

5-27-1949

A Study of Fleas of Rodents in the Albuquerque, New Mexico, Area

Lelia Ann Williams

Follow this and additional works at: https://digitalrepository.unm.edu/biol_etds



Part of the [Biology Commons](#)

Recommended Citation

Williams, Lelia Ann. "A Study of Fleas of Rodents in the Albuquerque, New Mexico, Area." (1949). https://digitalrepository.unm.edu/biol_etds/274

This Thesis is brought to you for free and open access by the Electronic Theses and Dissertations at UNM Digital Repository. It has been accepted for inclusion in Biology ETDs by an authorized administrator of UNM Digital Repository. For more information, please contact disc@unm.edu.

UNIVERSITY OF NEW MEXICO-GENERAL LIBRARY



A14423 424307

378.789

Un 3 Owil

1949

cop. 2

Williams — Fleas of Rodents in the Albuquerque Area

THE LIBRARY
UNIVERSITY OF NEW MEXICO



Call No.
378.789
Un30w11
1949
cop.2

Accession
Number
141121

DATE DUE

JAN 13 1977

RECD UNIV JAN 12 77

JAN 12 1977

May 21 1984

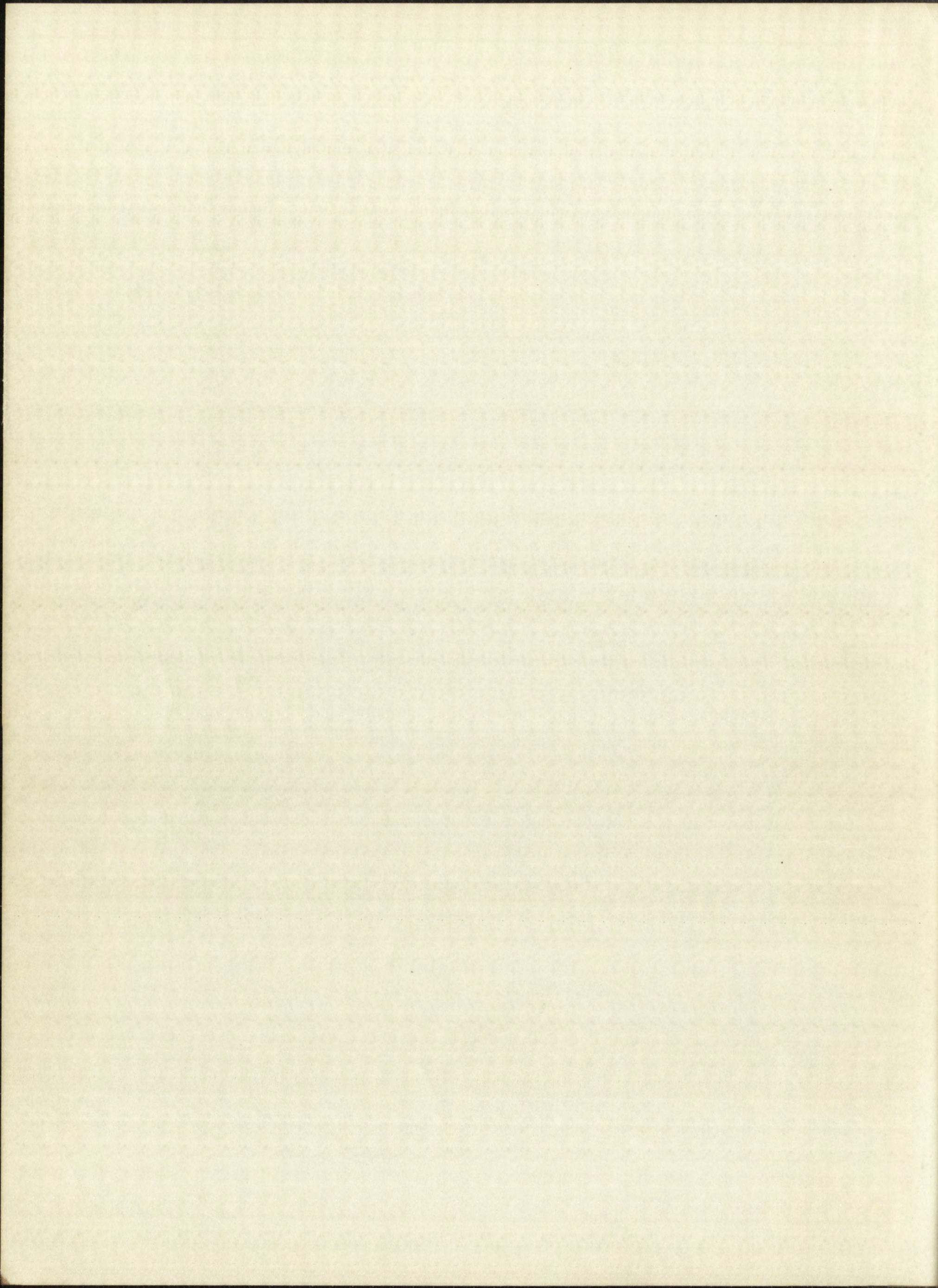
65925

JUL 07 2004

JUN 10 2004

GAYLORD

PRINTED IN U.S.A.



UNIVERSITY OF NEW MEXICO LIBRARY

MANUSCRIPT THESES

Unpublished theses submitted for the Master's and Doctor's degrees and deposited in the University of New Mexico Library are open for inspection, but are to be used only with due regard to the rights of the authors. Bibliographical references may be noted, but passages may be copied only with the permission of the authors, and proper credit must be given in subsequent written or published work. Extensive copying or publication of the thesis in whole or in part requires also the consent of the Dean of the Graduate School of the University of New Mexico.

This thesis by Lelia Ann Williams.....
has been used by the following persons, whose signatures attest their acceptance of the above restrictions.

A Library which borrows this thesis for use by its patrons is expected to secure the signature of each user.

NAME AND ADDRESS

DATE

MANUSCRIPT LABEL

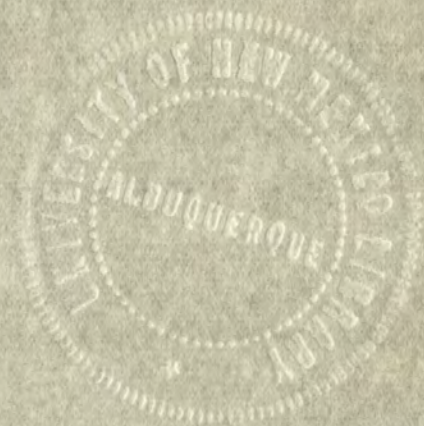
Unpublished thesis submitted for the degree of Master of Arts and deposited in the University of New Mexico Library for the purpose of being open for inspection and citation by other persons. The rights of the author in his manuscript are hereby acknowledged and it is understood that no part of the manuscript may be reproduced without the written permission of the author. Proper credit must be given in any publication or work. Excessive copying or publication of the thesis without the permission of the author is prohibited. The University of New Mexico Library is not responsible for the loss or damage of the manuscript.

This thesis by _____ has been used by the following _____ acceptance of the above statement.

A library which contains this thesis for reference is expected to secure the signature of the author.

NAME AND ADDRESS _____

A STUDY OF FLEAS OF RODENTS IN THE
ALBUQUERQUE, NEW MEXICO, AREA



A Thesis
Presented to
the Faculty of the Biology Department
University of New Mexico

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Lelia Ann Williams
June 1949



THE UNIVERSITY OF TENNESSEE

DEPARTMENT OF AGRICULTURE

This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

Paul L. Stolar

DEAN

May 27- 1949
DATE

A STUDY OF FLEAS OF RODENTS IN THE
ALBUQUERQUE, NEW MEXICO, AREA

by

Lelia Ann Williams

Thesis committee

C. Clayton Hoff
CHAIRMAN

William V. Koster

Howard J. Pittner

This thesis, submitted in partial fulfillment of the requirements for the degree of
Master of Science, has been accepted by the Graduate Committee of the
University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

James H. ...

Aug 21 - 1943

James H. ...

James H. ...

James H. ...
James H. ...
James H. ...

378,789
Un 30 wil
1949
cop. 2

ACKNOWLEDGMENTS

This problem was suggested by Dr. C. Clayton Hoff, under whose direction the research was done. I wish to express my appreciation for his helpful criticisms during the course of this study and in the preparation of this thesis. The host animals were obtained from collections made by Dr. William J. Koster, Dr. C. Clayton Hoff, and Mr. Robert DeWitt Ivey, and I wish to thank them for permitting me to use their collections. The nests were collected by Dr. C. Clayton Hoff. I wish to thank Mr. Ferd Sumrell for fleas from ground squirrels collected by him. I am grateful to Dr. William J. Koster and Mr. Robert DeWitt Ivey for identification of host animals. The photographic plates were prepared by Dr. Douglas G. Humm.

A sincere expression of gratitude is extended to Dr. Frank M. Prince of the Plague Suppressive Measures Laboratory, San Francisco, California, and to Major Robert Traub of the Army Medical Center, Washington, D. C., for checking the species determinations of fleas in my collections.

141121

ACKNOWLEDGMENTS

This problem was suggested by Dr. C. Clayton Hoff, under whose direction the research was done. I wish to express my appreciation for his helpful criticisms during the course of this study and in the preparation of this thesis. The host animals were obtained from collections made by Dr. William J. Koster, Dr. C. Clayton Hoff, and Mr. Robert Bewitt Ivey, and I wish to thank them for permitting me to use their collections. The nests were collected by Dr. C. Clayton Hoff. I wish to thank Mr. Ford Sumrell for flies from ground squirrels collected by him. I am grateful to Dr. William J. Koster and Mr. Robert Bewitt Ivey for identification of host animals. The photographic plates were prepared by Dr. Douglas G. Humm.

A sincere expression of gratitude is extended to Dr. Frank M. Prince of the Plague Suppressive Measures Laboratory, San Francisco, California, and to Major Robert Trumb of the Army Medical Center, Washington, D. C., for checking the species determinations of flies in my collections.

1941

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION.	1
II. HISTORY	2
III. MATERIAL AND METHODS.	3
IV. TAXONOMIC CONSIDERATION	5
V. SUMMARY	52
BIBLIOGRAPHY.	53
EXPLANATION OF FIGURES.	54
FIGURES	56

TABLE OF CONTENTS

CHAPTER	
I.	INTRODUCTION
II.	HISTORY
III.	MATERIAL AND METHODS
IV.	TAXONOMIC CONSIDERATION
V.	SUMMARY
	BIBLIOGRAPHY
	EXPLANATION OF FIGURES
	FIGURES

TABLE OF FIGURES

FIGURE		PAGE
1-4	<u>Anomiopsyllus novomexicanensis</u> , new species.	56
5-6	<u>Megarthroglossus bisetis</u> Jordan and Rothschild, 1915	56
7-10	<u>Meringis nidi</u> , new species	56-57
11-14	<u>Proximorectofrontia unica</u> , new genus and new species	57

TABLE OF FIGURES

FIGURES

11-4	<u>Amphispiza novaeboracensis</u> , new species
12-6	<u>Megascops asio</u> <u>bicolor</u> <u>torquatus</u> , new species
13-10	<u>Merula migratoria</u> , new species
14-12	<u>Protonotaria</u> <u>torquatus</u> , new species
	species

CHAPTER I

INTRODUCTION

In spite of the fact that Pasturella pestis, the etiological organism of plague, has been reported from fleas and rodents in eleven counties of New Mexico, our knowledge of the fleas of the State has remained very incomplete and extremely meager. Recognizing the marked deficiency regarding our information of the Siphonaptera of New Mexico, I began in the spring of 1948 an investigation that has resulted in adding considerable information to our knowledge of the flea population of our State.

The present study includes a report of 36 species and subspecies of fleas recovered from several nests and by means of examinations of over 137 rodents belonging to 12 species and subspecies. In addition, it has appeared advisable to outline the characteristics used in recognition of the five families and the 27 genera of fleas now recorded from New Mexico. As an aid for future work I have given a brief discussion of each species now known from the State with complete descriptions and drawings of one genus and three species previously unknown in the literature.

CHAPTER I

INTRODUCTION

In spite of the fact that Parasitology has been a well established branch of science, the study of parasites of man and animals has been comparatively neglected. In eleven countries of New Mexico, and especially in the State of Arizona, the State has remained very incomplete in its knowledge of the parasites of man and animals. Recognizing the marked deficiency regarding the history of the parasites of New Mexico, I began in the year 1910 an investigation that has resulted in a number of publications and a number of our knowledge of the parasites of man and animals. The present study includes a report on the parasites of man and animals of those recovered from several sources and by means of examinations of over 150 rodents belonging to the genera Peromyscus and Neotoma. In addition, it has appeared in the form of a paper in the Annals of the Entomological Society of America. In the characterization used in this study, the genera Peromyscus and Neotoma are now recorded from Arizona and the 27 genera of those now recorded from Arizona. For future work I have given a brief description of the species now known from the State with certain remarks on the drawings of one genus and three species and their distribution in the literature.

CHAPTER II

HISTORY

Hubbard in his book, Fleas of Western North America, published in 1947, reports 21 species and subspecies of fleas from New Mexico. These flea species are all confined to rodents except one skunk flea, one bat flea, and the stick-tight flea Echidnophaga gallinacea (Westwood), which is found on a wide variety of domestic and wild animals and birds. I have been unable to find any New Mexican flea records that have not been reported in Hubbard's treatise.

The United States Public Health Service has been studying fleas from New Mexico for several years but their results are not as yet published. A comparison of my studies with the partly completed and unpublished studies of this government Agency indicates that the present study does not duplicate, but rather supplements, the work of the United States Public Health Service.

Due to the impracticability, or even the impossibility, of readily securing all of the scattered papers published prior to the time of Hubbard's compilation, it has been thought advisable to concentrate on the body or text of this report rather than on a history of workers previously reporting on the flea fauna of New Mexico.

HISTORY

Hubbard in his book, Flora of Mexico, published in 1947, reports 21 species and subspecies of flies from New Mexico. These flies are all recorded as occurring except one known fly, one bat fly, and one black-bellied fly (Sciomyza californica (Westwood)), which is found in a wide variety of domestic and wild animals and birds. I have been unable to find any New Mexican flies recorded from birds and mammals reported in Hubbard's treatise.

The United States Public Health Service has been studying flies from New Mexico for several years but until recently has not as yet published a comparative list of flies from the country completed and unpublished studies of this government agency indicate that the present study does not duplicate, but rather supplements, the work of the United States Public Health Service.

Due to the impracticability, or even the impossibility, of readily ascertaining all of the scattered papers published prior to the time of Hubbard's compilation, it has been necessary to be able to concentrate on the body or part of this study rather than on a history of workers previously working on the flies of New Mexico.

CHAPTER III

MATERIAL AND METHODS

The rodent hosts examined during the course of this study were captured by both snap and live trapping. Each host captured was placed as soon as collected in a cellophane bag and transported to the laboratory. In the event that it was impossible to examine the rodent immediately, the bag containing the rodent was placed in the refrigerator. Before examination, a small piece of absorbent cotton saturated with either ether or chloroform was placed in the cellophane bag with the rodent in order to immobilize the fleas. The rodent at the time of examination was shaken from the bag into a white pan. Any debris found in the bag was also shaken into the pan since fleas often leave the hosts and are found in the debris at the bottom of the bag. The rodent was then combed with a fine-toothed comb in order to remove the fleas that might still remain on the animal. The fleas were picked up with either a camel-hair brush moistened in alcohol or with a dissection needle bent and flattened at the end. The fleas were preserved in 80% ethyl alcohol.

Fleas were secured from rodent nests and food stores by means of Berlese funnels. The nest and food materials were spread on the inverted funnels and the fleas, in reacting negatively to light and heat, fall into a jar of 80% alcohol at the apex of the funnel.

In preparing the fleas for study, they are moved from the alcohol, washed briefly in water, and then placed in a 10% solution of either potassium or sodium hydroxide. A convenient container for the caustic is a small test tube, especially since successful treatment of the flea is more rapidly carried out if the caustic is kept hot. With this in mind, it is frequently advantageous to place one or more test tubes with their contained fleas in a water bath. Treatment with caustic should continue until the fleas become cleared. The fleas are then transferred to a watch glass containing water and the contents of the body pressed out by means of a needle bent and flattened at the end. After this operation, the fleas are treated either with water or a weak acid solution to replace the caustic and then dehydrated by being placed in beechwood creosote. After dehydration in beechwood creosote, the fleas are mounted in Canada balsam.

In preparing the tissue for study, they are first
the alcohol, washed rapidly in water, and placed in a 10%
solution of either potassium or sodium hydroxide. The tissue is
contained for the period of a week in this solution, and then
transferred to a 10% solution of the tissue in water. This is
the tissue is kept for a period of a week in this solution, and
advantages to place and to place and to place and to place
and tissue in a water bath. The tissue is then placed in a
until the tissue is completely cleared. The tissue is then
to a water glass containing water and the tissue is at the bottom
pressed out by means of a glass rod and the tissue is then
After this operation, the tissue is cleared of water and
on a weak acid solution to remove any remaining fat and then
by being placed in a weak acid solution. The tissue is then
incubated overnight, the tissue is washed in distilled water.

CHAPTER IV

TAXONOMIC CONSIDERATION

During the course of my survey of the fleas found associated with rodents of the Albuquerque region, I studied the fleas from more than 137 animals, six nests, and one food store. A list of the numbers of each kind of rodent, rodent nest, and food store, along with the kinds of fleas associated with each species or subspecies of rodent is given in the list below. After the name of each kind of flea, I have inserted the number of females (F) and the number of males (M) secured from the hosts indicated.

A LIST OF HOSTS, NESTS, AND FOOD STORAGE

Family SCIURIDAE

Citellus variegatus grammurus (Say); one examined

Hoplopyllus anomalus (Baker); 20 F, 12 M

Diamanus montanus (Baker); 14 F, 10 M

Echidnophaga gallinacea (Westwood); 6 F, 1 M

Citellus spilosoma major (Merriam); 106 examined

Thrassis pansus (Jordan); 95 F, 61 M

Echidnophaga gallinacea (Westwood); 27 F, 1 M

Family MURIDAE

Mus musculus Linnaeus; one examined

No fleas present.

