

CONTENTS

LIST OF PLATES

page vii

I INTRODUCTION

I

Polymorphism. Embryology and metamorphosis. Origin and evolution of metamorphosis. Origin of the pupa. Imaginal discs. Metamorphosis in *Rhodnius*.

2 HISTOLOGICAL CHANGES DURING MOULTING AND METAMORPHOSIS

II

Growth and moulting in the integument. Chromatolysis. New cuticle formation. Metamorphosis in the integument. Imaginal discs and cell size. Metamorphosis in internal organs: phagocytosis. Growth ratios.

3 PHYSIOLOGY OF GROWTH AND MOULTING

2I

Humoral control of moulting. The brain and moulting. The brain and natural arrest of growth. Thoracic growth centre. Activation of thoracic gland. Thoracic glands in other insects. Growth and moulting in higher Diptera. Growth of imaginal discs in Diptera. Neurosecretion and endocrine organs. Mode of action of thoracic gland hormone. Nature of thoracic gland hormone. Control of hormone production. Moulting of adult insects. Wound healing and moulting.

4 PHYSIOLOGY OF METAMORPHOSIS

5I

The latent imaginal pattern. Humoral control of metamorphosis. Corpus allatum as source of juvenile hormone. Disappearance of thoracic gland. Control of stages towards metamorphosis. Control of pupal characters. Prothetely and metathetely. Hormone balance in normal development. Competence of tissues to undergo metamorphosis. Endocrine glands and reproduction. Endocrine glands and metabolism. Reversal of metamorphosis. Mode of action of corpus allatum hormone. Quantitative action of hormones concerned in growth. Control of function of corpus allatum.

Contents

5 DIFFERENTIATION AND POLYMORPHISM page 96

Integration of growth. Relative growth of parts of the body.
Nature of the 'substrate'. Determination in epidermis of
Rhodnius. Differentiation in epidermis of *Rhodnius*. Homœosis.
Regeneration. Polymorphism. Conclusion.

REFERENCES

130

INDEX

151