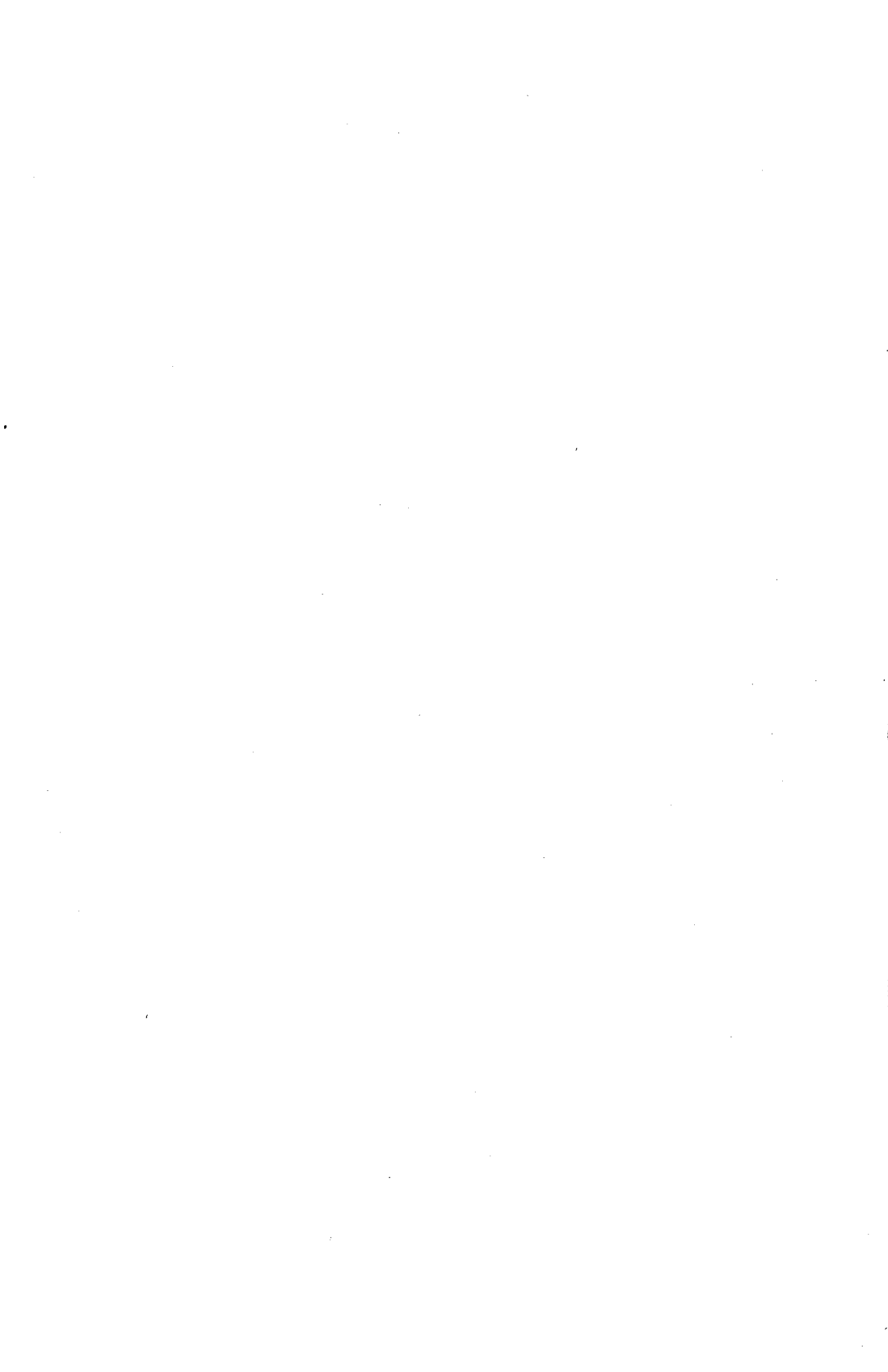
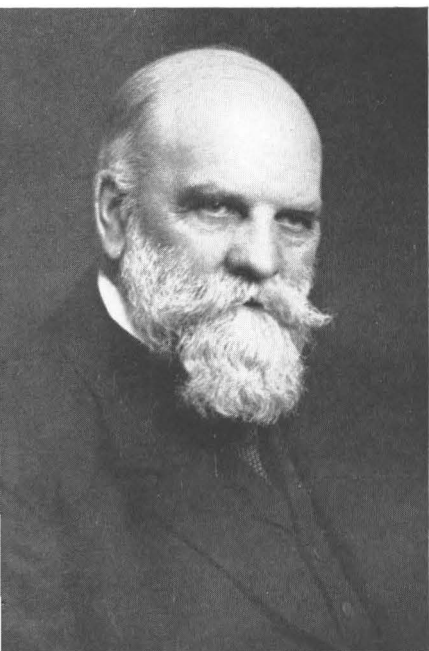