Family CRICETIDAE

Onychomys leucogaster melanophrys Merriam; three examined

Meringis parkeri Jordan; 1 F, 1 M

Meringis, species undetermined; 3F

Onychomys leucogaster (Wied); five examined

Echidnophaga gallinacea (Westwood); 1 F

Thrassis pansus (Jordan) ; 1F

Peromyscus maniculatus rufinus (Merriam); one examined

No fleas present

Peromyscus maniculatus; eight examined

(?) Malaraeus sinomus (Jordan); 2 F

Monopsyllus wagneri (Baker), subspecies undetermined;

5 F

Megarthroglossus bisetis Jordan and Rothschild; 1 M

Peromyscopsylla hesperomys (Baker); 1 F, 1 M

Phalacropsylla allos Wagner; 1 F

Peromyscus nasutus (Allen); one examined

Stenoponia americana (Baker); 1 F

Neotoma micropus canescens Allen; one examined

Orchopeas sexdentatus Baker, subspecies undetermined;

1 F, 1 M

Meringis parkeri Jordan; 1 F

Neotoma micropus canescens Allen, nests; four examined

Anomiopsyllus novomexicanensis, new species; 730 F,

Amniotylus novaezealandiae, new species; 730 ♀, Nest; four examined

Merula barki Jordan; 1 ♀

1 ♀, 1 M

Orchopus eximius Baker, new species; undetermined; Neotoma mitchellii Allen; one examined

Stenopoda americana (Baker); 1 ♀

Pteropus nasutus (Allen); one examined

Phaenocarpa alba Wagner; 1 ♀

Pteromyia hesperus (Baker); 1 ♀, 1 M

Merula barki Jordan and Kitchin; 1 M

Monocypus wagneri (Baker), new species; undetermined;

(?) Malurus sinensis (Jordan); 2 ♀

Pteromyia maculipes; eight examined

No flies present

Pteromyia maculipes (Baker); one examined

Thrasia parva (Jordan); 1 ♀

Phidippus pallidus (Westwood); 1 ♀

Gryllus leucophaea (Wied); five examined

Merula, species undetermined; 3 ♀

Merula barki Jordan; 1 ♀, 1 M

Oxychilus leucophaea (Baker); three examined

Family CRICETIDAE

Orchopeas sexdentatus Baker, subspecies undetermined; 1 F, 2 M

Megarthroglossus bisetis Jordan and Rothschild;
10 F, 10 M

Neotoma micropus canescens Allen; one nest and numerous animals (Collected by Mr. Ferd Sumrell, who kept no account of the number of hosts examined.)

Anomiopsyllus novomexicanensis, new species; 4 F,
16 M

Orchopeas sexdentatus Baker, subspecies undetermined; 32 F, 15 M

Atyphloceras echis Jordan and Rothschild; 42 F, 15 M

Megarthroglossus bisetis Jordan and Rothschild; 2 F,
6 M

Epitedia stanfordi Traub; 1 F

Meringis parkeri Jordan; 1 M

Family HETEROMYIDAE

Dipodomys ordii (Woodhouse); nine examined

Thrassis campestris Prince; 1 M

Meringis dipodomys Kohls; 2 M

Dipodomys spectabilis Merriam, nest; one examined

Thrassis campestris Prince; 2 F, 3 M

Meringis nidi, new species; 70 F, 28 M

Proximorectofrontia unica new genus and new species;
8 F, 8 M

Proxycoriscus tricus new genus and new species;

Meloida nidi, new species; 70 ♀, 28 M

Thrasia campestris Prinze; 2 ♀, 3 M

Dipodomys agrestalis Merrill, new; one examined

Meloida dipodomys Kohls; 2 M

Thrasia campestris Prinze; 1 M

Dipodomys ordii (Woodhouse); nine examined

Family HETEROMYIDAE

Meloida parvula Jordan; 1 M

Meloida stanfordi Tramp; 1 ♀

Meloida tricus Jordan and Rothschild; 2 ♀, 1 M

Meloida tricus Jordan and Rothschild; 2 ♀, 1 M

Atyplocera sebia Jordan and Rothschild; 42 ♀, 12 M

Meloida; 32 ♀, 12 M

Orchopoda sextentata Baker, subspecies under-

12 M

Anomalopis novaezealandiae, new species; 4 ♀,

account of the number of hosts examined.)

animals (Collected by Mr. Ford Smutell, who kept no

Neotoma microgaster canescens Allen; one host and numerous

10 ♀, 10 M

Meloida tricus Jordan and Rothschild;

1 ♀, 2 M

Orchopoda sextentata Baker, subspecies under-

Dipodomys spectabilis Merriam, food store; one examined

Thrassis campestris Prince; 1 F

Meringis nidi, new species; 8 F, 3 M

Perognathus flavus flavus Baird; one examined

No fleas present.

The fleas secured from these rodents, nests, and food storage brings to a total of five families, 27 genera, and 36 species and subspecies of fleas known from New Mexico. These fleas are systematically given in the following list. Species or subspecies that have been reported previously from New Mexico are indicated in the list by the letter a immediately preceding the species or subspecies name. The species and subspecies occurring in my collection are indicated by the letter b. Thus any species or subspecies previously reported for New Mexico and also found in the present material will be preceded in the list by both the letter a and b.

A LIST OF FLEAS REPORTED FROM NEW MEXICO

Family HECTOPSYLLIDAE Baker, 1904

Genus Echidnophaga Olliff, 1886

ab Echidnophaga gallinacea (Westwood, 1875)

Family PULICIDAE Stephens, 1829

Genus Xenopsylla Glinkiewicz, 1907

a Xenopsylla cheopis (Rothschild, 1903)

Dipodomys spectabilis Merriam, food stores; one examined

Thomomys campestris Fernald; 1 ♀

Neotoma albigula, new species; 8 ♀, 3 M

Peromyscus flavus Baird; one examined

No flies present.

The flies secured from these rodents, nests, and food stores bring to a total of five families, 27 genera, and 36 species and subspecies of flies known from New Mexico. These flies are systematically given in the following list. Species or subspecies that have been reported previously from New Mexico are indicated in the list by the letter a immediately preceding the species or subspecies name. The species and subspecies occurring in my collection are indicated by the letter b. Thus any species or subspecies previously reported from New Mexico and also found in the present material will be preceded in the list by both the letter a and b.

A LIST OF FLIES REPORTED FROM NEW MEXICO

Family HORTICOLAIDAE Baker, 1904

Genus Horticola Olfert, 1886

H. californica (Westwood, 1835)

Family PULICIDAE Stephens, 1829

Genus Xenopeltis Glinkiewicz, 1907

X. albigula (Rothschild, 1903)

Genus Hoplopsyllus Baker, 1905

ab Hoplopsyllus anomalus (Baker, 1904)

Genus Cediopsylla Jordan, 1925

a Cediopsylla inaequalis inaequalis (Baker, 1895)

Genus Anomiopsyllus Baker, 1904

b Anomiopsyllus novomexicanensis, new species

Family DOLICHOPSYLLIDAE Baker, 1905

Genus Orchopeas Jordan, 1933

a Orchopeas sexdentatus neotomae Augustson, 1943

b Orchopeas sexdentatus Baker, 1904, subspecies
undetermined

Genus Opisodasys Jordan, 1933

a Opisodasys robustus (Jordan, 1925)

Genus Thrassis Jordan, 1933

ab Thrassis pansus (Jordan, 1925)

a Thrassis fetus (Jordan, 1925)

a Thrassis aridis Prince, 1944

b Thrassis campestris Prince, 1944

Genus Diamanus Jordan, 1933

ab Diamanus montanus (Baker, 1895)

Genus Opisocrostis Jordan, 1933

a Opisocrostis hirsutus (Baker, 1895)

Genus Oropsylla Wagner and Joff, 1926

a Oropsylla idahoensis (Baker, 1904)

Genus Hoplostethus Baker, 1905

Hoplostethus anomalus (Baker, 1904)

Genus Cadiopsylla Jordan, 1933

Cadiopsylla insularis (Baker, 1905)

Genus Anomalopsylla Baker, 1904

Anomalopsylla novomexicanensis, new species

Family DOLICHOPTERYLLIDAE Baker, 1905

Genus Orophias Jordan, 1933

Orophias exdentatus (Baker, 1905)

Orophias exdentatus Baker, 1905, synonym

undetermined

Genus Ophiodon Jordan, 1933

Ophiodon robustus (Jordan, 1925)

Genus Thrasia Jordan, 1933

Thrasia panama (Jordan, 1925)

Thrasia lotus (Jordan, 1925)

Thrasia arida Prince, 1944

Thrasia carterii Prince, 1944

Genus Dianthus Jordan, 1933

Dianthus montanus (Baker, 1905)

Genus Opisocottus Jordan, 1933

Opisocottus hirsutus (Baker, 1905)

Genus Oreopsylla Wagner and Jell, 1936

Oreopsylla isabellae (Baker, 1904)

Genus Dactylopsylla Jordan, 1929

a Dactylopsylla neomexicana Prince, 1945

Genus Malaraeus Jordan, 1933

b (?) Malaraeus sinomus (Jordan, 1925)

Genus Nosopsyllus Jordan, 1933

a Nosopsyllus fasciatus (Bosc, 1801)

Genus Monopsyllus Kolenati, 1857

b Monopsyllus wagneri (Baker, 1904); subspecies
undetermined

Genus Pleochaetis Jordan, 1933

a Pleochaetis sibynus (Jordan, 1925)

Family HYSTRICHOPSYLLIDAE Tiraboschi, 1904

Genus Atyphloceras Jordan and Rothschild, 1915

b Atyphloceras echis Jordan and Rothschild, 1915

Genus Megarthroglossus Jordan and Rothschild, 1915

ab Megarthroglossus bisetis Jordan and Rothschild, 1915

Genus Stenistomera Rothschild, 1915

a Stenistomera alpina (Baker, 1895)

Genus Epitedia Jordan, 1938

a Epitedia wenmanni (Rothschild, 1904)

b Epitedia stanfordi Traub, 1944

Genus Meringis Jordan, 1937

a Meringis arachis (Jordan, 1929)

b Meringis dipodomys Kohls, 1938

b Meringis parkeri Jordan, 1937

b Meringis nidi, new species

Genus Pharyngodon Jordan, 1922

a Pharyngodon proterodon Jordan, 1922

Genus Malacosteus Jordan, 1922

b (?) Malacosteus alpinus Jordan, 1922

Genus Macropodus Jordan, 1922

a Macropodus chirocentrus Jordan, 1922

Genus Macropodus Jordan, 1922

b Macropodus chirocentrus Jordan, 1922

undetermined

Genus Plecogaster Jordan, 1922

a Plecogaster alpinus Jordan, 1922

Family HYSTIROCHOPYLLIDAE Hildebrand, 1922

Genus Aspidochelone Jordan and Hildebrand, 1922

b Aspidochelone alpinus Jordan and Hildebrand, 1922

Genus Macrathrochelone Jordan and Hildebrand, 1922

a Macrathrochelone alpinus Jordan and Hildebrand, 1922

Genus Stenistius Hildebrand, 1922

a Stenistius alpinus Hildebrand, 1922

Genus Epididius Jordan, 1922

a Epididius alpinus Jordan, 1922

b Epididius alpinus Jordan, 1922

Genus Morone Jordan, 1922

a Morone alpinus Jordan, 1922

b Morone alpinus Jordan, 1922

c Morone alpinus Jordan, 1922

d Morone alpinus Jordan, 1922

e Morone alpinus Jordan, 1922

b Meringis, species undetermined

Genus Peromyscopsylla I. Fox, 1939

b Peromyscopsylla hesperomys (Baker, 1904)

Genus Phalacropsylla Rothschild, 1915

b Phalacropsylla allos Wagner, 1936

Genus Leptopsylla Jordan and Rothschild, 1911

a Leptopsylla segnis (Schonherr, 1811)

Genus Proximorectofrontia, new genus

b Proximorectofrontia unica, new species

Genus Stenoponia Jordan and Rothschild, 1911

b Stenoponia americana (Baker, 1899)

Family ISCHNOPSYLLIDAE Wahlgren, 1907

Genus Sternopsylla Jordan and Rothschild, 1921

a Sternopsylla carlsbadensis Ewing, 1940

HECTOPSYLLIDAE Baker, 1904

Members of this family can be recognized by a reduced thorax, the combined tergites being shorter than the first abdominal tergite. One genus and one species has been reported from New Mexico. This species is represented in my collections.

Echidnophaga Olliff, 1886

This genus is characterized by the presence of a group of spinelets on the inner surface of coxa III. A single species of the genus is recorded from Western North America.

THE UNIVERSITY OF CHICAGO

James L. Thompson, Jr. and Robert L. Thompson

Winnipeg, Manitoba, Canada

Members of this family are very common in the mountains of the Himalayas.

Echidnophaga gallinacea (Westwood, 1875)

The males of this species can be recognized by the clasper having two processes, a longer one with several bristles on the anterior margin and a smaller one. The finger is rounded apically and curved toward the smaller process and is armed with one long bristle and several smaller ones. The females of this species can be recognized by a spermatheca that is broader ventrally than dorsally.

This species is called the tropical hen flea and is very common on chickens, dogs, and cats in the southern and southwestern parts of the United States. It also occurs on a wide variety of wild birds and wild mammals. In my collections, there are records as follows: six females and one male from one Say's rock squirrel (Citellus variegatus grammurus) collected at Juan Tabo Recreation area 15 miles northeast of Albuquerque on June 26, 1948; 24 females and one male from 95 large spotted ground squirrels (Citellus spilosoma major) collected two miles northwest of the University of New Mexico during the period from March 26 to July 14, 1948; three females from one large spotted ground squirrel (Citellus spilosoma major) collected one and one-half miles northwest of the University of New Mexico on July 25, 1948; one female from two grasshopper mice (Onychomys leucogaster) collected on the mesa east of Albuquerque on September 25, 1948.

Schizothorax californicus (Westwood, 1875)

The males of this species can be recognized by the clasp-
er having two processes, a longer one with several bristles on
the anterior margin and a smaller one. The finger is rounded
apically and curved toward the smaller process and is armed with
one long bristle and several smaller ones. The females of this
species can be recognized by a spermatheca that is broader ven-
trally than dorsally.

This species is called the tropical form of *S. californicus* and is very
common on chickens, dogs, and cats in the southern and south-
western parts of the United States. It also occurs on a wide
variety of wild birds and wild mammals. In my collection,
there are records as follows: six females and one male from
one Bay's took squirrel (*Sciurus arizonae*) collected
at Juan Tabo Reservation area 15 miles northwest of Albuquerque
on June 26, 1948; 24 females and one male from 95 large spotted
ground squirrels (*Citellus richardsoni*) collected two miles
northwest of the University of New Mexico during the period from
March 26 to July 14, 1948; three females from one large spotted
ground squirrel (*Citellus richardsoni*) collected one and
one-half miles northwest of the University of New Mexico on
July 25, 1948; one female from two grasshopper mice (*Onychomys*
leucogaster) collected on the mesa east of Albuquerque on
September 25, 1948.

Previously this species was reported by Hubbard (1947, 51) for New Mexico as follows: "The writer has specimens of this flea taken off ground squirrels at Sherman, Grant County, New Mexico, and it is reported off Alexandrian and Norwegian rats from this state."

PULICIDAE Stephens, 1829

Members of this family can be recognized by the absence of a dorsal sulcus and the presence of a single row of bristles on each abdominal tergite. These same characters are found in the genus Megarthroglossus Jordan and Rothschild, 1915, of the family HYSTRICHOPSYLLIDAE, but the genus Megarthroglossus can be recognized by the pronotal comb and the vestigial eyes. With the exception of the genus Anomiopsyllus Baker, 1904, members of the family PULICIDAE have well-developed eyes. In Anomiopsyllus the absence of a pronotal comb will make possible separation from and prevent confusion with the genus Megarthroglossus.

This family is represented by two genera and two species in my collections. In addition, two other genera and two species of this family have been reported from New Mexico

Xenopsylla Glinkiewicz, 1907

This genus can be separated from other genera in New Mexico by the presence of eyes and the absence of both pronotal and genal combs.

Xenopsylla cheopis (Rothschild, 1903)

Males of this species can be recognized by two processes of the clasper, one narrow and curved outward, the other flat and with a row of bristles on its upper margin. Females can be recognized by a large and prominent spermatheca.

This flea is the Oriental rat flea, the only member of this genus in western North America. Prince, according to Hubbard (1947, 67), reports this flea from Albuquerque, New Mexico. This flea is of great medical importance since it is one of the most efficient vectors of bubonic plague.

Hoplopyllus Baker, 1905

This genus can be separated from other genera in the State by the absence of a genal comb and the presence of a pronotal comb. A single species of the genus is recorded from western North America.

Hoplopyllus anomalus (Baker, 1904)

This flea, the only member of its genus in New Mexico, although found on a variety of hosts, seems to be typically a flea of ground squirrels. Males of this species can be recognized by upper claspers that have an elongated inverted plow-share shape, with the point directed cephalad and with a few weak hairs on the posterior border. Females can be recognized by the characteristic apical outline of sternite VII, its weakly rounded lobe having a slightly flattened apex. The spermatheca has a pear-shaped body with a very strong tail crooked apically.

Xenopylea chequia (Hochstetler, 1903)

Males of this species can be recognized by two processes of the clasper, one narrow and curved outward, the other flat and with a row of bristles on its upper margin. Females can be recognized by a large and prominent spermatheca.

This fly is the Oriental rat fly, the only member of this genus in western North America. Trinne, according to Hubbard (1947, 67), reports this fly from Algodoneros, New Mexico. This fly is of great medical importance since it is one of the most efficient vectors of human plague.

Hoplopygia Baker, 1907

This genus can be separated from other genera in the State by the absence of a genital comb and the presence of a genital comb. A single species of the genus is recorded from western North America.

Hoplopygia eximia (Baker, 1904)

This fly, the only member of its genus in New Mexico, although found on a variety of hosts, seems to be typically a fly of ground squirrels. Males of this species can be recognized by upper claspers that have an elongated invaginated glomerate shape, with the point directed cephalad and with a few weak hairs on the posterior border. Females can be recognized by the characteristic apical outline of sternite VII, its weakly rounded lobe having a slightly flattened apex. The spermatheca has a pear-shaped body with a very strong tail curved apically.

