DIRECTIONS FOR COLLECTING AND PRESERVING INSECTS, PART F OF BULLETIN OF THE UNITED STATES NATIONAL MUSEUM, NO. 39

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649524822

Directions for Collecting and Preserving Insects, Part F of Bulletin of the United States National Museum, No. 39 by C. V. Riley

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd. Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

C. V. RILEY

DIRECTIONS FOR COLLECTING AND PRESERVING INSECTS, PART F OF BULLETIN OF THE UNITED STATES NATIONAL MUSEUM, NO. 39



SMITHSONIAN INSTITUTION. UNITED STATES NATIONAL MUSEUM.

DIRECTIONS FOR COLLECTING AND PRESERVING INSECTS.

BY

C. V. RILEY, M. A., PH. D.,

Honorary Curator of the Department of Insects, U. S. National Museum.

Part F of Bulletin of the United States National Museum, No. 39 (with one plate).

2

88 B.00

P WASHINGTON; GOVERNMENT PRINTING OFFICE.

1892.

CONTENTS.

	Page,
Introductory	3
MANUAL OF INSTRUCTIONS FOR COLLECTING AND PRESERVING INSECTS	5
Characteristics of insects	5
Scope and importance of entomology	6
CLASSIFICATION OF REXAPODS	8
Order Hymenopters	12
Order Coleopters	14
Order Lepidoptera	16
Order Hemiptera	17
Suborder Thysanoptera	18
Order Diptera	19
Suborder Aphaniptera	20
Order Orthoptera	21
Suborder Dermaptera	22
Order Neuroptera	22
Suborder Trichopters	23
Suborder Mecoptera	23
Suborder Neuroptera	23
Suborder Platyptera	24
Suborder Plecoptera	25
Suborder Odonata	25
Suborder Ephemeroptera	25
Suborder Thysanura	26
COLLECTING	26
General considerations	26
Collecting apparatus	29
The sweeping net	29
The water net	31
Water dip-net	32
The umbrella	32
The beating cloth	33
The umbrella net	34
The sieve	35
The chisel	36
The trowel.	36
The collecting tweezers	36
The brush	37
The fumigator	38
The haversack	38
The lens and microscope	39
	39
Collecting Hymenopters	42
Collecting Coleoptera	9775
General directions	42
Winter collecting	43

CONTENTS.

Collecting—Continued.	
Collecting Coleoptera—Continued.	Page.
Spring collecting	44
Myrmecophilous and Termetophilous species	44
Spring flights of Coleoptera	44
Beach collecting	45
Attracting by lights	45
Traps	45
Freshets	45
Summer collecting	46
Collecting under stones	46
Collecting in rotten stumps and logs	46
Collecting in dying or dead trees	47
Beating living trees, shrubs, and vines	47
Sweeping	47
Collecting on mud and gravel banks	48
Collecting aquatic beetles	49
Collecting at the seashore and on sandy places	49
Collecting dung beetles	49
Night collecting	50
Fall collecting.	50
	50
Collecting Lepidoptera	50
	165.00
Collecting the early states	53
Collecting Hemiptera	54
Collecting Diptera	55
Collecting Orthoptera	57
Collecting Neuroptera	58
Pseudoneuroptera	58
Neuroptera	59
KILLING AND PRESERVING INSECTS	60
First preservation of living specimens	60
Killing specimens	61
Alcohol	61
Chloroform and ether	62
Cyanide of potassium	63
Other agenta	65
Special directions for different orders	66
ENTOMOTAXY	67
Care of pinned and mounted specimens	67
Insect pins	67
Preparation of specimens	68
Pinning	69
Mounting on points	70
Mounting duplicates	73
Temporary storage of specimens	74
Envelopes for Lepidoptera, etc	74
Directions for spreading insects	75
A new apparatus for spreading Microlepidoptera	76
Spreading Microlepidopters	77
Relaxing	79
Inflation of the larvæ of Lepidoptera	80
Stuffing insects	82
Dry preservation of Aphides and other soft-bodied insects	82

CONTENTS.	[m]
CONTENTS.	

