drate, Bromoacetal, 3-Bromo-4-Hydroxytoluene, Carbobenzoxy Chloride and Derivatives, 1,1-Cyclobutanedicarboxylic Acid and Cyclobutanecarboxylic Acid, Cyclopropyl Cyanide, *beta*-Di-*n*-Butylaminoethylamine, 2,3-Dihydropyrane, *beta,beta*-Dimethylacrylic Acid, *beta*-Dimethylaminopropiophenone Hydrochloride, *beta*-Ethoxyethyl Bromide, *beta*-Ethoxypropionitrile, Ethyl Benzoylacetate, Ethyl Bromoacetate, Indole, Ketene Diethylacetal, Mandelic Acid, *l*-Menthoxyacetic Acid, l-Menthoxyacetyl Chloride, Mesitaldehyde, *beta*-Methylglutaric Acid, *beta*-Naphthaldehyde, *p*-Nitrobenzoyl Peroxide, Pentamethylene Bromide, *alpha*-Phenylethylamine, *beta*-Phenylethylamine, Phthalaldehydic Acid, Pseudoionone, 1(*alpha*-Pyridyl)-2-Propanol, *trans*-Stilbene, Tetrahydrofurfuryl Bromide, Tetrahydropyrane, Tetraphenylcyclopentadienone, Tetraphenylphthalic Anhydride, Tribiphenylcarbinol, Triphenylcarbinol, Triphenylchloromethane.

The subject index at the close is cumulative in the sense that it covers the contents of Volumes 20, 21, 22 and 23. The cumulative indexes for previous volumes in the series will be found in Collective Volumes 1 and 2. The series is so well established as the leader in its chosen field that no eulogy is necessary on the part of the reviewer.

MARSTON T. BOGERT
COLUMBIA UNIVERSITY

THE MOTHS OF SOUTH AFRICA

The Moths of South Africa. By A. J. T. JANSE. Vol. IV. Part I. (Published by the University of Pretoria, South Africa.)

WHEN my wife and I visited Pretoria in 1931, we called on Dr. Janse, and saw his wonderful collection of moths and his great and completely indexed library of works on Lepidoptera. We discussed the forthcoming revision of "The Moths of South Africa," and since that time the volumes have been coming out at long intervals, under circumstances of increasing difficulty. The present part contains a list of the subscribers, but of these, several are in enemy countries, and others are likely to have dropped out. The principal support has come from the National Research Council of the Union of South Africa, and we note that General Smuts has made a generous subscription.

The part just received (dated November, 1942) is of unusual interest because it deals with the most primitive Lepidoptera known, the Hepialids and the Micropterygids. The former are numerously represented in South Africa, with only one species, *Leto venus,* of large size and comparable with the large Australian forms. The genus *Leto* has also one species in New South Wales and one in the Fiji Islands, a distribution suggestive of great antiquity and approaching extinction. It is interesting to note that *Leto venus* has only been found at Knysna, the locality on the coast of South Africa noted for its relict fauna. The Micropterygids appeared to be absent from South Africa until in 1917 Janse took a single female specimen of a new genus and species at Karkloof, Natal. In 1930 he returned to the same spot and took a male, and these two alone represent the known South African Micropterygid fauna.

In the classification of moths, it has always been usual to place the Micropterygids at the bottom of the scale, as nearest to the caddis-flies, from which the Lepidoptera are supposed to have been derived. But Janse now classes the Hepialids as most primitive on various grounds, but thinks they originated quite apart from the Micropterygids, the Lepidoptera being thus diphyletic.

The book is illustrated by eleven plates of Janse's exquisite drawings of structures and five photographic plates of moths. It is dedicated to the memory of Edward Meyrick of England, who described more Microlepidoptera than any one else and a bibliography of Meyrick's publications is included.

T. D. A. COCKERELL

SPECIAL ARTICLES

ON THE TYPE OF CHOLINESTERASE PRESENT IN BRAIN TISSUE[1]

TWO esterases capable of hydrolyzing acetylcholine have been shown[2] to exist in the animal body: a true cholinesterase, acting exclusively on certain choline esters, and a non-specific enzyme hydrolyzing not only esters of choline but a variety of non-choline esters as well. The true cholinesterase exhibits its maximum activity at low concentrations of acetylcholine (around 3 mg per cent.) and displays increasing inhibition with rising substrate concentrations, whereas the non-specific enzyme exhibits its greatest activity at high concentrations of acetylcholine (above 300 mg per cent.) and displays decreasing activity with diminishing concentrations of this substrate. Since the physiological function of the non-specific enzyme is as yet unknown it has been provisionally named pseudo-cholinesterase.

In view of the differences in activity of the two enzymes at high and low concentrations of acetylcholine, measurements at these two substrate concentrations can serve to indicate whether true cholinesterase

[1] A preliminary report on this investigation, which was aided by a grant from the Banting Research Foundation, was presented before the Toronto Physiological Society on December 2, 1942.

[2] B. Mendel and H. Rudney, *Biochem. Jour.,* 37: 59, 1943.