Previously this species has been reported by Hubbard (1947, 73) from Bernalillo County and Grant County, New Mexico. In my collection this flea is recorded as follows: 20 females and 12 males from one Say's rock squirrel (Citellus variegatus grammurus) collected at Juan Tabo Recreation area 15 miles north-east of Albuquerque on June 26, 1948.

Cediopsylla Jordan, 1925

The fleas in this genus are parasitic on rabbits. This genus can be separated from other genera of the family PULICIDAE reported for the State of New Mexico by the presence of both genal and pronotal combs.

Cediopsylla inaequalis inaequalis (Baker, 1895)

This species can be recognized by the stout genal teeth. The males can be separated from other species by the presence of from seven to 12 bristles evenly spaced along the ventral margin of the male clasper. The female can be recognized by the absence of a distinct lobe on the apical margin of sternite VII.

This species has been reported by Hubbard (1947, 76) from Grant County and is the only species of the genus from New Mexico.

Anomiopsyllus Baker, 1904

This genus can be separated from other genera of the PULICIDAE in the State of New Mexico by the absence of eyes.

Previously this species has been reported by Hubbard (1947, 73) from Benavente County and Grant County, New Mexico. In my collection this flies is recorded as follows: 20 females and 12 males from one Bay's rock squirrel (*Sciurus variegatus*) collected at Juan Pablo Hecatonoma area 15 miles north-east of Albuquerque on June 26, 1948.

Eudolopysia Jordan, 1925

The flies in this genus are parasitic on mammals. This genus can be separated from other genera of the family PULICIDAE reported for the State of New Mexico by the presence of both genital and proventricular organs.

Eudolopysia inaequalis (Baker, 1925)

This species can be recognized by the acute genital teeth. The males can be separated from other species by the presence of from seven to 12 bristles evenly spaced along the ventral margin of the male clasper. The female can be recognized by the absence of a distinct lobe on the apical margin of sternite VII.

This species has been reported by Hubbard (1947, 76) from Grant County and is the only species of the genus from New Mexico.

Anomolopysia Baker, 1904

This genus can be separated from other genera of the PULICIDAE in the State of New Mexico by the absence of eyes.

Anomiopsyllus novomexicanensis, new species

Figures 1 - 4

Head: Frontal tubercle present, angulate apically. Genal armature consisting of two slender bristles, one at the edge of antennal groove and the other at the outer edge of gena at about eye position, with a short weak bristle midway between the two. Postantennal region nude with exception of small setae at lower marginal angle. Bristles of the second antennal segment are short in both the male and female. The antenna of the male is long and slender while in the female it is shorter and stouter. Labial palpus of four segments extends slightly beyond fore coxae.

Thorax: Pronotal comb absent.

Legs: Coxa II and coxa III each with a posterioventral spinelike lobe separated from coxa proper by a deep incision. Coxa III without a row or patch of spinelets on inner surface. Each femur has a single lateral bristle. Segment 5 of tarsi I and II with five pairs of plantar bristles, the first pair being situated between setae of second pair; fifth segment of tarsus III with only four pairs of plantar bristles, all being lateral and forming two parallel rows.

Abdomen: Two anterior tergites with apical spinelets and all tergites with a single row of weak bristles. One well-developed antepygidial bristle to each side.

Modified segments, male: Sternite IX (Fig. 1) of male without anterior apophysis, with a long posterior process

Anoploglyptus novaezealandicus, new species

Figures 1 - 4

Head: Frontal tubercle present, minute apically. Gena
 structure consisting of two slender bristles, one at the edge of
 antennal groove and the other at the outer edge of gena at about
 eye position, with a short weak bristle midway between the two.
 Postantennal region wide with exception of small setae at lower
 marginal angle. Bristles of the second antennal segment are
 short in both the male and female. The antennae of the male is
 long and slender while in the female it is shorter and stouter.
 Labial palpus of four segments extends slightly beyond fore coxae.

Thorax: Pronotal cone absent.

Legs: Coxa II and coxa III each with a posterior ventral
 apical spine separated from coxa proper by a deep incision.
 Coxa III without a row or patch of spinules on inner surface.
 Each femur has a single lateral bristle. Segment 5 of tarsi I
 and II with five pairs of pleural bristles, the first pair being
 situated between series of second pair; fifth segment of tarsus
 III with only four pairs of pleural bristles, all being lateral
 and forming two parallel rows.

Abdomen: Two anterior tergites with apical spinules
 and all tergites with a single row of weak bristles. One well-
 developed antepuparial bristle on each side.

Modified segments, male: Sternum IX (Fig. 1) of male

without anterior apophysis, with a long posterior process

containing six subevenly spaced long bristles, then a sinus, and at the posterior tip two black spiniforms and below them one longer clear spiniform. Finger (Fig. 2) of male wide at base and becoming narrow at tip. There are three weak bristles at tip of finger and an evenly scattered row over the anterior border. There are three black spiniforms evenly spaced on the posterior border. Process of clasper bent anteriorly, posterior border rounded and with three bristles.

Modified segments, female: Sternite VII as shown in figure 3. Spermatheca (Fig. 4) has a rounded body and a crooked tail. Stylet about three times longer than wide, with a long bristle and two very short ones at apex.

Type locality: Six miles west of Albuquerque, Bernalillo County, New Mexico; at west foothills of Sandia mountains. Male holotype, female allotype, one male paratype and three female paratypes from a nest of the hoary wood rat (Neotoma micropus canescens) collected on October 10, 1948. Also from nests of the same rodent, 10 male paratypes and 22 female paratypes collected on October 10, 1948; 321 male paratypes and 580 female paratypes collected on October 10, 1948; 62 male paratypes and 126 female paratypes collected on February 28, 1948; 16 male paratypes and four female paratypes from both a nest and animals collected in December, 1947.

Remarks: The known species of Anomiopsyllus Baker fall into two groups. The species of the first group which contains

containing six subevenly spaced long bristles, then a sinus, and at the posterior tip two black spiniforms and below them one longer elater spiniform. Finger (Fig. 2) of male wide at base and becoming narrow at tip. There are three weak bristles at tip of finger and an evenly scattered row over the anterior border. There are three black spiniforms evenly spaced on the posterior border. Process of elater bent anteriorly, posterior border rounded and with three bristles.

Modified segments, female: Sternite VII as shown in figure 3. Epimerites (Fig. 4) has a rounded body and a crossed tail. Styli about three times longer than wide, with a long bristle and two very short ones at apex.

Type locality: Six miles west of Alpuerto, Bernalillo County, New Mexico; at west foothills of Sandia mountains. Male holotype, female allotype, one male paratype and three female paratypes from a nest of the hairy wood rat (Neotoma albigula gambeliana) collected on October 10, 1948. Also from nests of the same rodent, 10 male paratypes and 22 female paratypes collected on October 10, 1948; 321 male paratypes and 580 female paratypes collected on October 10, 1948; 62 male paratypes and 126 female paratypes collected on February 28, 1948; 16 male paratypes and four female paratypes from both a nest and animals collected in December, 1947.

Remarks: The known species of Anomoeophilus Baker fall into two groups. The species of the first group which contains

nudatus (Baker, 1898), falsicalifornicus C. Fox, 1929, congruens Stewart 1940, and hiemalis Eads and Menzies 1948, have three spiniforms on the movable finger of clasper. The species of the second group, to which belong montanus Collins, 1936, and amphibolus Wagner, 1936, have two spiniforms on the movable finger. My new species resembles the species of the first group in the nature of finger of the male. This new species appears to be most closely related to hiemalis. In hiemalis there are three spiniforms equally spaced along the posterior border, while in the new species they are equally spaced but confined to the distal half of finger. In hiemalis there are four bristles between the second and third spiniform while in novomexicanensis no bristle occurs between the second and third spiniforms.

DOLICHOPSYLLIDAE Baker, 1905

Members of this family can be recognized by the absence of a dorsal sulcus that separates the frons from the posterior portion of the head. Members of this family have two or more rows of bristles on each abdominal tergite; there is no genal comb. This family is represented by five genera, including six species and subspecies in my collections. In addition, six other genera, with nine species and subspecies, of this family have been reported from New Mexico.

Hemiteles (Baker, 1898), talescallicornis G. Fox, 1929, conspicua
Stewart 1940, and hemiteles Koda and Henrichs 1948, have three
apiniform on the movable finger of clasper. The species of the
second group, to which belong montana Collins, 1936, and an-
ibolus Wagner, 1936, have two apiniform on the movable finger.
My new species resembles the species of the first group in the
nature of finger of the male. This new species appears to be
most closely related to hemiteles. In hemiteles there are three
apiniform equally spaced along the posterior border, while in
the new species they are equally spaced but confined to the dis-
tal half of finger. In hemiteles there are four bristles between
the second and third apiniform while in novemacanthus no
bristle occurs between the second and third apiniform.

DOIGCHOPRYLLIDAE Baker, 1905

Members of this family can be recognized by the absence
of a dorsal suture that separates the frons from the posterior
portion of the head. Members of this family have two or more
rows of bristles on each abdominal tergite; there is no genal
comb. This family is represented by five genera, including six
species and subspecies in my collection. In addition, six
other genera, with nine species and subspecies, of this family
have been reported from New Mexico.

Orchopeas Jordan, 1933

In members of this genus, femur I never has more than a single lateral bristle on outer surface. In males the movable finger has a submarginal row of four to seven short, black, subequal spiniforms directed upward. In the females of this genus the ventral margin of sternite X is angulate near the middle.

Orchopeas sexdentatus neotomae Augustson, 1943

The males of this species can be separated from other males of the genus Orchopeas by the finger which is more or less pointed at apex and armed with five to seven black spiniforms. The males of this subspecies can be recognized by the finger of clasper that is roughly rectangular in shape and armed on the posterior edge with four black spiniforms, two below close together at heel and two above equally spaced. Sternite IX of the male is armed with a black spiniform and three bristles. Females can be recognized by sternite VII with its upper angular lobe, which may or may not be expanded at tip. Spermatheca typical for genus with body more or less barrel-shaped and with a crooked appendix.

This flea is reported in Hubbard (1947,99) from New Mexico.

Orchopeas sexdentatus (Baker, 1904),

subspecies undetermined

The subspecies of this group often lack well-marked characteristics and so are identified with great difficulty. This

Oreopneustes Jordan, 1933

In members of this genus, femur I never has more than a single lateral bristle on outer surface. In males the movable finger has a submarginal row of four to seven short, black, sub-apical spiniform bristles directed upward. In the females of this genus the ventral margin of sternite X is angulate near the middle.

Oreopneustes subdentatus Anderson, 1943

The males of this species can be separated from other males of the genus Oreopneustes by the finger which is more or less pointed at apex and armed with five to seven black spiniform bristles. The males of this subspecies can be recognized by the finger of clasper that is roughly rectangular in shape and armed on the posterior edge with four black spiniform bristles, two below close to rather at heel and two above apically spaced. Sternite IX of the male is armed with a black spiniform bristle and three bristles. Females can be recognized by sternite VII with its upper angular lobe, which may or may not be expanded at tip. Spermathecae typical for genus with body more or less barrel-shaped and with a crooked appendix.

This flies is reported in Hubbard (1947, 22) from New Mexico.

Oreopneustes subdentatus (Jordan, 1904)

subspecies undetermined

The subspecies of this group often lack well-marked characteristics and so are identified with great difficulty. This

along with the great variation that may be observed in specimens from the same host and locality prevents subspecific assignment of this lot of specimens.

In the males of this subspecies, the finger of the clasper is pointed apically. The number of spiniforms on the posterior border of finger is variable, out of 16 males in my collections, 15 males have four spiniforms on posterior border equally spaced and one above. In the other male there are three spiniforms on the posterior border equally spaced and one above. Sternite IX of the male has one black spiniform and three bristles. In the female of this subspecies, the apical outline of sternite VII is variable. Of the two lobes, there is a large amount of variation in the upper lobe. In some females the upper lobe may be longer than the lower lobe and the upper lobe may be pointed or round at the tip. The spermatheca is typically that of the species with the body barrel-shaped and with a crooked appendix.

In my collections there are records of this flea as follows: one female and one male from one hoary wood rat (Neotoma micropus canescens) collected about two miles northeast of U. S. Route 66 bridge over the Rio Puerco on February 28, 1948; 15 males and 32 females from one hoary wood rat nest and animals collected in the foothills of the Sandia Mountains, Albuquerque in December 1947; one male from one hoary wood rat nest collected at the base of Sandia mountains on October 10, 1948; one male and one female from one hoary wood rat nest collected at base of Sandia Mountains on October 10, 1948.

along with the great variation that may be observed in specimens from the same host and locality prevents suggestive assignment of this lot of specimens.

In the males of this subspecies, the finger of the clasper is pointed apically. The number of spiniforms on the posterior border of finger is variable, out of 15 males in my collections, 15 males have four spiniforms on posterior border equally spaced and one above. In the other male there are three spiniforms on the posterior border equally spaced and one above. Sternum IX of the male has one black spiniform and three bristles. In the female of this subspecies, the apical outline of sternite VII is variable. Of the two lobes, there is a large amount of variation in the upper lobe. In some females the upper lobe may be longer than the lower lobe and the upper lobe may be pointed or round at the tip. The agermateness is typically that of the species with the body barrel-shaped and with a crooked appendix.

In my collections there are records of this line as follows:

one female and one male from one heavy wood rat (*Neotoma micropus* gambiensis) collected about two miles northwest of U. S. Route 66 bridge over the Rio Puerco on February 28, 1948; 15 males and 32 females from one heavy wood rat nest and animals collected in the foothills of the Sandia Mountains, Albuquerque in December 1947; one male from one heavy wood rat nest collected at the base of Sandia Mountains on October 10, 1948; one male and one female from one heavy wood rat nest collected at base of Sandia Mountains on October 10, 1948.

Opisodasys Jordan, 1933

In members of this genus femur I never has more than a single lateral bristle on the outer surface. In the males of this genus the movable finger has a submarginal row of three to four unequal and black spiniforms directed downwards. In the females of this genus the ventral margin of sternite X is not distinctly angulate.

Opisodasys robustus (Jordan, 1925)

The males of this species can be recognized by the clasper that has a finger roughly triangular in shape and armed on the posterior border with two black spiniforms, distal one longer and bent dorsally, proximal one much shorter and straight; between them a pale weak spiniform or bristle. In the male sternite IX has two pale spiniforms on the proximal lobe and the distal lobe has numerous pale spiniforms along the posterior border. The female can be recognized by sternite VII having the upper lobe longer than the lower, quadrate and sometimes expanded at apex. The lower lobe is triangular and the sinus between lobes is deep and broad.

This flea is the only member of this genus reported from New Mexico. Hubbard (1947, 116) reports this flea from Ritu (sic!) de los Frijoles, Sandoval County, New Mexico.

4100
F. H. B. 1911

Opiliones

In members of this genus I have found four
single lateral bristles on the first segment. In the males of
this genus the fourth segment of the first leg is
four unequal and thin, and the fifth segment is
female of this genus the fourth segment of the first leg is
distinctly angulate.

Opiliones

The males of this species can be distinguished by the
fact that they have a large, strongly developed
the posterior border of the first leg is
longer and bent dorsally, the fourth and fifth segments
between them a pale weak line is visible. In the male
the IX has two pairs of spinules on the first and second
the first leg has numerous fine spinules along the first border.
The female can be recognized by the fact that the
lobe longer than the lower, the lower and fourth segments
apex. The lower lobe is triangular and the upper border
is deep and broad.

This lies in the only member of this genus reported from
New Mexico. Hubbard (1905, 1911) has found this species in
de los Arboles, Sinaloa County, New Mexico.

Trassis Jordan, 1933, sensus lato

In members of this genus, femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles from base to apex (apart from bristles on anterior margin). The labial palpus extends to or beyond apex of trochanter I. In the male sternite VIII is broad, unreduced, bearing several to many setae. Basal abdominal sternum of female without patch of lateral setae.

Thrassis pansus (Jordan, 1925)

In the males of this species the finger has three bristles on the posterior dorsal margin, the lowest is the longest and stoutest. Between it and the base there are five marginal bristles. On proximal ventral lobe of sternite IX in males, there is an apical bristle, behind this two flattened bristles, proximal to these several smaller bristles. In the female of this species, the head of the spermatheca is globular and pigmented, tail broadest in distal half and with a sclerotic appendage on the tip. In the females of this species the posterior face of sternite VII is slightly slanting. The stylet of the female is short and broad, with an apical and three lateral bristles.

In my collections there are records of this flea as follows: one male from one large spotted ground squirrel (Citellus spilosoma major) collected on the mesa, west of the Rio Grande River

Tarsus Jordan, 1933, *Revue de Zoologie*

In members of this genus, Tarsus I has several small lateral bristles on outer surface. Inner surface of coxae II and III with thin bristles from base to apex (apart from bristles on anterior margin). The lateral bristles extend to or beyond apex of trochanter I. In the male sternite VII is broad, undusted, bearing several to many setae. Basal abdominal sternum of female without patch of lateral setae.

Tarsus Jordan (Jordan, 1933)

In the males of this species the femur has three bristles on the posterior dorsal margin, the longest is the longest and stoutest. Between it and the base there are five marginal bristles. On proximal ventral lobe of sternite IX in males, there is an apical bristle, behind this two flattened bristles, proximal to these several smaller bristles. In the female of this species, the head of the apophyses is globular and pigmented, call broadest in distal half and with a sclerotic appendage on the tip. In the females of this species the posterior face of sternite VII is slightly elongate. The style of the female is short and broad, with an apical and three lateral bristles.

In my collections there are records of this fly as follows:

one male from one large spotted ground squirrel (*Citellus rich-*
soni major) collected on the west, west of the Grande River

opposite Bernalillo on February 21, 1948; 80 females and 55 males from 95 large spotted ground squirrels (Citellus spilosoma major) collected two miles north and northwest of the University of New Mexico during the period from March 26 to July 14, 1948; one female from two grasshopper mice (Onychomys leucogaster) collected on the mesa east of Albuquerque on September 25, 1948; and numerous individuals taken at various times from large spotted ground squirrels (Citellus spilosoma major) collected on or near the University of New Mexico golf course, Albuquerque, New Mexico. These last include one male and one female flea from a ground squirrel on July 21, 1948; one male from one ground squirrel on July 21, 1948; three males and one female from one ground squirrel on July 28, 1948; one female from one ground squirrel collected on July 23, 1948; three females and one male from one ground squirrel collected on July 28, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on August 2, 1948.

