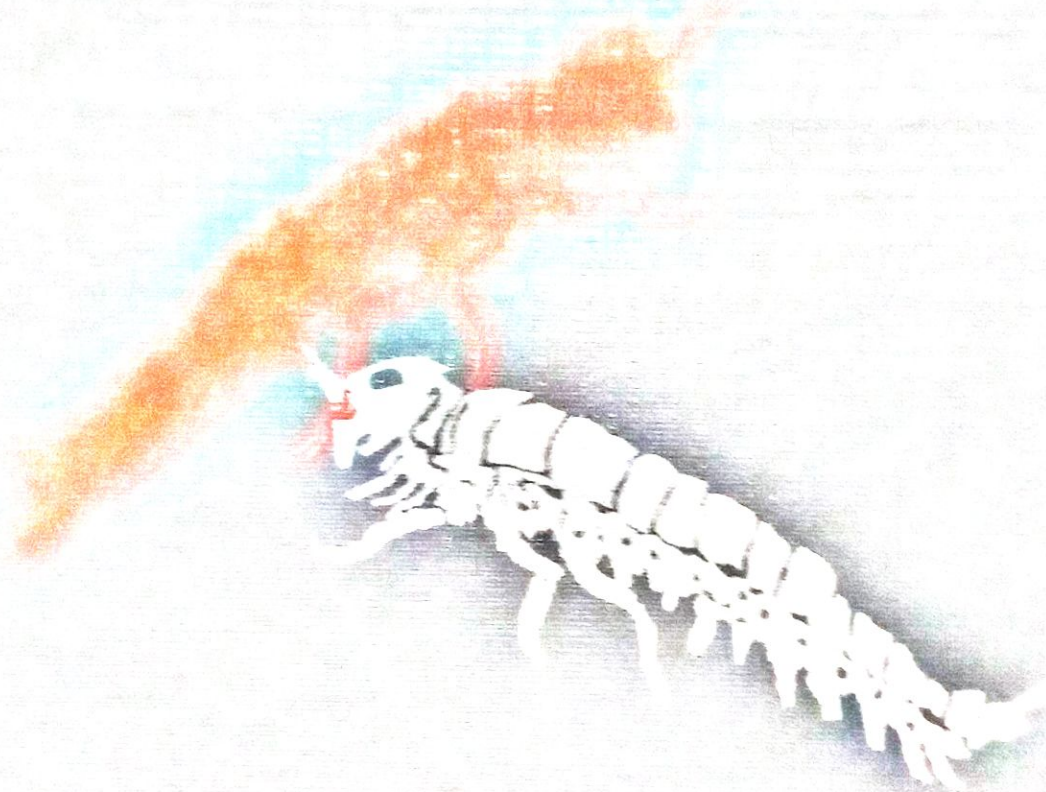


PRINCIPLES OF INSECT MORPHOLOGY



THE SYNOPSIS

CONTENTS

	Page
PREFACE	v
CHAPTER I	
INTRODUCTION	1
CHAPTER II	
GENERAL ORGANIZATION AND DEVELOPMENT	14
Glossary of Embryological Terms	44
CHAPTER III	
THE BODY WALL AND ITS DERIVATIVES	48
1. The Body Wall	48
2. External Processes of the Body Wall	55
3. Sense Organs	59
4. Ectodermal Glands, Corpora Allata, Oenocytes	60
5. Muscle Attachments on the Body Wall	62
6. Moulting	64
Glossary of Terms Applied to the Body Wall	68
CHAPTER IV	
Body Regions, Sclerites, and Segmentation	70
Glossary of General Terms Applied to the Body Segments and the Skeletal Plates	81
CHAPTER V	
THE SEGMENTAL APPENDAGES OF ARTHROPODS	83
Glossary of Terms Applied to the Appendages	98
CHAPTER VI	
THE HEAD	100
1. General Morphology of the Arthropod Head	100
2. Structure of the Definitive Insect Head	104
3. Special Modifications in the Structure of the Head	118
Glossary of Terms Applied to the Head	127
CHAPTER VII	
THE HEAD APPENDAGES	130
1. Preantennal Appendages	130
2. The Antennae	131
3. The Postantennal Appendages	133
4. The Mandibles	133
5. The Superlinguae	139
6. The Maxillae	141
7. The Labium	145
8. Glands of the Head Appendages	153
Glossary of Terms Applied to the Head Appendages	155