FLEAS
OF
WESTERN NORTH AMERICA



THE PIONEER
SIPHONAPTERISTS



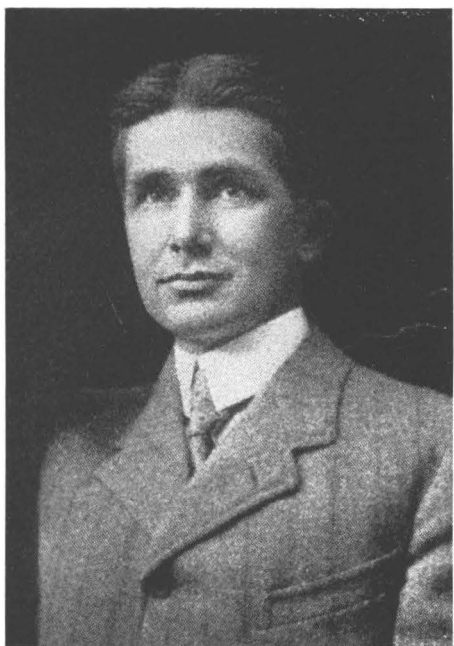
Karl Jordan

Karl Jordan
1861-



N. Charles Rothschild

N. Charles Rothschild
1877-1923



C. F. Baker

Carl (Charles) Fuller Baker
1872-1927

FLEAS

OF

Western North America

THEIR RELATION TO THE PUBLIC HEALTH

By CLARENCE ANDRESEN HUBBARD

FORMERLY HEAD OF THE DEPARTMENT OF BIOLOGY

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DIRECTOR OF THE PRE-MEDIC CURRICULUM

PACIFIC UNIVERSITY, FOREST GROVE, OREGON



1947

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*The writer of this treatise
wishes here
to express a debt of gratitude
to*

*Dr. Karl Jordan, F. R. S.,
Curator
Tring Branch, British Museum
Hertz, England*

*Foremost student of today in the field of
Siphonaptera
and
in charge of
The N. C. Rothschild Collection of Fleas,
the greatest collection of its kind
in the world.*

*Dr. Jordan is truly the friend and willing helper
of the beginner in the field of the study of fleas.*

*To him the writer dedicates this treatise
on the fleas of the
Great Western Country
of
North America*

PREFACE

"Fleas of Western North America"—Where does the West begin? This is hard to say, but this treatise is about the fleas, their hosts and their relation to the public health in a zone west of the 100th meridian which includes the eastern approaches of the Rocky Mountains, the Rocky Mountains, the Great Basin, the Great Cascade-Sierra chain of mountains, the valleys between the Cascade-Sierras and the Coast Range, the Coast Range and the Pacific Slope.

In this vast territory of North America 66 genera of fleas are represented and some few more than 230 species and subspecies. When compared to the 33 genera and some 55 species known from east of the 100th meridian, the West is indeed a flea collector's paradise. The fleas of the West become tremendously more important when one realizes that among their numbers are species which are very efficient in transferring sylvatic plague from host to host, a plague which if expressed in man becomes bubonic plague. Certain of these fleas are also known to be able to transmit murine typhus, the type found in North America. Some evidence seems to point toward ability in some of these insects to transmit tularemia. Fleas often become a nuisance in homes, tormenting particularly persons allergic to these insects. On farms fleas may seriously annoy poultry and pigs. In many fleas examined, bladderworms, the cysticercus stage of tapeworms, can be found. Certain fleas, then, act as intermediate host for tapeworms. For these reasons fleas are of great medical importance.

This treatise is built around the large personally gathered collection of fleas of the writer. Thousands of personal records come from all over Oregon, Washington, northern California, Nevada, Idaho, southern Utah, and Arizona. Gus Augustson has sent many specimens to the writer for study from southern California. M. A. Stewart has loaned materials from central California. George Holland has contributed from British Columbia. Jellison, Kohls and Mills have loaned the writer fleas from Montana. Stanford of Utah State College and Sam McCampbell of Colorado State College made available to the writer types and other material from Utah, and Colorado. Good and Prince of the Plague Suppressive Measures Laboratory at San Francisco have been very lenient in loans.

The administration of Pacific University, both under Dr. John F. Dobbs and Dr. Walter Geirsbach, is to be thanked for allowing the writer continual use of Pacific University Bulletin through 15 papers on western fleas, which in a way form the nucleus of this work.

All American students of fleas are indebted to Dr. Karl Jordan of the British Museum, Tring, England, for his help and patience.

Thanks are here extended to the following three noted western mammalogists for identification of rare western mammalian hosts: Stanley Jewett of Portland, Oregon, Alex Walker of Tillamook, Oregon, Robert Holdenried of San Francisco, California.

The staff of the entomology department of Oregon State College is here thanked for helpful suggestions. The members are Drs. Don C. Mote, H. A. Scullen, and W. J. Chamberlin.

Although including records from the following western check lists of fleas, the author has not been able to check their validity.

Augustson: Preliminary Records and Discussion of Some Species of Siphonaptera from the Pacific Southwest, 1943.

Jellison and Kohls: Siphonaptera: The Fleas of Alaska, 1939.

Jellison, Kohls and Mills: Species and Host List of Montana Fleas, 1943.

Mail and Holland: Siphonaptera of Western Canada, 1939.

Stanford: More Utah Siphonaptera, 1944.

Svihla: A List of the Fleas of Washington, 1941.

In order that students of fleas may study actual specimens of north-western fleas at first hand the author is establishing a series of 25 depositories, each containing 90 northwest species, to be deposited in the United States National Museum, the British Museum, California Academy of Sciences, other museums and entomology departments of universities evenly scattered over this country.

The author wishes to thank Pomona College Library for the portrait of Dr. Carl Baker; Dr. Karl Jordan for the portraits of Jordan and Rothschild; Dr. C. F. W. Muesebeck and the United States Public Health Service for the portrait of Carroll Fox; Dr. R. R. Parker of the Rocky Mountain Laboratory for portraits of Jellison and Kohls.

C. A. H.

Portland, Oregon
July, 1946

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