Previously Prince took this species from New Mexico according to Hubbard (1947,141).

Thrassis fatus (Jordan, 1925)

In the males of this species the finger is plump and the posterior margin is rounded on entire length and armed with four

opposite Bernalillo on February 21, 1948; 80 females and 25 males from 95 large spotted ground squirrels (*Citellus spilosomus major*) collected two miles north and northwest of the University of New Mexico during the period from March 25 to July 14, 1948; one female from two grasshopper mice (*Onychomys leucogaster*) collected on the mesa east of Albuquerque on September 25, 1948; and numerous individuals taken at various times from large spotted ground squirrels (*Citellus spilosomus major*) collected on or near the University of New Mexico golf course, Albuquerque, New Mexico. These last include one male and one female from a ground squirrel on July 21, 1948; one male from one ground squirrel on July 21, 1948; three males and one female from one ground squirrel on July 28, 1948; one female from one ground squirrel collected on July 27, 1948; three females and one male from one ground squirrel collected on July 28, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on July 21, 1948; one female from one ground squirrel collected on August 2, 1948. Previously Prince took this species from New Mexico according to Hubbard (1947, 141).

Thomomys townsendi (Jordan, 1925)
In the males of this species the finger is pink and the posterior margin is rounded on entire length and armed with four

bristles, apical one longest, lower two much shorter, stout and spinelike. Apex of finger is rounded with anterior margin slightly concave. The proximal ventral lobe of sternite IX of male is rounded and armed with three spinelike bristles, one long stout bristle and two shorter ones. In the females of this species the spermatheca has characteristically a flattened somewhat oval body and a crooked long tail without an appendage. This serves to separate fotus from females of other species in the State. The apical margin of sternite VII is variable, sometimes the lobe is angular with posterior margin undulate, at other times the lobe is low and rounded.

This species was reported by Hubbard (1947, 144) from Catron County, New Mexico.

Trassis aridis Prince, 1944

Thrassoides aridis Hubbard, 1947: 145-146

In males of this species, the finger is nearly symmetrical with four bristles on posterior border, basal two largest. The proximal lobe of sternite IX has four pale bristles; distal lobe with numerous setae. In the females of this species sternite VII has a sinus, and the upper lobe is small and attenuated. The stylet is about three times as long as broad with one apical and two lateral bristles. Spermatheca has a globular body and long slender tail that is conspicuously bent and has apically a small appendage.

bristles, apical one longest, lower two moderate, lower one
apical one. Apex of ligula is rounded with small teeth.
slightly concave. The proximal ventral lobe of sternite II
male is rounded and ends with three spinules. The
long about bristles and two shorter ones. In the female of this
species the apical margin of sternite II is rounded and
what oval body and a rounded long tail with a small
This nerve to separate from female. The apical margin of
the base. The apical margin of sternite II is rounded and
times the lobe is angular with posterior margin rounded.
other times the lobe is low and rounded.

This species was reported by Hubbard (1937) from
Cotton County, New Mexico.

Thysanotus arcticus (Hubbard, 1937)
Thysanotus arcticus Hubbard, 1937: 121.
In males of this species, the ligula has a small
with four bristles on posterior border, lower one longest.
proximal lobe of sternite II has four pale hairs and a small
with numerous setae. In the females of this species
VII has a spine, and the upper lobe is small and rounded.
The style is about three times as long as broad with a small
and two lateral bristles. Spermathecae are small and
long slender cell that is conspicuously bent and has a small
small appendage.

This species was reported in Hubbard (1947, 146) from Hidalgo County, New Mexico.

Thrassis campestris Prince, 1944

Thrassoides campestris Hubbard, 1947: 146

In males of this species the finger is more plump than in aridis and the apex is more blunt. The finger is armed with four stout bristles on posterior border, the upper one is the longest. The males of this species can be separated from other males of the genus Thrassis occurring in New Mexico by the presence of one long acetabular bristle while the males of this species have two acetabular bristles. In the females of this species the apical outline of sternite VII has an upper prominent knoblike lobe and below it a shallow sinus. The spermatheca has a small appendage on apex of tail.

In my collections there are records of this flea as follows: one male from three kangaroo rats (Dipodomys ordii) collected five miles east of U. S. 66 bridge over the Rio Puerco on February 28, 1948; two females and three males from one kangaroo rat nest (Dipodomys spectabilis) collected on the mesa east of Albuquerque on March 6, 1948; one female from food storage in a kangaroo rat burrow collected on mesa east of Albuquerque on March 6, 1948.

This species was reported in Hubbard (1947, 146) from Hidalgo County, New Mexico.

Thrasia semipalmata Prinos, 1914

Thrasia semipalmata Hubbard, 1947: 146

In males of this species the finger is more blunt than in arida and the apex is more blunt. The finger is armed with four stout bristles on posterior border, the upper one is the longest. The males of this species can be separated from other males of the genus Thrasia occurring in New Mexico by the presence of one long scapular bristle while the males of this species have two scapular bristles. In the females of this species the apical outline of sternite VII has an upper prominent knoblike lobe and below it a shallow sinus. The spermatheca has a small appendage on apex of tail.

In my collections there are records of this fly as follows: one male from three kangaroo rats (Dipodomys ordii) collected five miles east of U. S. 66 bridge over the Rio Pecos on February 28, 1948; two females and three males from one kangaroo rat nest (Dipodomys spectabilis) collected on the mesa east of Albuquerque on March 6, 1948; one female from food storage in a kangaroo rat burrow collected on mesa east of Albuquerque on March 6, 1948.

Diamanus Jordan, 1933

In members of this genus, femur I has several small lateral bristles on outer surface. Inner surfaces of coxa II and III with thin bristles from base to apex (apart from bristles on anterior margin). Labial palpus extends beyond apex of trochanter I. Sternum VIII of male is quite small. In the males the bristles of antennal segment II are short. In females there are two antepygidial bristles of about equal length and the dorsal lateral bristles of stylet are much smaller than the ventral ones.

Diamanus montanus (Baker, 1895)

This is the only species of this genus west of the Rocky Mountains. The males of this species can be recognized by the finger which extends far beyond the process dorsally and is long and slender. The finger curves toward the anterior and is shaped like the blade of a hand sickle or scythe. There are about six weak bristles on its posterior border, five on the upper half. Females can be recognized by the spermatheca that has a slightly flattened bulbous body and a distinctly crooked tail, which in some specimens has a tendency to be slightly bulbous at the tip. In other specimens the free end of the tail of the spermatheca is cut off at an angle. Apical margin of sternite VII of female varies somewhat, sometimes being angular, at other times somewhat rounded.

Blasius jordanii (Jordan, 1925)

Members of this genus, fewer I have several small lateral bristles on outer surface. Inner surface of coxa II and III with thin bristles from base to apex (apart from bristles on anterior margin). Labial palpus extends beyond apex of trochanter I. Sternum VIII of male is quite small. In the males the bristles of antennal segment II are short. In females there are two entostylar bristles of about equal length and the dorsal lateral bristles of stylus are much smaller than the ventral ones.

Blasius montana (Jordan, 1925)

This is the only species of this genus west of the Rocky Mountains. The males of this species can be recognized by the finger which extends far beyond the process dorsally and is long and slender. The finger curves toward the anterior and is shaped like the blade of a hand sickle or scythe. There are about six weak bristles on its posterior border, five on the upper half. Females can be recognized by the spermatheca that has a slightly flattened bulbous body and a distinctly crooked call, which in some specimens has a tendency to be slightly bulbous at the tip. In other specimens the true end of the call of the spermatheca is cut off at an angle. Apical margin of sternite VII of female varies somewhat, sometimes being angulate, at other times somewhat rounded.

In my collections there is a record of this flea as follows: 10 males and 14 females from one Say's rock squirrel (Citellus variegatus grammurus) collected at Juan Tabo Recreation area 15 miles northeast of Albuquerque on June 26, 1948.

Previously this species was reported, according to Hubbard (1947, 150), from Grant County, New Mexico.

Opisocrostis Jordan, 1933

In members of this genus femur I has several small lateral bristles on outer surface. Inner surface of coxae II and III with thin bristles from base to apex (apart from bristles on anterior margin). Labial palpus extending beyond apex of coxa I. Bristles of segment II of antenna are long. Basal abdominal sternite has a number of slender bristles on upper anterior half. In the male, sternite VIII is reduced to a slender horizontal sclerite that bears two long bristles and an apical long filamentous appendage. In females there are two antepygidial bristles of which the lower is distinctly shorter. Head of spermatheca is higher than long.

Opisocrostis hirsutus (Baker, 1895)

Males of this species can be recognized by the process of the clasper being small in comparison with the finger and being dome-shaped but flattened posteriorly, and armed with three medium apical bristles. Finger is long and slender, narrowed in diameter toward the middle by two concave surfaces.

In my collection there are two specimens of *U. varians* (Hubert) 10 males and 14 females. The specimens were collected in the variegatus (Hubert) collection and from other sources. Miles northeast of Albuquerque, New Mexico, 1947. Hubert (1947, 1951). From where? (Hubert, 1947, 1951).

Uta varians (Hubert, 1947)

In members of this genus there are several species. The first species is *U. varians* (Hubert) 1947, 1951. It is a small lizard with a slender body. The head is small and the eyes are large. The body is covered with small scales. The tail is long and slender. The legs are short and the feet are small. The color is brown and the pattern is irregular. The head of *U. varians* is small and the eyes are large. The body is covered with small scales. The tail is long and slender. The legs are short and the feet are small. The color is brown and the pattern is irregular.

Uta varians (Hubert, 1947)

Notes on this species are as follows: The head of the lizard is small and the eyes are large. The body is covered with small scales. The tail is long and slender. The legs are short and the feet are small. The color is brown and the pattern is irregular. The head of *U. varians* is small and the eyes are large. The body is covered with small scales. The tail is long and slender. The legs are short and the feet are small. The color is brown and the pattern is irregular.

Uta varians

Armature made up of four bristles on posterior margin close to apex, two lower ones longest and stout. In the male, sternite VIII is long and slender with a median pair of ventral bristles, three pairs of subterminal bristles, and a pair of long terminal filaments that are branched at the end. Females can be recognized by sternite VII with one lobe that is angulate with posterior margin slightly concave. Upper angle of lobe is rounded to angulate, lower angle well rounded. Spermatheca with globular body and tail that is long and crooked at almost a right angle.

This is the only species of this genus represented in New Mexico. Hubbard (1947, 160) reports this flea from Catron, Rio Arriba, and McKinley Counties.

Oropsylla Wagner and Joff, 1926

In members of this genus femur I has several small lateral bristles on outer surface. Inner surface of coxae II and III with thin bristles from base to apex (apart from bristles on anterior margin). Labial palpus extending beyond trochanter I. In males bristles of segment II of antenna are short, not reaching to middle of club. Basal abdominal sternite is without patch of bristles on side, at most with one or two in or below the middle (besides the usual ventral bristles). In the male, sternite VIII is narrow, rodlike and has no membranous apical appendage. The apex of sternite VIII is sharply defined with long bristles. In the female the stylet has two or more lateral

Antennae made up of four bristles on posterior margin close to apex, two lower ones longest and stout. In the male, sternite VIII is long and slender with a median pair of ventral bristles, three pairs of subterminal bristles, and a pair of long terminal filaments that are branched at the end. Femur can be recognized by sternite VII with one lobe that is angulate with posterior margin slightly concave. Upper angle of lobe is rounded to angulate, lower angle well rounded. Spermathecae with glabrous body and tail that is long and crooked at almost a right angle. This is the only species of this genus represented in New Mexico. Hubbard (1947, 1950) reports this flies from Catron, Rio Arriba, and McKinley Counties.

Otophylla Wagner and Joff, 1932

In members of this genus femur I has several small lateral bristles on outer surface. Inner surface of coxae II and III with thin bristles from base to apex (apart from bristles on anterior margin). Labial palpus extending beyond trochanter I. In males bristles of segment II of antenna are short, not reaching to middle of club. Basal abdominal sternite is without patch of bristles on side, at most with one or two in or below the middle (besides the usual ventral bristles). In the male, sternite VIII is narrow, rodlike and has no membranous apical appendage. The apex of sternite VIII is sharply defined with long bristles. In the female the stylus has two or more lateral

bristles, head of spermatheca is longer than broad, the tail is not much longer than head and always has a long appendage.

Oropsylla idahoensis (Baker, 1904)

In the males of this species the finger is distinct, having a broadly rounded posterior border armed with two stout bristles and several smaller ones. The anterior border of the finger is almost straight with apex being nicely rounded. In females, the margin of sternite VII is almost a flat surface, only slightly concave. Spermatheca has a body almost round in outline, yet slightly oval, a short tail bent slightly toward body at apex, and a long appendage at apex bent in general contour with tail.

This is the only species of this genus represented in New Mexico. Hubbard (1947, 166) reports this flea from Colfax County, New Mexico.

Dactylopsylla Jordan, 1929

Members of this genus have several lateral bristles on femur I. This genus can be separated from other genera of the family DOLICHOPSYLLIDAE in New Mexico by the absence of eyes.

Dactylopsylla neomexicana Prince, 1945

The males can be recognized by the finger of clasper being long, curved distad, and acuminate. The finger has the appearance of a walking stick. Finger is armed with an apical bristle and three bristles on posterior border. Sternite VIII of male

bristles, head of spermatheca is longer than broad, the tail is not much longer than head and always has a long appendage.

Crotophaga idahoensis (Baker, 1901)

In the males of this species the finger is distinct, having a broadly rounded posterior border armed with two stout bristles and several smaller ones. The anterior border of the finger is almost straight with apex being nicely rounded. In females, the margin of sternite VII is almost a flat surface, only slightly concave. Spermatheca has a body almost round in outline, yet slightly oval, a short tail bent slightly toward body at apex, and a long appendage at apex bent in general contour with tail.

This is the only species of this genus represented in New Mexico. Hubbard (1947, 1966) reports this flies from Colfax County, New Mexico.

Dactylopsylla Jordan, 1929

Members of this genus have several lateral bristles on sternite I. This genus can be separated from other genera of the family DOLICHOPHYLLIDAE in New Mexico by the absence of eyes.

Dactylopsylla newmexicana Prineas, 1945

The males can be recognized by the finger of elongate being long, curved distad, and acuminate. The finger has the appearance of a walking stick. Finger is armed with an apical bristle and three bristles on posterior border. Sternite VIII of male

is concave on dorsal apical half and armed with four large bristles on ventral border, upper bristle at apex. In the female the head of the spermatheca is well pigmented and slightly longer than broad. The tail of the spermatheca is shorter than head, being broadest near apex, tip sclerified but not prominent.

This flea was recorded by Hubbard (1947, 193) from 20 miles south of Las Vegas, San Miguel County, New Mexico.

Malaraeus Jordan, 1933

In members of this genus femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most on distal half. Labial palpus does not reach apex of trochanter I. In the male sternite VIII is reduced or long and narrow, bearing a long apical bristle and fringed membranous flap. In this genus the eye is distinctly reduced; its longest diameter being shorter than distance from eye to apex of angle of strongly chitimized portion of genal lobe. Bristles of segment II of antenna reaching beyond middle of clubs or shorter in female. Stylet of female without a dorsal lateral bristle.

(?) Malaraeus sinomus (Jordan, 1925)

The females of the species sinomus (Jordan, 1925) and eremicus (Baker, 1904) cannot be separated with certainty, identification depending upon characteristics of the males. Since there are no males in my collection, identification is only tentative.

is concave on dorsal apical half and curved with four large bristles on ventral border, upper bristles at apex. In the female the head of the spermatheca is well pigmented and slightly longer than broad. The tail of the spermatheca is shorter than head, being broadest near apex, tip serrated but not prominent. This flies was recorded by Hubbard (1947, 1953) from 20 miles south of Las Vegas, San Miguel County, New Mexico.

Malaisea Jordan, 1933

In members of this genus femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most on distal half. Lateral apophysis does not reach apex of trochanter I. In the male sternite VIII is reduced or long and narrow, bearing a long apical bristle and fringed membranous flap. In this genus the eye is distinctly reduced; its largest diameter being shorter than distance from eye to apex of angle of strongly cristated portion of genal lobe. Bristles of segment II of antenna remaining beyond middle of club or shorter in female. Stylet of female without a dorsal lateral bristle.

(?) Malaisea sinensis (Jordan, 1933)

The females of the species sinensis (Jordan, 1933) and eremiana (Baker, 1904) cannot be separated with certainty, identification depending upon characteristics of the males. Since there are no males in my collection, identification is only tentative.

According to the literature the males of this species can be recognized by the somewhat triangular finger armed with one blackish spine below and four stiff bristles above. The bristles are thinner than the spine and the lower three are short, upper one longest. In the male sternite VIII is vestigial, without bristles. In the females the stylet with one long lateral bristle and the apical outline of sternite VII with a pointed lobe.

In my collection there is a record of this flea as follows: two females from one deer mouse (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948.

Nosopsyllus Jordan, 1933

In members of this genus, femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most on distal half. Labial palpus scarcely reaching apex of trochanter I. Similar to Malaraeus but segment I of hind tarsus is a little shorter than II and III taken together, no bristles of segment II and III reaching beyond the segment following. Eye well developed. Sternal plate VIII of male vestigial, without bristles.

Nosopsyllus fasciatus (Bosc, 1801)

This common species is found wherever there are house rats and mice. In both male and female the species can be

According to the literature the males of this species can be recognized by the somewhat triangular finger armed with one blackish spine below and four stiff bristles above. The bristles are thinner than the spine and the lower three are short, upper one longest. In the male sternite VIII is vestigial, without bristles. In the females the style with one long lateral bristle and the apical outline of sternite VII with a pointed lobe.

In my collection there is a record of this flies as follows: two females from one deer mouse (*Peromyscus maniculatus*) collected on the mesa west of the Rio Grande River opposite Bernadillo on March 12, 1918.