CHAPTER VII

THE THORAX

1. Evolution of the Thorax
2. The Stage
3. General Structure of the Thorax
4. The Prothorax
5. The Pleurothorax
6. The Thoracic Muscles
- Glossary of Terms Applied to the Thorax

CHAPTER VIII

THE THORACIC LEGS

1. The Structure of the Legs
2. Muscles and Mechanisms of the Legs
- Glossary of Terms Applied to the Parts of an Insect Leg

CHAPTER IX

THE WINGS

1. Origin and Evolution of the Wings
2. Development of the Wings
3. Structure of the Wings
4. The Wing Muscles
5. The Wing Movements
6. Insect Flight
- Glossary of Terms Applied to the Wings

CHAPTER X

THE ABDOMEN

1. General Structure of the Abdominal Segments
2. The Abdominal Musculature
3. The Abdominal Appendages

CHAPTER XI

THE ORGANS OF INGESTION

1. The Peroral Cavity
2. The Cephalic Stomodaeum
3. The Feeding Mechanism of Neuroptera and Coleoptera
4. The Feeding Mechanism of Hymenoptera
5. The Feeding Mechanism of Lepidoptera
6. The Feeding Mechanism of Diptera
7. The Mouth Parts of Siphonoptera
8. The Feeding Mechanism of Phymatoptera
9. The Feeding Mechanism of Hemiptera
10. The Feeding Mechanism of Anoptera

CHAPTER XII

THE ALIMENTARY CANAL

1. Development of the Alimentary Canal
2. General Structure of the Alimentary Canal
3. The Stomodaeum
4. The Mesenteron
5. The Proctodaeum

CONTENTS

ix

Page

6. The Filter Chamber	383
Glossary of Terms Applied to the Alimentary Canal	387

CHAPTER XIV

THE ORGANS OF DISTRIBUTION, CONSERVATION, AND ELIMINATION	389
1. The Blood	389
2. The Organs of Circulation	397
3. The Fat-body	407
4. The Oenocytes	410
5. The Corpora allata	411
6. The Organs of Elimination	413
Glossary of Terms Used in This Chapter	420

CHAPTER XV

THE RESPIRATORY SYSTEM	422
1. The Integument as a Respiratory Organ	423
2. Blood Gills	424
3. The Tracheal System	425
4. General Mechanism of Tracheal Respiration	452
Glossary of Terms Applied to the Respiratory System	461

CHAPTER XVI

THE NERVOUS SYSTEM	464
1. General Structure, Organization, and Function of the Nervous System	465
2. The Central Nervous System	472
3. The Stomodaeal Nervous System	501
4. The Peripheral Nervous System	503
Glossary of Terms Applied to the Nervous System	507

CHAPTER XVII

THE SENSE ORGANS	510
1. General Structure and Classification of Insect Sense Organs	512
2. The Hair Organs	515
3. The Campaniform Organs	521
4. The Plate Organs	523
5. The Scolopophorous Organs	525
6. The Eyes	528
Glossary of Terms Applied to the Sense Organs	548

CHAPTER XVIII

THE INTERNAL ORGANS OF REPRODUCTION	550
1. The Female Organs	552
2. The Male Organs	567
3. General Morphology of the Reproductive Organs	573
Glossary of Terms Applied to the Internal Reproductive Organs	578

CHAPTER XIX

THE ORGANS OF COPULATION AND OVIPOSITION	581
1. The Male Genitalia	582
2. The Female Genitalia	607
Glossary of Terms Applied to the External Genitalia	620

REFERENCES	625
------------	-----

INDEX	647
-------	-----