

## BOOK REVIEW

*Colloques internationaux du Centre national de la recherche scientifique. XXVI: Mécanisme de la narcose, Paris, 19-26 avril 1950.* Paper. Pp. 215, with illustrations. Centre national de la recherche scientifique, 45 rue d'Ulm, Paris V°, 1951.

This collection contains 22 papers by American, Canadian, English and French authors, covering the effects of narcotic drugs upon the different phases of cell function. Actually, it does not deal with the mechanism of narcosis or anesthesia, but rather with the different mechanisms of the effects of narcotic drugs, their parallel or divergent actions on diverse biologic systems. It is impossible properly to review the abundance of information contained in these papers. However, I would like to comment on two papers read in English.

The first one, by J. Ferguson, investigates the "Relations between thermodynamic indices of narcotic potency and the molecular structure of narcotics." The relative potency scales of drugs as measured by volume concentration in air, water or blood neglect the multiphasic structure of the affected media. The "thermodynamic activity" gives a proper index of the narcotic action *per se*. The different effects of homologous series of alcohols, hydrocarbons, and so forth, of isomeric branched chains, of haloid substitutions, lose their significance, unless they change the interaction on the cell membrane. Thermodynamic activity can correctly be applied only to ideal solutions in equilibrium with that phase of the cell structure which is the site of the processes causing narcosis. How-

ever, this concept is essential for the understanding of the narcotic action, and it covers to a certain degree both the Meyer-Overton and the Traube theories of narcosis. (P. Gavandau and Kurt H. Meyer in separate French papers thoroughly cover lipid theory and the general functional inhibition by narcotic drugs.)

The other outstanding English paper is by Heilbrunn on "The Colloid Chemistry of Narcosis." It should be considered required reading for anyone who wants to investigate any phase of narcosis.

### Other English papers:

A. Mellwain & L. Buchel: Changes in the phosphorous derivatives of the brain during the action of narcotics *in vivo* and *in vitro*.

J. H. Quastel: Biochemical aspects of narcosis.

Wm. D. McElroy: The reversible denaturation of enzymes by narcotics.

Gunnar Östergreen: Narcotized mitosis and the precipitation hypothesis of narcosis.

These papers thoroughly cover their subjects and implement Heilbrunn's and Ferguson's lectures.

We do not want to imply that the French papers are any less important, simply that those who do not understand French will find these English articles most useful.

The French papers deal mostly with electrophysiologic responses to narcotic drugs (changes of the action potential, mitosis, photogenesis, luminescence, impedance, the dampening of oscillatory discharges, chronaxy and rheobase);

also with physicochemical changes of permeability (inhibition of respiratory enzymes with delayed electron transfer and dissociation of the action of the three cytochromes).

J. B. S. Haldane's paper (in French) deals with "The narcotic effects of indifferent gases" (Nitrogen, Xenon, Argon) under pressure, which cannot be explained by the lipoid absorption hypothesis but which fit easily into Ferguson's thermodynamic concept.

This rather arbitrary selection of

papers shows the vast amount of important facts contained in the book. In this reviewer's opinion, it is a symposium on narcotics rather than on narcosis. However, we cannot sufficiently explain the biologic and philosophic categories of life, death and sleep, and may perhaps never be able to do so; therefore, this collection is as thorough a study and explanation of the essential problems of narcosis as natural science can provide today.

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