Nosopavillus Jordan, 1933

In members of this genus, femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most as distal half. Lateral spines scarcely reaching apex of trochanter I. Similar to *Aglyptus* but segment I of hind tarsus is a little shorter than II and III taken together, no bristles of segment II and III reaching beyond the segment following. Eye well developed. Sternite plate VIII of male vestigial, without bristles.

Nosopavillus fasciatus (Boeck, 1801)

This common species is found wherever there are houses rats and mice. In both male and female the species can be

differentiated from all other fleas by characteristically modified abdominal segments and the presence upon the house rats and mice.

In the male, process of clasper is broad, with a prominent posterior angle, armed at apex with two or three small bristles. Finger is evenly rounded posteriorly, the posterior margin bearing two stout bristles, between which there is a much smaller bristle and one or two others at the apex. In the female, apical margin of sternite VII is irregularly rounded or slanting. Head of spermatheca is globular, tail about one and one-half times as long as head and partly encircling it.

This species is reported by Hubbard (1947, 209) from Los Lunas and State Line.

Monopsyllus Kolenati, 1857

In members of this genus, femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most on distal half. Labial palpus not extending beyond apex of trochanter I. Eye not reduced. Bristles of segment II of antenna reaching to or beyond apex of club in female. In male, bristles of segment II of antenna not reaching beyond the middle of club. Stylet of female with two lateral bristles. In males sternite VIII is narrow, with or without a membranous apical flap.

differentiated from all other flies by characters of the
fied abdominal segments and the processes of the
and wings.

In the male, process of clasper is broad, with a
ment posterior angle, armed at apex with two or three small
flies. Tarsus is evenly rounded posteriorly, the inner
gin bearing two stout bristles, between which there is a
smaller bristle and one or two others at base. In the
apical margin of sternite VII is irregularly rounded or
Head of spermatheca is globose, cell about one-third
times as long as head and partly enclosing it.
This species is reported by Hubbard (1912), 1907 from
Texas and State Line.

Monogaylia Kolenati, 1897

In members of this genus, femur I bears a small
al bristles on outer surface. Inner surface of femur I and
III with thin bristles at most on distal half. Bristles of
not extending beyond apex of trochanter I. The last
Bristles of segment II of antenna reaching to the base of
club in female. In male, bristles of segment II of antenna
reaching beyond the middle of club. Stylus of female
lateral bristles. In males sternite VIII is narrow, with
without a membranous apical flap.

Monopsyllus wagneri (Baker, 1904), subspecies undetermined

The males of this species can be recognized by three black spiniforms on posterior border of finger. The finger is not ham or scythe-blade shaped, and the levers of the genital armature are rolled into a spiral, thus separating the species from other species of the genus Monopsyllus. In the female the body of the spermatheca has a diameter less than the diameter of the tail.

A determination of the subspecies has not been attempted since this is difficult and very uncertain when based entirely on females.

In my collections there are five females taken from four infested deer mice (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948.

Pleochaetis Jordan, 1933

In members of this genus femur I has several small lateral bristles on outer surface. Inner surfaces of coxae II and III with thin bristles at most on distal half. Labial palpus does not reach apex of trochanter I. Bristles on second segment of antenna are short in female, not reaching apex of club. In male, sternite VIII is slender, with one or more subapical bristles and sometimes with a membranous flap. Stylet of female with one or two lateral bristles. Spermatheca with body subglobular to oblong. Eye well developed.

Monocorypha wrighti (Baker, 1904), subgenus undetermined.
 The males of this species can be recognized by their
 black epinotum on posterior border of tibia. The tibia is
 not bent on apical edge, and the lower of the genital
 structures are joined into a single, thus separating the species
 from other species of the genus Monocorypha. In the female the
 body of the spermatheca has a diameter less than the diameter
 of the tail.
 A description of the subgenus has not been attempted
 since this is difficult and very uncertain when based chiefly
 on females.
 In my collection there are five females taken from two
 infested deer mice (Peromyscus maniculatus) collected on the
 west bank of the Rio Grande River opposite Benaville on March
 12, 1948.
Platygaster Jordan, 1910
 In a number of this genus there are several small later-
 al bristles on outer surface. Inner surface of coxae II and
 III with thin bristles of same or distal half. Lateral bristles
 does not reach apex of trochanter I. Bristles on second segment
 of antenna are short in female, not reaching apex of club. In
 male, sternite VIII is slender, with one or two subapical bris-
 tles and sometimes with a subventral flap. Right of female
 with one or two lateral bristles. Spermatheca with body nar-
 rower to oblong. Eye well developed.

Pleochaetis sibynus (Jordan, 1925)

The female of this species is unknown. The male can be recognized by a fairly broad clasper, rounded at apex, incurved posteriorly and armed apically with a few short bristles. Different authors vary in the descriptions of the finger.

This species was reported by Hubbard (1947, 247) from the Mogollon Mountains in New Mexico.

HYSTRICHOPSYLLIDAE Tiraboschi, 1904

Members of this family can be recognized by the dorsal sulcus that separates the frons from the posterior portion of the head. This sulcus is well developed and permits movement between the two parts of the head. This family is found chiefly on rodents and is represented by eight genera and eleven species in my collections. In addition, two other genera and four species of this family have been reported from New Mexico.

Atyphloceras Jordan and Rothschild, 1915

The members of this genus can be separated from other genera in the State of New Mexico by the absence of a genal comb and the presence of prominent apical spinelets on the abdominal tergites. Females have two spermatheca. This genus is represented by only one species in New Mexico.

Liocichla alpestris (Jordan, 1922)

The female of this species is unknown. The male can be recognized by a fairly broad dusky band, rounded at apex, located posteriorly and armed apically with a few sharp barbs. The extent of the band varies in the descriptions of the species. This species was reported by Hubbard (1927, 1928) from the Mogollon Mountains in New Mexico.

HEMIPHYLLIDAE (Hemiphyllidae)

Members of this family can be recognized by the dorsal surface and especially the front from the position of the head. This surface is well developed and permits movement between the two parts of the head. This family is found chiefly on rocks and is represented by eight genera and eleven species in my collection. In addition, two other genera and four species of this family have been reported from New Mexico.

Aspidochelone Jordan and Kotschal, 1925

The members of this genus can be separated from other genera in the State of New Mexico by the presence of a small horn and the presence of prominent apical spines on the abdominal tergites. Females have two spermathecae. This genus is represented by only one species in New Mexico.

Atyphloceras echis Jordan and Rothschild, 1915

In the males of this species, process, finger and sternite IX are similar to the same structures of Atyphloceras longipalpus Stewart, 1940. Sternite VIII of this species is much broader and more evenly rounded than longipalpus, thus serving to separate the two males. Males of this species can be separated from other species of this genus except longipalpus by the finger that has both margins convex on apical half, posterior margin armed with three long thin bristles. Process of clasper is bilobed with apices rounded, armed with seven bristles, three of which are large and are situated on apical margin of upper lobe. The external or posteroventral arm of sternite IX is rounded ventrally, being spoon-shaped or ladle-shaped but not triangular. The females can be recognized by the apical margin of sternite VII which consists of a lower well-rounded lobe, above which the margin is slightly convex in outline without a sinus.

In my collection there is a record of this flea as follows: 18 males and 42 females from several hoary wood rats (Neotoma micropus canescens) and one nest, all collected at the base of the Sandia mountains east of Albuquerque in December, 1947.

Megarthroglossus Jordan and Rothschild, 1915

The members of this genus can be separated from other genera of the family HYSTRICHOPSYLLIDAE in the State of New Mexico by the presence of typical abdominal tergites with but one transverse row of bristles.

one transverse row of bristles.

Mexico by the presence of typical abdominal bristles with

genus of the family HYSTRICOPHYLLIDAE in the state of

The members of this genus can be recognized by the

Mesitichneumon Jordan and Krombein

base of the female mandible and of the mandible of the

(Neotoma mexicana (Cresson)) and one nest, all collected in the

lows: 13 males and 12 females from several nests, and 7

In my collection there is a record of 11 males and 10

above which the margin is slightly convex in the middle and

of sternite VII which consists of a lower well-defined

triangular. The female can be recognized by the

rounded ventrally, being spoon-shaped or leaf-shaped and

lobes. The external or posterioventral and the anterior

of which are large and are situated at right angles to

is bilobed with apices rounded, and with several bristles

margin armed with three long thin bristles. The

finger that has both margins convex on apical half

ed from other species of this genus except Neotoma

to separate the two males. Males of Neotoma are

broader and more evenly rounded than females. The

palpus Stewart, 1940. Sternite VII of Neotoma is

nite IX are similar to the same sternite of Neotoma

In the males of this species, however, the

Atypilocera Jordan and Krombein

Megarthroglossus bisetis Jordan and Rothschild, 1915

Figures 5 and 6

Hubbard (1947, 302) reduces this species to a subspecies of M. divisus (Baker, 1895). The males of this species previously have not been described.

Head: Eyes vestigial but slightly pigmented. One row of four bristles on gena, short ones alternating with very long ones, these bristles are not always in a straight row. There are a few small bristles above this row. Postantennal region with a strong bristle half way up antennal groove and another at posterior angle. Setae along antennal groove. The antenna of the male is long and slender while in the female it is shorter and rounder. Labial palpus of five segments, last one very long, slightly curved, apex more produced posteriorly than anteriorly. Labial palpus extending beyond tip of trochanter I.

Thorax: Pronotal comb present.

Legs: Mid- and hind-femora with a lateral row of bristles on inside. Tibiae without lateral bristles on inner surface. Fifth segment in all tarsi with a proximal ventral pair and four lateral pairs of plantar bristles.

Abdomen: Abdomen with a few apical spinelets on anterior tergites. Abdominal tergites with but one row of bristles. Two antepygidial bristles on each side of the female, the upper one being a little longer than the lower one. Some variation is noticed in the number of antepygidial bristles, since one female

Neurochordatus blattariae (Hemiptera: Coreidae)

Figures 3 and 4

Hubbard (1947, 1952) recorded this species from the

of M. blattaria (Latreille, 1825). The species of this genus

have not been described.

Head: Eyes ventral, not distinct. One eye

of four bristles on each, short ones anterior and long

ones, these bristles are not always in a straight row. There

are a few small bristles above the eye. Short bristles

with a strong cristate half way up antennae. Antennae

at posterior angle. Setae along antennae. Two setae

of the male is long and slender with a small hook at tip.

er and rounded. Labial palps of first segment, base one

long, slightly curved, apex more pointed than base.

Labial palps extending beyond tip of labium.

Thorax: Pronotum concave posteriorly.

Legs: Mid- and hind-tarsus with 11 segments.

Five on inside. Tibiae without lateral spines.

Fifth segment in all tarsi with a small hook at tip.

lateral pairs of slender bristles.

Abdomen: Abdomen with a few small bristles on each

tergite. Abdominal tergites with first two segments

antepygoid bristles on each side of the posterior

being a little longer than the lower ones. Small bristles

noticed in the number of antepygoid bristles on each

in my collection has two antepygidial bristles on one side and three on the other side. The males have two antepygidial bristles on each side, the dorsal one long and stout, the ventral one short.

Modified segments, male: Sternite IX (Fig. 5) broad at base, narrowed at apex, curving upward and bearing on the curved posterior edge three or four slender bristles and on anterior edge and apex a few small bristles. Finger (Fig. 6) slightly convex on both anterior and posterior borders, being broader at base than at the rounded apex. Finger has small bristles all around edge. Process with three long bristles and a few shorter bristles on posterior border.

Modified segments, female: Spermatheca has a swollen collar, tail is short and hooked. Sternite VII of female slants anteriorly with a slight bulge toward the dorsad.

In my collections there are records of this flea as follows: four males and three females from one wood rat (Neotoma micropus canescens) nest collected at the base of the Sandia mountains east of Albuquerque on February 28, 1948; one male from three deer mice (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948; six males and two females from one hoary wood rat (Neotoma micropus canescens) nest and animals collected at the base of the Sandia mountains east of Albuquerque in December, 1947; six males and seven females from three hoary wood rat (Neotoma

In my collection there are two unidentified crustaceans on one side and three on the other side. The males have two unidentified crustaceans on each side, the females one large unidentified crustacean and one small.

Modified segment, male: Segment II (Fig. 5) broad at base, narrowed at apex, narrowing upward and bearing on the curved posterior edge series of small spines and on anterior edge and apex a few small bristles. Segment III (Fig. 6) slightly convex on both anterior and posterior surfaces, bearing bristles at base and at the rounded apex. Segment IV (Fig. 7) bearing all around edge. Segment V (Fig. 8) bearing bristles and a few shorter bristles on posterior border.

Modified segment, female: Segment II (Fig. 9) broad at base, narrowed at apex, narrowing upward and bearing on the curved posterior edge series of small spines and on anterior edge and apex a few small bristles. Segment III (Fig. 10) slightly convex on both anterior and posterior surfaces, bearing bristles at base and at the rounded apex. Segment IV (Fig. 11) bearing all around edge. Segment V (Fig. 12) bearing bristles and a few shorter bristles on posterior border.

In my collection there are three unidentified crustaceans on one side and four unidentified crustaceans on the other side. The males have two unidentified crustaceans on each side, the females one large unidentified crustacean and one small.

Modified segment, male: Segment II (Fig. 13) broad at base, narrowed at apex, narrowing upward and bearing on the curved posterior edge series of small spines and on anterior edge and apex a few small bristles. Segment III (Fig. 14) slightly convex on both anterior and posterior surfaces, bearing bristles at base and at the rounded apex. Segment IV (Fig. 15) bearing all around edge. Segment V (Fig. 16) bearing bristles and a few shorter bristles on posterior border.

micropus canescens) nests collected on October 10, 1948, in the same locality as given above.

Hubbard (1947, 302) mentions this flea as being collected from Beulah, New Mexico.

Stenistomera Rothschild, 1915

The members of this genus can be separated from other genera of the family HYSTRICHOPSYLLIDAE by the absence of a genal comb. Apical spinelets on abdominal tergites normal and each abdominal tergum with more than one transverse row of bristles.

Stenistomera alpina (Baker, 1895)

This species can be separated from other species of the genus by the presence of five rows of enlarged bristles on the preantennal region and three on the postantennal region of head in both sexes.

This species is reported by Hubbard (1947, 306) from Glorieta, Santa Fe County, New Mexico.

Epitedia Jordan, 1938

The members of this genus can be recognized by the presence of two genal teeth overlapping at base. Apical spinelets on abdominal tergites. Frontal notch prominent, frontal tubercle small, acuminate. Fifth segment of tarsi I and II with four pairs of lateral plantar bristles and a basal ventral pair located near median line. Fifth segment of tarsus III with four

Microtus carassensis (new to collection)

Hubbard (right, 30s) and Johnnie Chase (left, 20s)

Stenistorsus Romanelli

The members of this group are:

remains of the family HYSTEROGONATID in the following:

General account. Applied statistics on educational testing.

each abdominal segment with more than one tubercle as seen in

Printed.

1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 26

This species can be separated from other species by the

caused by the presence of the traces of sulfur in the

presented in the form of a table and three on the cover of the book.

This species is reported by Huxford

The members of this group can be recognized by

ance of two female teeth overlapping at base. 1.1 and 1.2

on abdominal changes. I would not have been surprised to find

Small, acuminate. White segment of corolla 1 and 2

... ..

collected near median line. With segment of 1st pair

pairs of plantar bristles, all of which are lateral. This genus is represented by two species in the State of New Mexico.

Epitedia wenmanni (Rothschild, 1904)

The males of this species can be recognized by the posterior arm of sternite IX being wider at the base than at the apex and armed with about 12 sharp black spiniforms of varying lengths. The females can be recognized by the spermatheca in which the tail projects deeply into body. Sternite VII is divided into two lobes by a wide sinus, the upper lobe more acuminate and extending further distad than the rounded lower lobe.

This species is reported by Hubbard (1947, 312) from Lake Burford, New Mexico.

Epitedia stanfordi Traub, 1944

This species can be separated from other species in the genus Epitedia by a prominent caudally directed process immediately ventral to each group of antepygial bristles.

In my collection there is a record of this flea as follows: one female in a collection from a wood rat (Neotoma micropus canescens) nest and several animals taken at the base of the Sandia mountains, east of Albuquerque, in December, 1947.

Meringis Jordan, 1937

Members of this genus can be separated from other genera of the family HYSTRICHOPSYLLIDAE in the State of New Mexico by

pairs of slender, pointed, all of which are black. The
is represented by two species in the genus *...*

Phyllorhynchus (Phyllorhynchus) ...

The males of this species are ...
larger and of a more ...
apex and armed with a ...
lengths. The ...
which the tail projects ...
ed into two lobes by a ...
and extending ...

This species is ...
Burford, New Mexico.

Phyllorhynchus (Phyllorhynchus) ...

This species ...
Genus *Phyllorhynchus* ...
ly ventral to each ...
In my collection ...
one female in a ...
cassessa) ...
Sandia mountain, ...

Phyllorhynchus (Phyllorhynchus) ...

Members of this genus ...
of the family ...

the presence of two genal teeth which overlap at base and the absence of apical spinelets on abdominal tergites.

Meringis arachis (Jordan, 1929)

Males of this species can be recognized by the finger which is narrow, the lower two-fifths of the posterior border without bristles. Sternite IX is without a proximal ventral lobe, pointed at apex and armed with two spiniforms and three evenly spaced bristles on posterior border. Females can be recognized by the apical margin of sternite VII slanting, being somewhat undulate, having a shallow bay at some distance above the rounded ventral angle.

This species was reported by Hubbard (1947, 319) from Sierra and Hidalgo Counties, New Mexico.

Meringis dipodomys Kohls, 1938

Males of this species can be recognized by the process of clasper that is very short in relation to finger, which is long, much broader than in arachis, and with apex broadly rounded. Sternite IX is without a proximal ventral lobe, at apex there is a very small pale cone-shaped spine and hair. Just below the ventral apical angle are two or three spiniforms. The females can be recognized by sternite VII with its upper shallow angular lobe, followed ventrally by angular bay.

In my collection there is a record of this flea as follows: two males from one kangaroo rat (Dipodomys ordii)

BOYD

the presence of the ...
absence of apical ...
Males of this species ...

which is narrow, the ...
without cristae. ...
lobe, pointed at apex ...
evenly spaced cristae ...
recognized by the ...
somewhat undulate, ...
the rounded ventral ...
This species was ...
Sierra and Hidalgo ...

