows *a posteriori*.

Dr. Meduna's book on the treatment of nervous disorders by "carbon dioxide therapy" is an example of this method of approach. Dr. Meduna's own words describe this best:

"One of my friends told me that he had heard from a German psychiatrist that he, in turn, had heard from someone that three American psychiatrists claimed that by using some gas they had succeeded in resolving catatonic conditions. After excitedly making inquiries, I heard a garbled report of the Americans having injected pure oxygen into the cerebellar cistern. Possessing in those years no knowledge of the English language, I could not read the original reports of Loevenhart, Lorenz, and Waters. So, a number of times, I attempted to resolve catatonic conditions by injecting O<sub>2</sub>. Naturally, I did not succeed. Therefore, I discontinued my experimentation with O<sub>2</sub> . . . a Dr. Cook gave me the first intimation that the Americans were using, not O<sub>2</sub> but CO<sub>2</sub> and that they were administering it by having it inhaled. In 1937 or 1938, I administered CO<sub>2</sub> to catatonic patients with results identical with those which Loevenhart, Lorenz, and Waters had secured."

So much for the methodology. Dr. Meduna, discouraged by the results of this treatment in the psychoses, went on to apply it to psychoneurotic conditions. He warns of disappointment if this method is used for obsessive-compulsive patients and of possible danger in anxiety neuroses, but he reports a definite improvement (defined on page 55 as those cases in which the overt symptoms have disappeared, and on page 79 as "only those cases which have shown at least 75 per cent improvement") in 68 of 100 patients with other types of neurosis. These patients he classifies as suffering from sympathetic reactions (an example is anxiety neurosis), parasympathetic reactions (e.g., spastic colitis, etc.); motor reactions (e.g., stuttering) and "ideo-motor reactions" (e.g., character neurosis, homosexuality, etc.). These classifications are made on the basis of his theory as to their possible mechanisms.

When one comes to the final chapter entitled "A Neurophysiological Theory of the Psychoneuroses," one finds that this is essentially the theory propounded by McCulloch at the 2nd International EEG Congress in Paris in 1949 and at the Royal Society of Medicine in London later in the same year. In brief, this attractive hypothesis envisages a psychoneurosis as a perversion of reflex circuits in such a way that impulses are diverted from their appropriate path into recurrent nervous circuits where they may reverberate indefinitely, or discharge through effector systems inappropriate to the initial stimulus.

It is Dr. Meduna's postulate that this inappropriate circuiting of impulses is due to an abnormally low threshold in the component neurones. On this postulate he builds a tower of theory to account for the ameliorating effects he found with CO<sub>2</sub>. So much emphasis is given to this explanation that one wishes the neurophysiology were a little less shaky.

That the properties of the components of the central nervous system mimic those of peripheral nerves is his primary assumption on which his whole arguments rests, yet there is, in fact, as yet little direct evidence to support this. For example, values for the various properties of nerve, including the periods of supernormal and subnormal excitability, are given here and stated to be those of "average mammalian nerve," whereas the figures given apply only to A fibres—a type which is in the minority in the central nervous system. The explanation for the action of CO<sub>2</sub> on peripheral nerve is based on the argu-

ment that the action potential of nerve is merely a depolarization of the resting membrane potential—a position which has been untenable since 1939, the year of the almost simultaneous demonstration on both sides of the Atlantic of the reversal of potential during the action spike, later followed by Hodgkin's elucidation of the key role played by sodium ions.

One would prefer to have this chapter omitted, for one doubts whether it really helps the non-neurophysiologist (for example the apparent paradox: CO<sub>2</sub> increases threshold, fatigue increases threshold, CO<sub>2</sub> counteracts fatigability, is too complex for the level of explanation given here); the neurophysiologist on the other hand will be irked by the many misstatements (for example: that the local potential may propagate; that the number of after-potential phases in peripheral nerve is restricted to two; that *current* flows in nerves).

The book as a whole would gain by being given a fuller bibliography. Many expected references are missing and one wonders why the many years of work with CO<sub>2</sub> therapy at the Salpêtrière warrants only a footnote.

The manner in which this book is written reveals that one of its aims is to refute the followers of dynamic psychiatry by an argument based on neurophysiological conjecture. One neurophysiologist on reading it is reminded of the words of Sigmund Freud: "I would advise you to set aside your therapeutic ambitions, and try to understand what is happening. When you have done that, therapeutics will take care of itself."

MARY A. B. BRAZIER

#### The Neurologic Examination: Incorporating the Fundamentals of Neuroanatomy and Neurophysiology

Russell N. DeJong

New York, Paul B. Hoeber, Inc., 1950,  
1079 pp., \$16.00.

This beautiful book is the last word in neurologic handbooks for the office of the diagnostician. It is remarkably complete, readable, and well illustrated. The material is arranged in chapters pertaining to certain parts of the examination, such as "The Sensory System" (a difficult chapter especially well done), "The Cranial Nerves," "The Motor System," and "The Reflexes." The anatomical and physiological prefaces to each chapter are important parts of the exposition. "Components of the Motor System" for example,

is a section of 68 pages just preceding "Examination of the Motor System." In these sections the author shows that he bases his diagnosis on a thorough knowledge of fundamental physiology and has left behind him the late and not lamented epoch of the neurologists who thought in syndromes and named them after themselves and their colleagues. The author's basic reading has been wide and critical. Well selected references are given. In the section on cranial nerves the anatomy and physiology of each nerve is described and illustrated in the chapter that also goes into the examination methods and clinical pathology. There is a good outline of mental examinations, with the pertinent remark: "The reliability of the history and of the responses to diagnostic procedures depends upon the patient's intelligence, memory, ability to express himself, emotional reactions and state of consciousness."

Dr. DeJong is Professor of Neurology at the University of Michigan Medical School. His book is highly recommended to all those diagnosticians who may want to look up the meaning of a reflex or brush up difficult subjects like examination for aphasia or extrapyramidal motor activity.

S. C.

#### The Meaning of Anxiety

Rollo May

New York, The Ronald Press, 1950, 376  
pp., \$4.50.

This book presents a digest of many viewpoints regarding anxiety, from those of Descartes, Pascal, Kierkegaard, and Spinoza to Freud and contemporary psychologists and psychoanalysts. After going into literary, philosophical, and cultural aspects of the modern "age of anxiety," quoting Auden's term, the author discusses the biological interpretation of anxiety, particularly referring to Kurt Goldstein's work with brain damage cases. Psychosomatic research in recent years is taken up, as related to anxiety, with a description of some of the work of Alexander, Dunbar, Saul, Mittelman, Wolf and Scharf, and Wolf and Wolff. There follows a review of the various changes in Freud's theories concerning anxiety, culminating in Freud's later work on the "Problem of Anxiety" in which Freud states that anxiety is the source of repression and not the reverse. May thinks Mowrer correct and Freud incorrect in that Mowrer considers anxiety's main source to be in ethical conflicts. In general, May's criticism of Freud concerns