ENTOMOTAXY—Continued.	
Care of pinned and mounted specimens—Continued.	Page.
Mounting specimens for the microscope	84
Preparing and mounting the wings of Lepidoptera	86
Preservation of alcoholic specimens	88
Apparatus and methods	88
Vials, stoppers, and holders	89
Preserving micro-larvæ in alcohol	92
Preservative fluids	93
Alcohol	93
Alcohol and white arsenic	93
Alcohol and corrosive sublimate	94
Two fluids to preserve form and color	94
Glycerin	94
The Wickersheim preserving fluid	94
Labeling specimens.	98
General directions	98
	5557
Labels for pinned specimons	98
Labeling alcoholic specimens	9
Cabinet for apparatus	90
INSECT BOXES AND CABINETS	90
General directions	90
The folding box	9
The cabinet	100
The Lintner display box	10
The Martindale box for Lepidoptera	104
Horizontal versus vertical arrangement of boxes	
Lining for insect boxes	10
ARRANGEMENT OF INSECTS IN THE CABINET	100
Systematic and biologic collections	10
Economic displays	10
Labeling collections	10
MUSEUM PESTS, MOLD, ETC	106
Museum pests	108
Remedies	100
Naphthaline	100
Bisulphide of carbon	11
Mercury pellets	11
Carbolic acid	
A means of preserving insects in dry, hot countries	
Mold	
Verdigrising and greasing	
THE REARING OF INSECTS	11:
General directions	200
	111
The breeding cage, or vivarium	14353
Detailed instructions for breeding	
The root cage	
Other apparatus	27030
The insectary	
DIRECTIONS FOR PACKING AND TRANSMITTING INSECTS	
NOTES AND MEMORANDA	
Instructions for collecting and preserving Arachnids and Myriapods.	
Directions for collecting spiders	
Apparatus	
Time and locality for collecting	12

1	•			٠
1		т	w	۲.
			٠	
	ь			

CONTENTS.

COLLECTING AND PRESERVING ARACHNIDS AND MYRIAPODS-Continued.	Page.
Collecting other Arachnids, mites, ticks, scorpions, etc	126
Collecting Myriapoda	130
Text books and entomological works	131
Comprehensive works most useful for the student of North American in-	10000
sects	132
General works on classification	132
Hymenoptera	132
Coleoptera	132
Lepidoptera	133
Hemiptera	134
Diptera	134
Orthopters	188
Neuroptera	135
Myriapoda	135
Arachnida	136
American periodicals	136
Foreign periodicals	138
The more useful works on economic entomology	140
Entomological works published by the United States Entomological Com-	•
mission and by the United States Department of Agriculture	141
Works by the United States Entomological Commission	141
Bulletins of the Division of Entomology, U. S. Department of Agri-	
culture	142
Special reports and bulletins	144
HOW TO OBTAIN ENTOMOLOGICAL BOOKS AND PAMPHLETS.	148

INTRODUCTORY.

There is a constant demand, especially from correspondents of the Museum and also of the Department of Agriculture, for information as to how to collect, preserve, and mount insects. There is also great need of some simple directions on a great many other points connected with the proper packing of insects for transmission through the mails or otherwise; labeling; methods of rearing; boxes and cabinets; text-books, etc. Interest in the subject of entomology has, in fact, made rapid growth in the last few years, and now that nearly every State has an official entomologist connected with its State Agricultural Experiment Station, the number of persons interested in the subject may be expected to increase largely in the near future. I have hitherto made use of the Smithsonian Miscellaneous Collections, No. 261, which is a pamphlet on collecting and preserving insects prepared by Dr. A. S. Packard. This is out of print, and I have been requested by Prof. Goode to prepare for Bulletin 39, U. S. N. M., something that would cover the whole ground and give the more essential information needed for collectors and students of insect life. I have deemed it unnecessary to go too much into detail, but have studied not to omit anything essential. Customs and methods vary in different countries and with different individuals, but the recommendations contained in the following pages are based upon my own experience and that of my assistants and many acquaintances, and embrace the methods which the large majority of American entomologists have found most satisfactory.

Much of the matter is repeated bodily from the directions for collecting and preserving insects published in my Fifth Report on the Insects of Missouri (1872) and quotations not otherwise credited are from that Report. The illustrations, also, when not otherwise credited or not originally made for this paper, are from my previous writings. Some are taken from Dr. Packard's pamphlet, already mentioned; others, with the permission of Assistant Secretary Willits, from the publications of the Department of Agriculture, while a number have been especially made for the occasion, either from photographs, or from drawings by Miss L. Sullivan or Dr. Geo. Marx or Mr. C. L. Marlatt. When enlarged, the natural size is indicated in hair-line. In the preparation of the pamphlet I have had the assistance of Mr. E. A. Schwarz, and more particularly of Mr. C. L. Marlatt, to both of whom I desire here to express my obligations.

C. V. R.