Males of this species ...
of clasper that is ...
long, much broader ...
rounded. ...
apex there is a very ...
below the ventral ...
females can be ...
angular lobe, ...
In my collection ...
females: two males ...

collected on the mesa west of the Rio Grande River opposite Bernalillo on February 21, 1948.

Meringis parkeri Jordan, 1937

Males of this species can be recognized by sternite IX, which is distinct, proximal ventral lobe not swollen, and armed with a clawlike black spiniform. Deeply incurved posterior face of sternite armed with about four evenly spaced bristles, at posteriodorsal angle with a black spiniform and two short bristles at apex. Female can be recognized by the apical flattened margin of sternite VII.

In my collections there are records of this flea as follows: one female from one hoary wood rat (Neotoma micropus canescens) collected about two miles northeast of the bridge over the Rio Puerco River, U. S. Route 66 on February 28, 1948; one male from a grasshopper mouse (Onychomys leucogaster melanophrys) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948; one female from two grasshopper mice (Onychomys leucogaster melanophrys) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948; one male from a wood rat (Neotoma micropus canescens) nest and animals, collected at the base of the Sandia mountains east of Albuquerque in December, 1947.

Meringis nidi, new species

Figures 7 - 10

Head: Rostrum reaches at most to three-fourths of fore-coxa. Head is well rounded. Two genal teeth present, overlapping at base, outer shorter and broad, inner narrow, more pointed and about one-half again as long as the outer. Two rows of bristles present on gena, upper row of three or four medium sized ones and a lower row of four heavy ones, two extending slightly beyond genal teeth, second from antennal groove and bristle on outside of gena extending to tip of shorter tooth. Postantennal region with three rows of about five bristles each; some minute bristles along antennal groove. Eye vestigial.

Thorax: Pronotum with comb and a single row of bristles.

Legs: Coxa III with a row of spinelets on inner surface. Tarsal segment 5 of each leg with four pairs of lateral plantar bristles and a basal, submedian, ventral pair.

Abdomen: No apical spinelets on tergites. Two rows of bristles on tergites, a minor row posterior to which is a row of alternating major and minor bristles. In the male there are three antepygidial bristles of which the dorsal one is the shortest, the middle one the longest, and the ventral one about twice as long as the dorsal bristle. In the female there are three antepygidial bristles, the ventral two long and the dorsal bristle shortest.

Modified segments, male: Sternite IX (Fig. 7) with two and sometimes three black spiniforms on posterior border at apex,

Head: Rostrum present at least to base of antenna.

Coxa. Head is well rounded. The coxa is small, rounded, and

ping at base, over thorax and head. The coxa is small, rounded, and

ed and about one-half as long as the rostrum. The coxa is small, rounded, and

bristles present on coxa, upper row of bristles long, lower row of

ones and a lower row of ones. The coxa is small, rounded, and

beyond anal tooth, second row of bristles long, lower row of

outside of coxa extending to tip of rostrum. The coxa is small, rounded, and

region with three rows of bristles. The coxa is small, rounded, and

bristles along anterior groove. The coxa is small, rounded, and

Thorax: Promotor with small, rounded, and

Legs: Coxa III with a row of bristles. The coxa is small, rounded, and

Tarsal segment 5 of each leg with three rows of bristles. The coxa is small, rounded, and

bristles and a basal, rounded, and

Abdomen: No anal segment. The coxa is small, rounded, and

bristles on tergites, a minor row posterior to anal. The coxa is small, rounded, and

alternating major and minor bristles. The coxa is small, rounded, and

anepygial bristles of which the dorsal one is the longest. The coxa is small, rounded, and

middle one the longest, and the ventral one about half as long as

the dorsal bristle. In the female there are three rows of bristles. The coxa is small, rounded, and

bristles, the ventral two long and the dorsal bristles short. The coxa is small, rounded, and

Modified segments, anal. The coxa is small, rounded, and

and sometimes three black apophyses on each side of anal. The coxa is small, rounded, and

top one shortest, and below these some bristles. On anterior border at apex there is a small clear spiniform. Finger (Fig. 8) is armed on the posterior border with small bristles. Apex is flattened and the finger is notched near apex on anterior border, rest of anterior border of finger straight. Process of clasper has a row of three or four bristles, dorsal two long, ventral bristles short.

Modified segments, female: Sternite VII (Fig. 9) has a sinus on ventral margin, dorsal to which are two small lobes. Spermatheca (Fig. 10) is like that of arachis and dipodomys, with spermatheca as broad anteriorly as posteriorly and narrower in the middle.

Type locality: Mesa east of Albuquerque, Bernalillo County, New Mexico. Male holotype, female allotype, 27 male paratypes and 69 female paratypes from a nest of a kangaroo rat (Dipodomys spectabilis) collected on March 6, 1948. Also three male paratypes and eight female paratypes from the food storage of the same nest.

Remarks: Based on the males only, the species of the genus Meringis fall into two groups. In the species of the first group, which contains arachis (Jordan, 1929), dipodomys Kohls, 1938, cummingi (C. Fox, 1926), and walkeri Hubbard, 1940, sternite IX is without a proximal ventral lobe. The species of the second group, in which belong jewetti Hubbard, 1940, parkeri Jordan, 1937, jamesoni Hubbard, 1943, shannoni (Jordan, 1929),

top one shortest, and below it, and ...
border at apex ...
8) is armed on the ...
is flattened and ...
border, rest of ...
clasper has a row of ...
ventral ...
Modified ...
aligns on ventral ...
Spermatheca (Fig. 10) is like that of ...
with spermatheca as broad ...
in the middle.
Type locality: ...
County, New Mexico. ...
paratypes and ...
(*Dipodomys spectabilis*) ...
male paratypes and ...
of the same nest.
Remarks: Based on the ...
genus *Heteromys* ...
first group, which ...
Kobla, 1938, ...
sterile IX is ...
the second group, ...
Jordan, 1937, ...

and hubbardi Kohls, 1938, have a proximal ventral lobe on sternite IX. Females of those species for which the females are described may be separated into two groups on the basis of the shape of the spermatheca. In one group, including arachis Jordan and dipodomys Kohls, the spermatheca is as broad anteriorly as posteriorly, but more narrow in the middle; while the females of the second group have an inverted pear-shaped spermatheca.

The males of this new species resemble the species of the first group in the nature of sternite IX, and the females resemble the species of the first group in the shape of the spermatheca. This new species is near dipodomys but can be separated from it by the wider sternite IX; the process is not bifid and the cephalic margin of the movable finger is biconcave.

Meringis, species undertermined

Due to the lack of definite species characteristics in the females of this genus Meringis, it is impossible in some instances to determine isolated females. The females mentioned here fall into the Meringis arachis and Meringis dipodomys group and not in the Meringis parkeri group with respect to the nature of the spermatheca.

In my collections there are records of this species as follows: One female from one grasshopper mouse (Onychomys leucogaster melanophrys) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948; two females from

and Hubbard Kohla, 1938, have a somewhat different view on the
male IX. Females of these species for which the females are de-
scribed may be separated into two groups (1) the males of the same
of the species. In one group, *Alcedo viridis* Jordan and
Alcedo viridis Jordan, the species of the same group are
terribly, but more narrow in the middle, and females of
the second group have an inverted pear-shaped shape.
The males of this new species resemble the species of the
first group in the nature of the shape of the head and the
shape of the species of the first group in the shape of the
male. This new species is near the *Alcedo* group of species
ed from it by the wider distance of the head and the
and the cephalic margin of the head is different.

Merula, species under review

Due to the lack of definite species characteristics in
the females of this genus *Merula*, it is necessary to have in-
stances to determine isolated females. The females mentioned
here fall into the *Merula atrata* and *Merula alcedo* group
and not in the *Merula parkeri* group with respect to the nature
of the species.

In my collection there are records of this species as fol-
lows: One female from the grasshopper house (Ogryzova 1938)
gaster melanopygia collected on the west bank of the Olenok
River opposite Betnitsk on March 15, 1938; two females from

two grasshopper mice (Onychomys leucogaster melanophrys) collected at the same place and date.

Peromyscopsylla I. Fox, 1939

This genus can be separated from all other genera of the family HYSTRICHOPSYLLIDAE in the State of New Mexico by the presence of two genal teeth which do not overlap at the base.

Peromyscopsylla hesperomys (Baker, 1904)

The members of this species can be recognized by the transparent genal lobe which extends below the genal teeth. The males can be recognized by sternite VIII which is armed apically with four bristles, all of different lengths. The females can be recognized by sternite VII which is deeply sinuate, upper lobe prominent and more or less triangular, lower lobe wider.

In my collection there is a record of this flea as follows: one female and one male from a deer mouse (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948.

Phalacropsylla Rothschild, 1915

Members of this genus can be recognized by two genal teeth overlapping at base. Apical spinelets on abdominal tergites. Frontal tubercle and frontal notch absent. Fifth tarsal segment of each leg with four pairs of lateral planter bristles and a basal, submedian, ventral pair.

two transverse ribs (conspicuous transverse rib) collected at the same place and date.

Paronychia K. Fox, 1933

This genus can be separated from all other genera of the family HYSTEROPTERIDAE in the State of New Mexico by the presence of two basal teeth which do not overlap at the base.

Paronychia paronychia (Knox, 1904)

The members of this species can be recognized by the transverse basal lobe which extends below the basal teeth. The males can be recognized by sternite VII which is broad apically with four bristles, all of different lengths. The females can be recognized by sternite VII which is deeply sinuate, upper lobe prominent and more or less triangular, lower lobe wider.

In my collection there is a record of this fly as follows: one female and one male from a deer house (Paronychia manicellus) collected on the mesa west of the Rio Grande River opposite Manichillo on March 12, 1948.

Phaenocarpa manichillo, 1915

Members of this genus can be recognized by two basal teeth overlapping at base. Apical spines on abdominal tergites. Frontal tubercle and frontal notch absent. Fifth tarsal segment of each leg with four pairs of lateral spines and a basal, submedian, ventral pair.

Phalacrotopsylla allos Wagner, 1936

Males of this species can be recognized by the process which is prominent and broadly rounded apically. Finger long, slender and apically pointed, armed along posterior border with short bristles. Sternite IX is expanded apically and armed at the posteroventral angle with a row of about eight short, heavy black spiniforms. Females can be recognized by sternite VII, which is sinuate, upper lobe much longer than lower, narrow and rounded apically. Lower lobe is small and triangular. Spermatheca with body round to pear-shaped and tail long and slender but not bent back over body.

In my collection there is a record of this flea as follows: one female from one deer mouse (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite Bernalillo on March 12, 1948.

Leptopsylla Jordan and Rothschild, 1911

This genus can be separated from all other genera of the family HYSTRICHOPSYLLIDAE in New Mexico by the presence of four horizontally arranged genal teeth. Only representative of this genus in the west is the common European mouse flea.

Leptopsylla segnis (Schonherr, 1811)

This is the common European mouse flea. The head is bullet shaped with slightly pointed tip at apex of female. Directly posterior to apex are two heavy spiniforms and below

Thalassopygia allos Wagner, 1936

Males of this species can be recognized by the process which is prominent and broadly rounded apically. Finger long, slender and apically pointed, armed along posterior border with short bristles. Sternite IX is expanded apically and armed at the posterioventral angle with a row of about eight short, heavy black spiniforms. Females can be recognized by sternite VII, which is sinuate, upper lobe much longer than lower, narrow and rounded apically. Lower lobe is small and triangular. Spermathecae with body round to pear-shaped and tail long and slender but not bent back over body. In my collection there is a record of this flies as follows: one female from one deer mouse (Peromyscus maniculatus) collected on the mesa west of the Rio Grande River opposite

Bernalillo on March 12, 1948.

Lepidopygia Jordan and Rothschild, 1911

This genus can be separated from all other genera of the family HYSTRICOPHYLLIDAE in New Mexico by the presence of four horizontally arranged genital teeth. Only representative of this genus in the west is the common European mouse flea.

Lepidopygia seana (Schonherer, 1911)

This is the common European mouse flea. The head is bullet shaped with slightly pointed tip at apex of female. Directly posterior to apex are two heavy spiniforms and below

them on the anterior margin five bristles, above them two bristles. Genal comb consists of four teeth, the most dorsal is the broadest, the third is the longest. In the male the finger is rounded at the posterior margin and armed with five or six bristles, of which three are longer than the others. Distal end of posterior arm of sternite IX is expanded, posterior margin bearing a number of hairlike setae. In the females sternite VII is not sinuate, but consists of a single lobe having a somewhat undulate margin. Body of spermatheca somewhat rectangular with rounded corners, broader at base than at apex, and curved.

This species was reported by Hubbard (1947, 348) from the Alexandrian rat at Lordsburg, New Mexico.

Proximorectofrontia, new genus

Diagnosis: Frontal tubercle present; eye vestigial; genal teeth five in number; two heavy genal bristles and more dorsal in position five or six medium ones; five-segmented labial palpus. Pronotal comb with about 16 teeth. Apical spinelets on all abdominal tergites. Antepygidial bristles absent in the male, two in the female. Fifth tarsal segment of each leg armed with usually five, rarely six, pairs of lateral plantar bristles. Known only from the genotype.

Genotype: Proximorectofrontia unica, new genus and new species.

Remarks: This new genus stands between Rectofrontia Wagner and Argyropolo, 1934 and Actenophthalmus C. Fox, 1925.

them on the anterior margin five bristles, above them two bristles. Genal comb consists of four teeth, the most dorsal is the broadest, the third is the longest. In the male the finger is rounded at the posterior margin and armed with five or six bristles, of which three are longer than the others. Distal end of posterior arm of sternite IX is expanded, posterior margin bearing a number of hairlike setae. In the female sternite VII is not sinuate, but consists of a single lobe having a somewhat undulate margin. Body of spermatheca somewhat rectangular with rounded corners, broader at base than at apex, and curved. This species was reported by Hubbard (1947, 348) from the Alexandrian rat at Iordaburg, New Mexico.

Proximorsetronia, new genus

Diagnosis: Frontal tubercle present; eye vestigial; genal teeth five in number; two heavy genal bristles and more dorsal in position five or six medium ones; five-segmented labial palps. Pronotal comb with about 16 teeth. Apical spinules on all abdominal tergites. Antepygial bristles absent in the male, two in the female. Fifth tarsal segment of each leg armed with usually five, rarely six, pairs of lateral plantar bristles. Known only from the genotype.

Genotype: Proximorsetronia unia, new genus and new

species.

Remarks: This new genus stands between Heterotritia Wagner and Argypolo, 1934 and Astenophthalmus G. Fox, 1925.

The nature of the genal comb indicates a close relationship to the genus Rectofrontia. The new genus has a smaller number of teeth in the pronotal comb than is common in species of the two related genera. The present genus differs from the genus Rectofrontia in the number of lateral plantar bristles on the fifth tarsal segment of each leg. The spermatheca is similar to that of Actenophthalmus.

Proximorectofrontia unica, new species

Figures 11 - 14

Head: Frontal tubercle prominent. Genal comb with five teeth, four in a row and one above at about eye position. The teeth of gena increase in length from outer edge of gena toward antennal groove, except for the short tooth at the inner edge of gena at eye position. Genal bristles: two heavy ones at about eye position, one in about the center, other on gena next to antennal groove; there are four to six medium bristles dorsal to these. Postantennal region with three rows of bristles. Labial palpus of five segments, not reaching tip of coxa I.

Thorax: Pronotal comb of about 16 teeth, single row of bristles. Upper sclerite of metepisternum separated from metanotum by internal ridge.

Legs: Coxa III with a patch of spinelets on inner surface. Fifth tarsal segment of each leg has five or six pairs of lateral plantar bristles.

Abdomen: Apical spinelets present on each abdominal tergite. There are two antepygidial bristles on each side in the female and none in the male.

Modified segments, male: Process of clasper (Fig. 11) with one long subapical bristle on outer surface, posterior border is straight except at apex where it is curved toward finger. Finger is narrow, shorter than process, with a rounded posterior border and a slightly concave anterior border, a few small bristles on posterior border. Sternite IX (Fig. 12) of male has a rounded apex and has many small bristles on outer surface.

Modified segments, female: Spermatheca (Fig. 13) with a gradual decrease in diameter from tip of tail to body, without a definite line of demarcation between body and tail; tail bent over body. Sternite VII of female as shown in figure 14.

Type locality: Mesa east of Albuquerque, one male holotype, one female allotype, seven male paratypes and seven female paratypes from a nest of a kangaroo rat (Dipodomys spectabilis) collected on March 6, 1948.

Stenoponia Jordan and Rothschild, 1911

This genus can be separated from other genera in the State of New Mexico by the possession of a genal comb of many long slender black teeth. This genus is represented in the western United States by a single species.

117

Abdomen: ...
tergite. There are ...
the female and male ...
Modified ...
with one long ...
border is ...
finger. ...
posterior border ...
small bristles ...
male has a ...
surface.

Modified ...
a gradual ...
a definite line ...
over body. ...
Type ...
holotype, one ...
female paratype ...
(coll.) collected ...

Genus and Species

This genus ...
of New Mexico ...
slender black ...
United States ...

Stenoponia americana (Baker, 1899)

The members of this species have a genal comb of about 26 teeth. The pronotum has a comb of about 26 teeth on each side. Each abdominal tergite has three rows of bristles. First tergite with a comb of 42 teeth. Tergites II to IV with a series of short stout apical spinelets. Males can be recognized by the process of clasper which is broad, apically rounded and armed with a series of medium bristles. The finger is curved, longer than process, and armed with short and medium bristles along posteroventral border. Sternite IX is expanded apically, paddle-shape, and armed with numerous bristles. The females can be recognized by sternite VII, with its deep sinus close to ventrum. Lower lobe narrow, triangular; upper lobe also weak, apically rounded. The head of the spermatheca is spherical with a long crooked tail.

In my collection there is a record of this flea as follows: one female from one long-nosed deer mouse (Peromyscus nasutus) collected in the Jemez mountains on March 27, 1948.

ISCHNOPSYLLIDAE Wahlgren, 1907

The western North America members of this family are recognized by the presence of a pair of highly sclerotic preoral plates on each side of head. These vary in size and shape and represent modified genal teeth. Members of this family are normally parasitic on bats. One genus and one species has been reported from New Mexico.

Sternopsylla Jordan and Rothschild, 1921

Members of this genus can be recognized by the acuminate maxilla and the presence of antepygidial bristles.

Sternopsylla carlsbadensis Ewing, 1940

In the males from New Mexico, the movable finger is about as broad as long and the anterior margin is very broadly incurved; the two lower, posterior, marginal, spinelike setae of the movable finger situated some distance from one another, and the seta adjacent to the third posterior, marginal, spinelike seta is larger and longer than the third seta itself.

This species was reported by Hubbard (1947, 381) from the Carlsbad Cavern, New Mexico.

Sternoptygia Jordan and Kotschalke, 1921

Members of this genus can be recognized by the following

maxilla and the presence of antepygial cristae.

Sternoptygia caribbeensis (Jenkins, 1946)

In the males from New Mexico, the movable finger is about
as broad as long and the anterior margin is very broadly convex-
ed; the two lower, posterior, marginal, spinulose teeth of the
movable finger situated some distance from one another, and the
teeth adjacent to the third posterior, marginal, spinulose teeth
is larger and longer than the third teeth itself.
This species was reported by Jenkins (1946, 1947) from the
Caribbeo Cavern, New Mexico.

CHAPTER V

SUMMARY

1. During this study, 275 fleas were removed for study from the 137 rodents examined. The host animals included 12 different species and subspecies of rodents.

2. From six nests, 1,406 fleas were secured. These fleas belonged to nine species and subspecies. Of these, four species and subspecies were also found on the host animals, five species were found only in the nests.

3. In the food storage from one rodent burrow, 12 fleas belonging to two different species were collected.

4. Prior to the present work, there were only 21 species and subspecies of fleas reported in the literature from New Mexico. The present paper brings to 36 the total of species and subspecies reported from New Mexico.

5. Only five of the previously reported species were found in the present collections.

6. Nine species, already described in the literature as occurring in the western part of the United States, are listed as new records for New Mexico. In addition, there is reported the presence of three species, the material of which is insufficient for specific and subspecific determinations.

7. Three species and one genus new to the literature are described from specimens collected in New Mexico.

CHAPTER V

SUMMARY

1. During this study, 275 flies were removed for study from the 137 rodents examined. The host animals included 12 different species and subspecies of rodents.
2. From six nests, 1,400 flies were secured. These flies belonged to nine species and subspecies. Of these, four species and subspecies were also found on the host animals, five species were found only in the nests.
3. In the food storage from one rodent burrow, 12 flies belonging to two different species were collected.
4. Prior to the present work, there were only 21 species and subspecies of flies reported in the literature from New Mexico. The present paper brings to 36 the total of species and subspecies reported from New Mexico.
5. Only five of the previously reported species were found in the present collections.
6. Nine species, already described in the literature as occurring in the western part of the United States, are listed as new records for New Mexico. In addition, there is reported the presence of three species, the material of which is insufficient for specific and subspecific determinations.
7. Three species and one genus new to the literature are described from specimens collected in New Mexico.

BIBLIOGRAPHY

- Eads, R. H. and G. C. Menzies. 1948. An undescribed Anomiopsyllus Baker from the pack rat, Neotoma micropus Baird. Jour. Kansas Ent. Soc., vol. 21, pp. 133-136; 5 figs.
- Ewing, H. E. and Irving Fox. 1943. The fleas of North America. U. S. Dept. Agric., Misc. Publ. no. 500, pp. 1-142; 13 figs.
- Hubbard, Clarence Andresen. 1947. Fleas of western North America. Iowa State College Press, Ames, Iowa, pp. i-ix, 1-533; numerous text figures.

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

100-100000-100000

PLATE I

EXPLANATION OF FIGURES

- Fig. 1. Anomiopsyllus novomexicanensis, new species; male, sternite IX.
- Fig. 2. Anomiopsyllus novomexicanensis, new species; male, finger and process of clasper.
- Fig. 3. Anomiopsyllus novomexicanensis, new species; female, sternite VII.
- Fig. 4. Anomiopsyllus novomexicanensis, new species; female, spermatheca.
- Fig. 5. Megarthroglossus bisetis Jordan and Rothschild, 1915; male, sternite IX.
- Fig. 6. Megarthroglossus bisetis Jordan and Rothschild, 1915; male, finger of clasper.
- Fig. 7. Meringis nidi, new species; male, sternite IX.

FIGURES OF THE

- Fig. 1. Anterior view of the head of the male
- Fig. 2. Anterior view of the head of the female
- Fig. 3. Anterior view of the head of the male
- Fig. 4. Anterior view of the head of the female
- Fig. 5. Anterior view of the head of the male
- Fig. 6. Anterior view of the head of the female
- Fig. 7. Anterior view of the head of the male

BEVERLY H. BEE
A. S. B.
BOND

PLATE II

EXPLANATION OF FIGURES

- Fig. 8. Meringis nidi, new species; male, finger and process of clasper.
- Fig. 9. Meringis nidi, new species; female, sternite VII.
- Fig. 10. Meringis nidi, new species; female, spermatheca.
- Fig. 11. Proximorectofrontia unica, new genus and new species; male, finger and process of clasper.
- Fig. 12. Proximorectofrontia unica, new genus and new species; male, sternite IX.
- Fig. 13. Proximorectofrontia unica, new genus and new species; female, spermatheca.
- Fig. 14. Proximorectofrontia unica, new genus and new species; female, sternite VII.

PLATE II

EXPLANATION OF FIGURES

- Fig. 8. Merinaia nidi, new species; male, finger and process of clasper.
- Fig. 9. Merinaia nidi, new species; female, sternite VII.
- Fig. 10. Merinaia nidi, new species; female, spermatheca.
- Fig. 11. Proximotectonella nidi, new genus and new species; male, finger and process of clasper.
- Fig. 12. Proximotectonella nidi, new genus and new species; male, sternite IX.
- Fig. 13. Proximotectonella nidi, new genus and new species; female, spermatheca.
- Fig. 14. Proximotectonella nidi, new genus and new species; female, sternite VII.



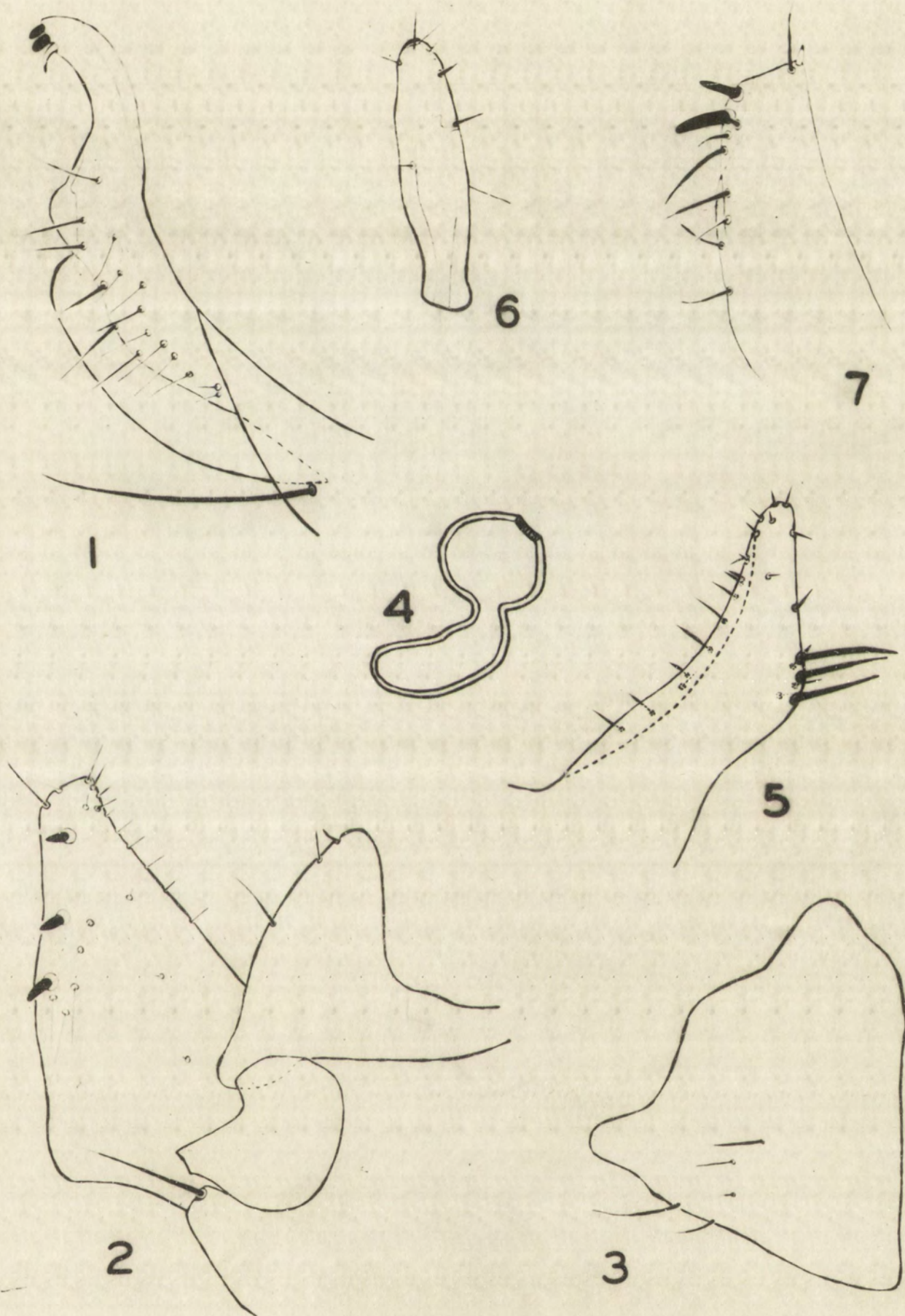
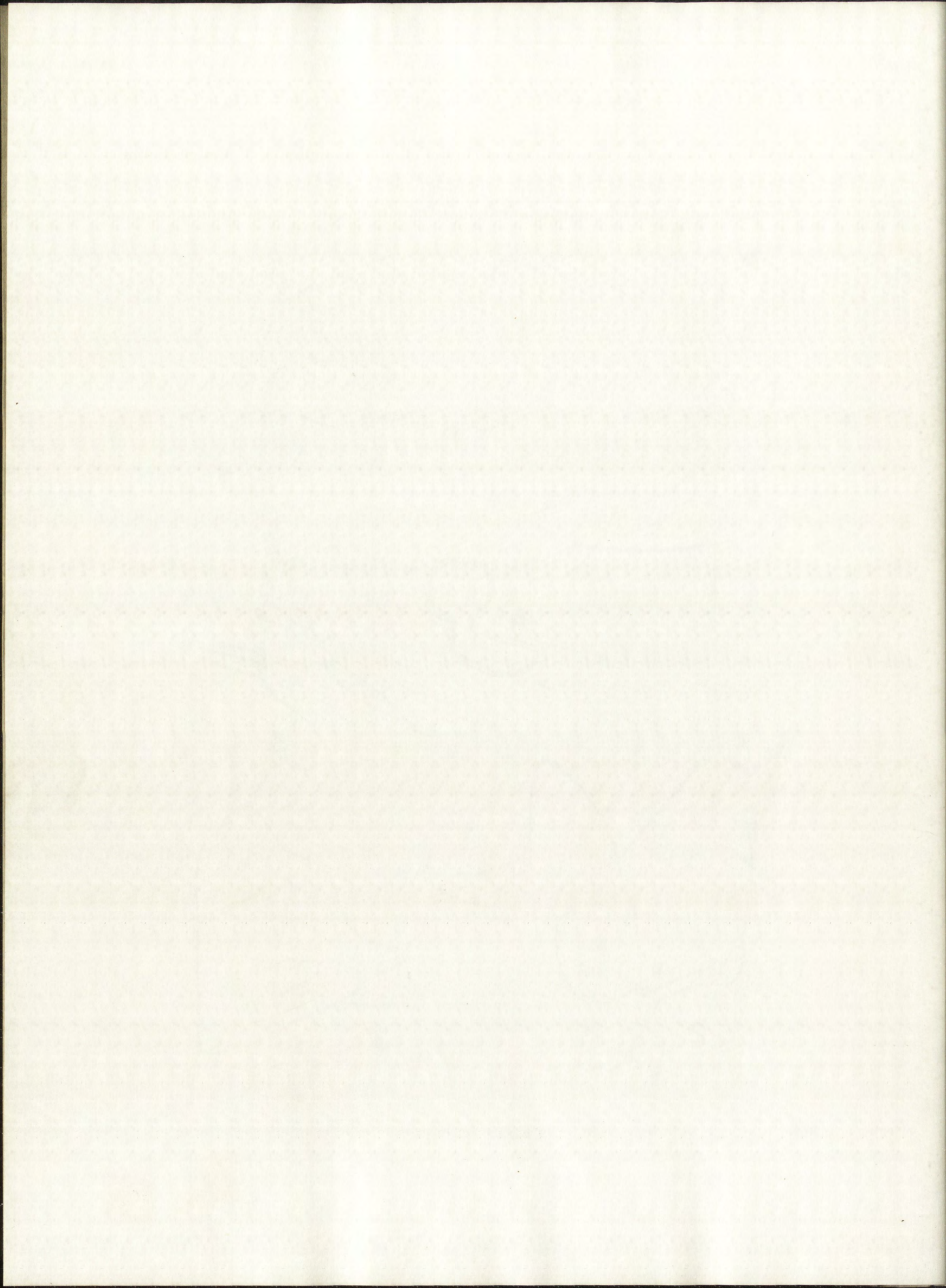


PLATE I



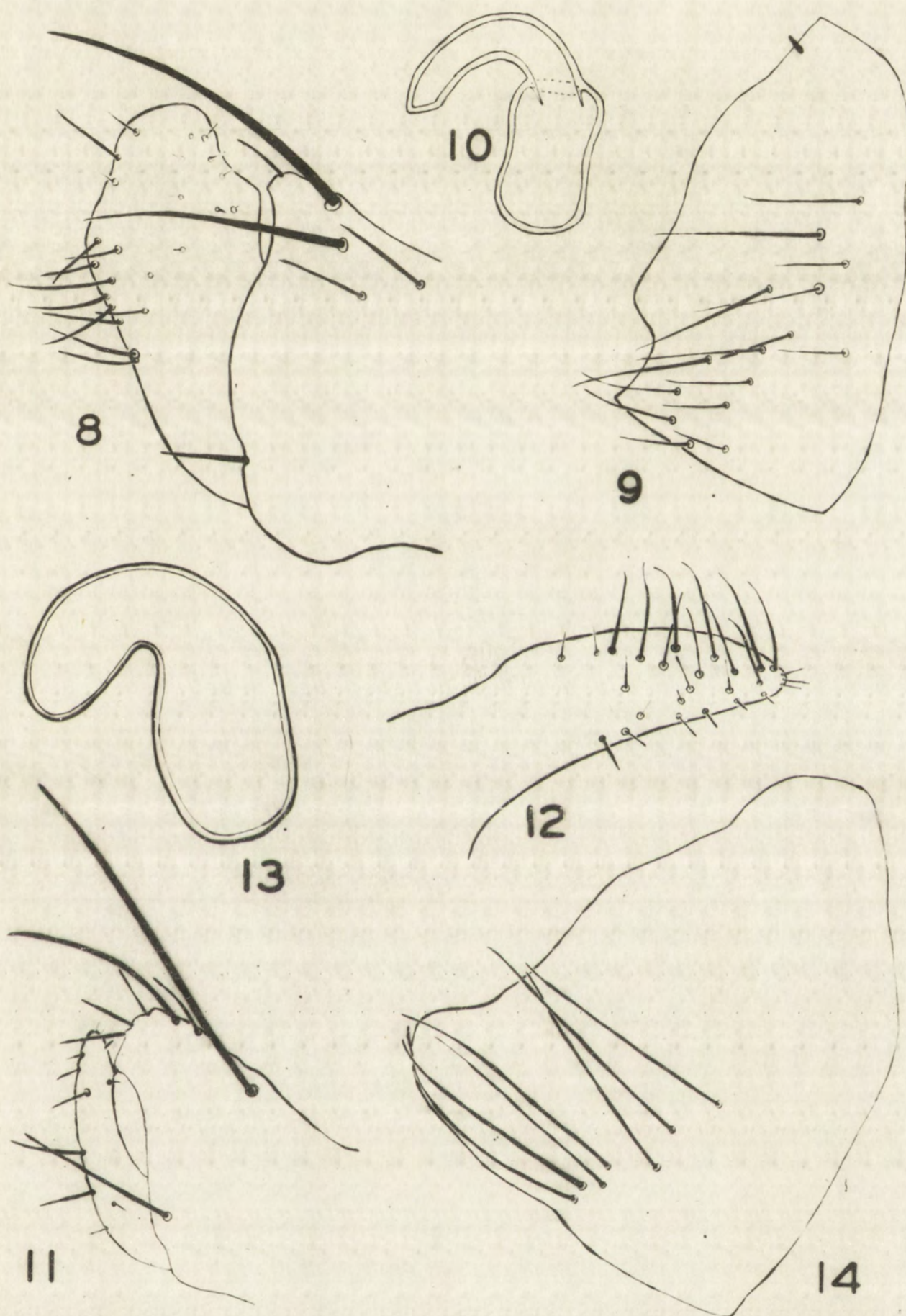
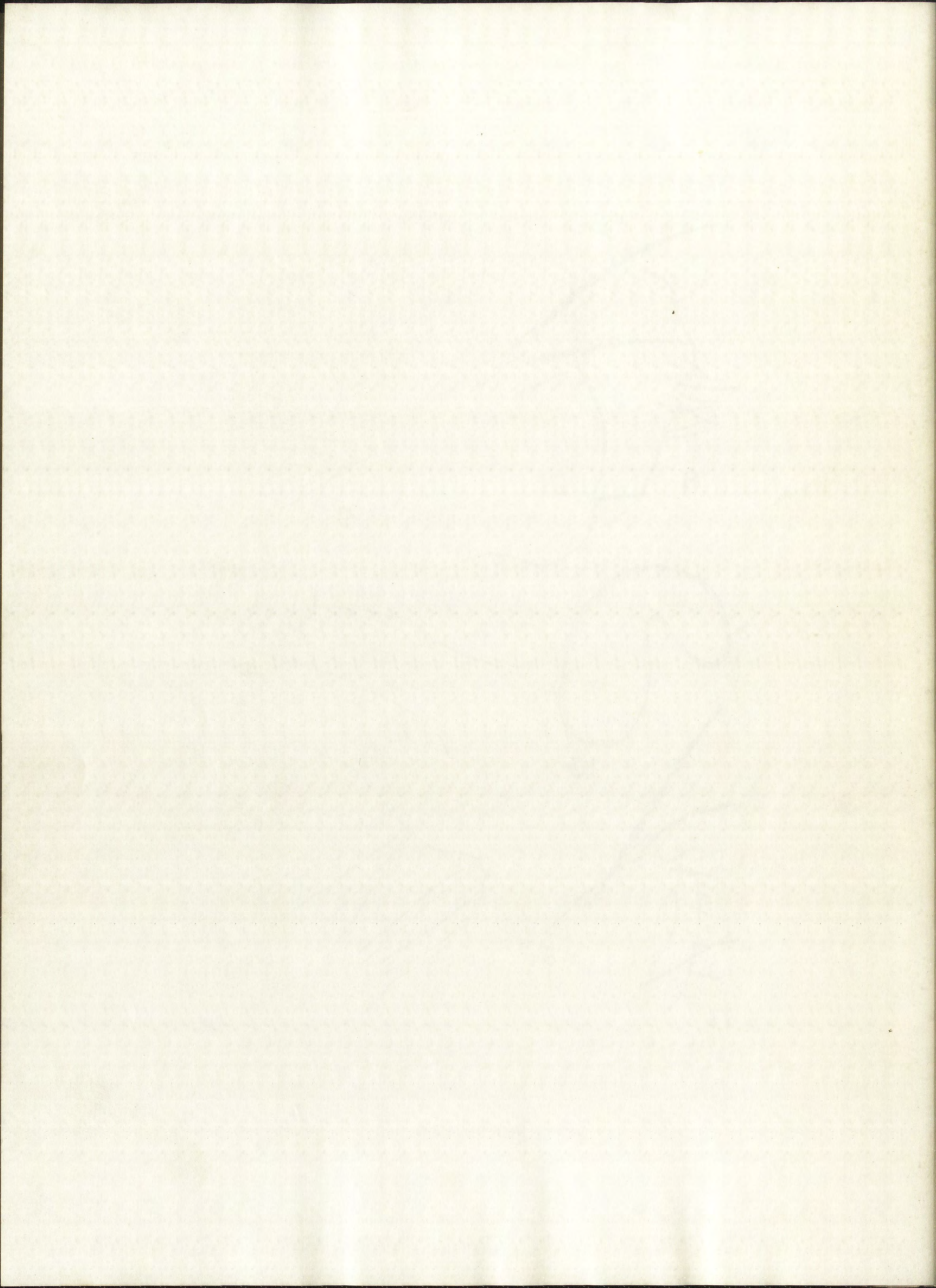
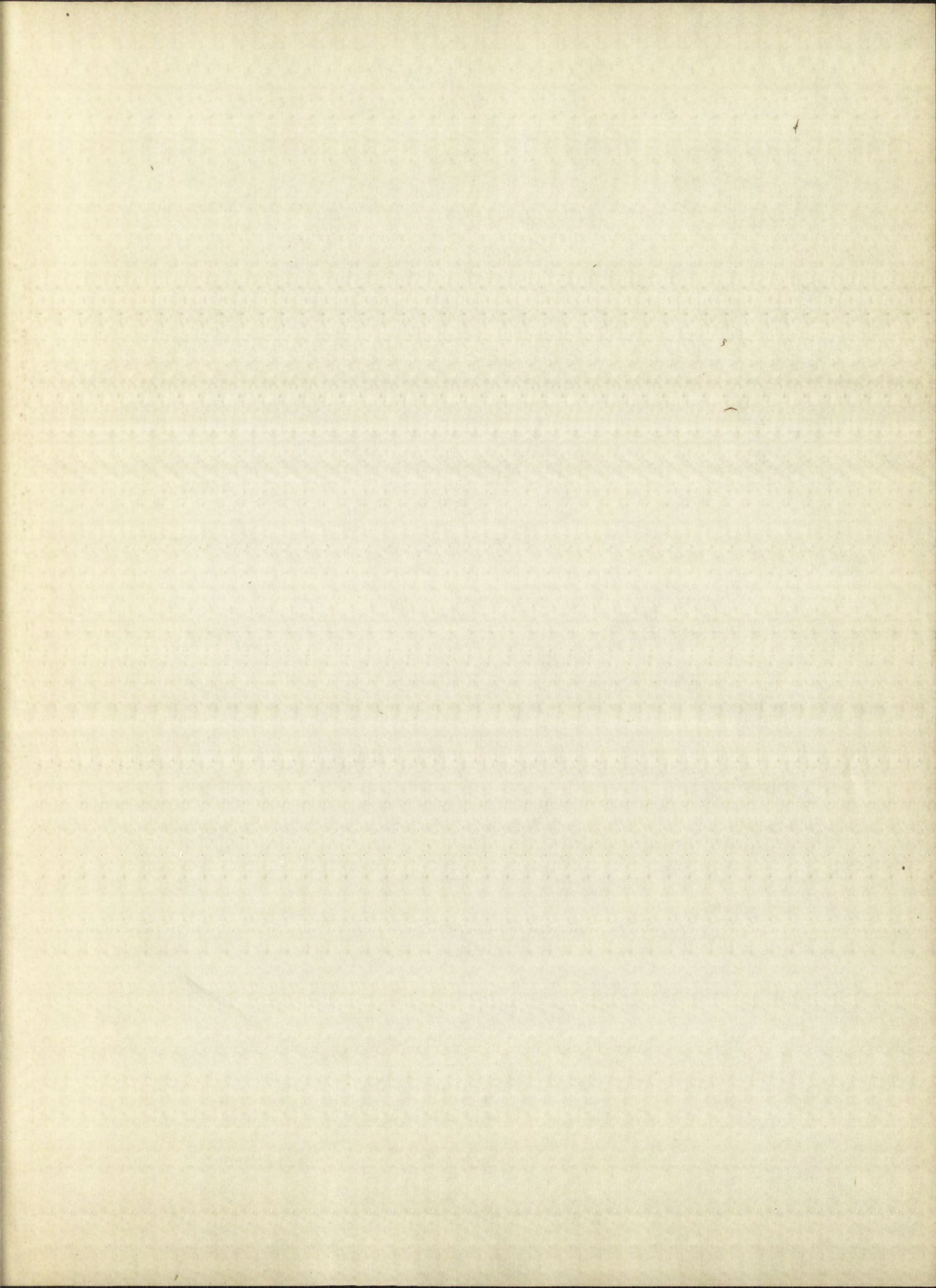
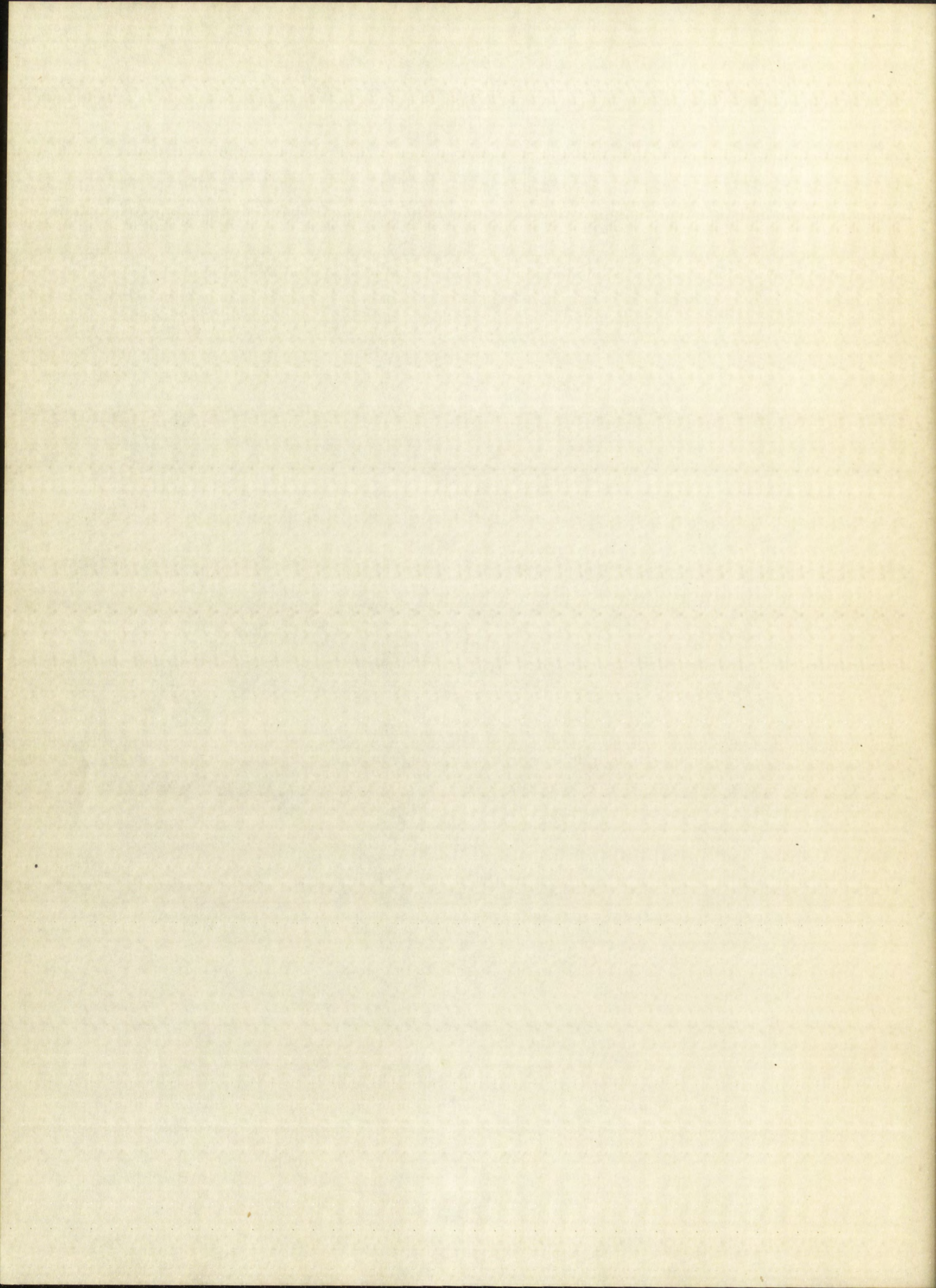
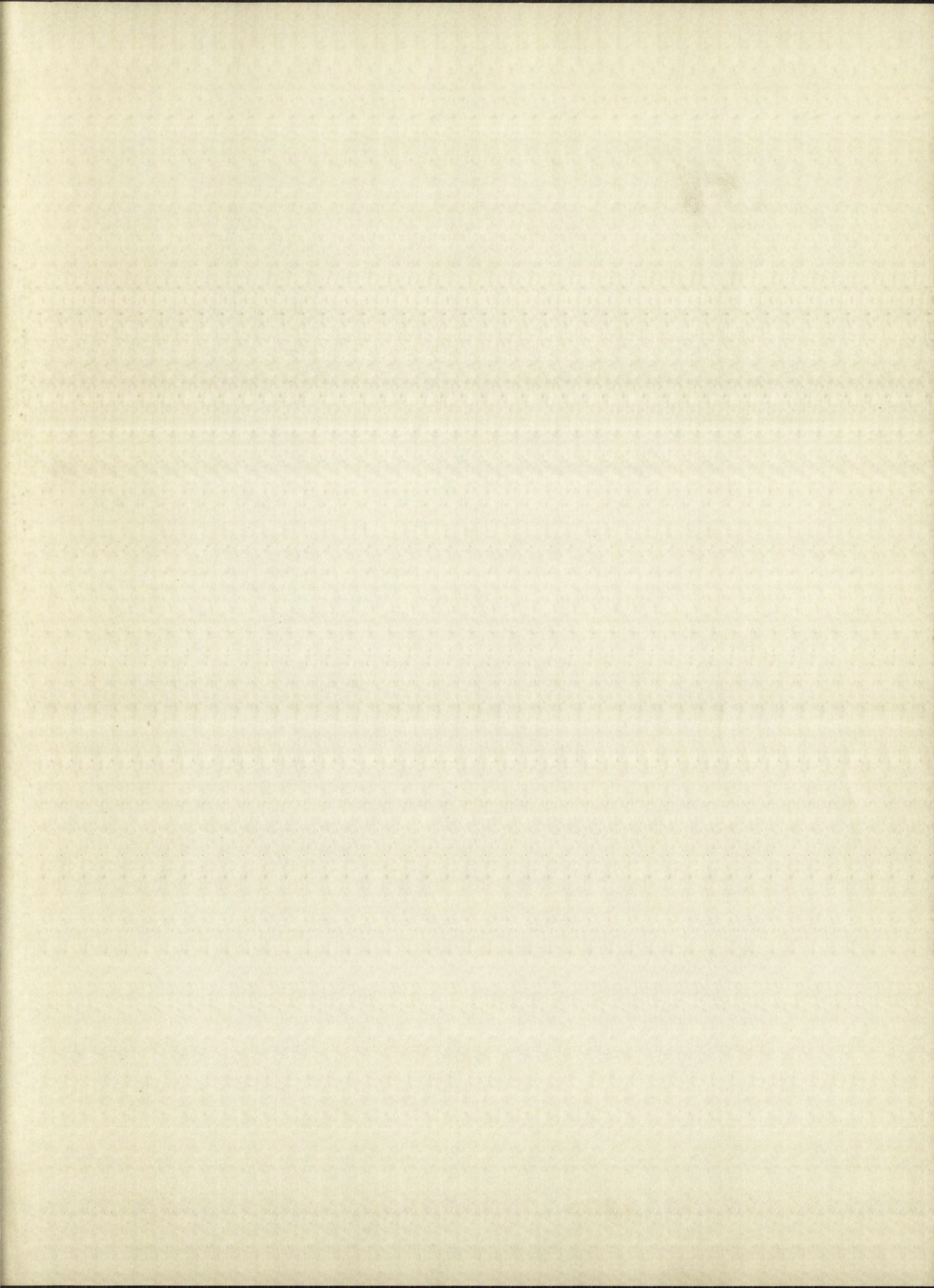


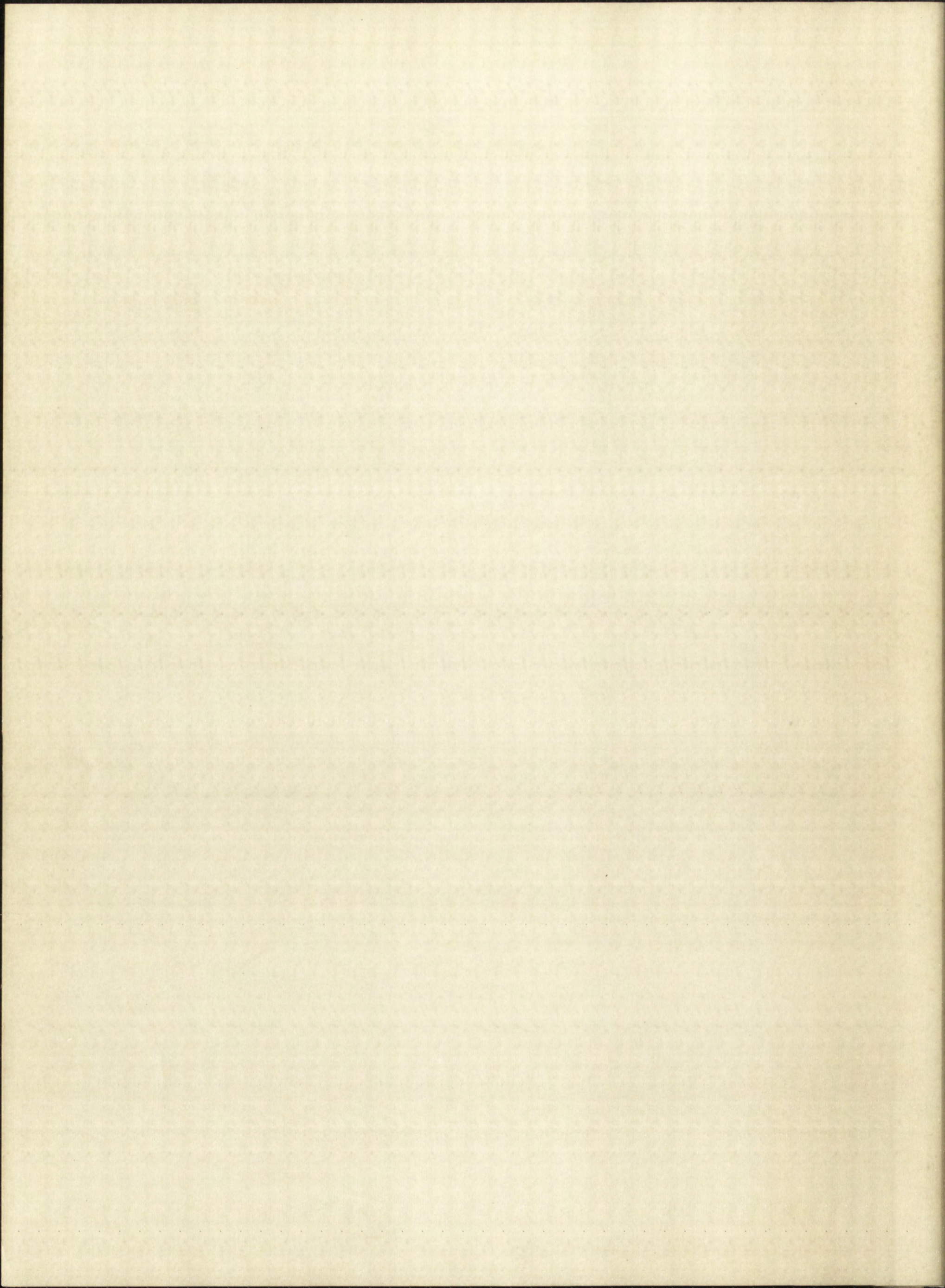
PLATE II











[illegible]

