

HANDBOOK FOR  
MIDWIVES  
AND MATERNITY NURSES

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MARY MAYES

THIRD EDITION

# HANDBOOK FOR MIDWIVES AND MATERNITY NURSES

BY

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THIRD EDITION

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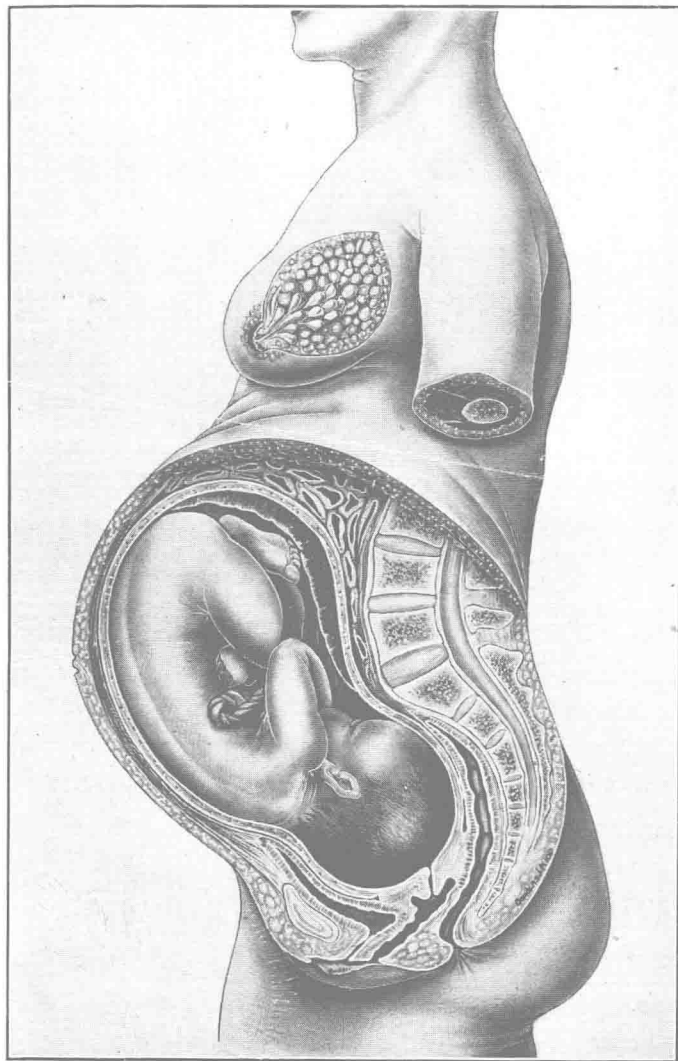


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**HANDBOOK FOR MIDWIVES  
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*Frontispiece]*

THE NORMAL FULL-TERM PREGNANT UTERUS.

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## FOREWORD

It is a great pleasure to be asked again to write a Foreword, this time for the third edition of the book ; but the pleasure is tinged with sadness in the death of Miss Mayes. She had done a great deal of preparatory work for the preparation of this edition, and it has been brought into its final form by Miss Gannon who had worked closely with Miss Mayes at the Liverpool Maternity Hospital, and was chosen by her to carry on this work. I hope that the additions and alterations in the new edition will increase the value of the book, and that it will continue to receive wide support from teaching schools for Pupil Midwives.

ARTHUR A. GEMMELL.

LIVERPOOL,

*July, 1941.*

## PREFACE TO THE THIRD EDITION

THE third edition of this book appears almost three years after the publication of the second edition, and four years after it was first issued. Its immediate and continued success is in no small measure due to the fact, to which Miss Mayes drew attention in her first preface, that it was the outcome of many years' experience of teaching, and she might justly have added great skill as a teacher.

Miss Mayes died last December, and it has fallen to my lot to prepare the third edition of the book for Press. The manuscript was left in an advanced state, and there was not a great deal to be done to it, but it should be noted that every page has been considered, both by Miss Mayes and myself, and altered and brought up to date. The principal changes are: the Chapter on "Labour" has been re-written, and additions have been made to the "Description of the Management of Breech," and also to the Chapter on "Contracted Pelvis" with illustrations.

The late Miss Mary Mayes was a great pioneer of Midwifery Teaching. I count it a privilege to have known her and an honour to have been entrusted with the preparation of the new edition of her book for Press. I feel sure her textbook will continue to hold its place as one of the most satisfactory and useful textbooks available to the pupil-midwife and midwife teachers, for she was endowed with the gift of teaching, and could express herself in a way that was readily understood by students.

My thanks are offered to Dr. A. A. Gemmell for assistance with the manuscript, to Mr. Bowen Wright for the use of literature on "Pelvic Shape," to Dr. J. W. Burns for the use of diagrams on pages 357 and 361, to Professor R. W.

Johnston for the use of diagrams on page 194, and to Mr. Douglas Kidd for the drawings throughout the book. Also to the Publishers for their help and advice during this period.

M. A. GANNON.

BIRMINGHAM,

*August, 1941.*



## PREFACE TO THE FIRST EDITION

THIS book is the outcome of many years' experience in the coaching of midwifery students for the examination of the Central Midwives Board.

The text follows an arrangement in which normal pregnancy, labour, and the puerperium are explained on simple lines while the complications of childbearing are introduced later as a separate section. This method has been found to be the most satisfactory in teaching midwifery. The more a student knows of normal childbearing, the more readily does she recognise abnormalities in their early stages and the necessity for immediate medical treatment. This book is an aid to study. Review questions are given at the end of sections in order that the student in answering them without a book may find out how much she has remembered of a particular subject. Most of the questions have been previously set by the Central Midwives Board for their examinations.

Some of the illustrations (of which there are over 140) are original and have been designed by the author to convey a clear idea of the subject in the text. Some of them are diagrammatic and, therefore, enable the student to grasp the principle which might be lost in a more elaborate drawing.

It is the author's hope that the book will fill a long-felt want as an aid to the study of the doctor's lectures on midwifery and that in the hands of teachers and students it may contribute to the success of midwifery training and future practice. It is hoped also that practising midwives and maternity nurses will find it useful in helping them to add some further theoretical knowledge to their own experience.

I have to thank Dr. Arthur A. Gemmell, F.R.C.S.E., F.C.O.G., for his collaboration in reading through the manuscript and for helpful criticism and advice. Thanks are due to Dr. Ruby Bell, Senior Assistant Medical Officer of Health, Liverpool, i/c M. and C.W., for kindly reading the chapter on Government Services, and to Miss Ruth Nicholson, M.B., M.S., for reading the chapter on Venereal Diseases.

I have also to thank Miss Edith M. Todd for valuable help in reading the proofs and compiling the index.

I desire to thank Miss Meta Norbury, Artist, M.R.S.T., for the preliminary work she has done in connection with many of the drawings, and to Mr. Douglas J. Kidd, Medical Artist, of Liverpool, for some original drawings, and also for preparing a great number of the illustrations for reproduction.

I am indebted to the following authors and their publishers for permission to use some of the illustrations.

FIG. 44 is from Dr. J. S. Fairbairn's *Textbook for Midwives* (Oxford Medical Publications); seven illustrations from Sir Comyns Berkeley's *Pictorial Midwifery*; one from Dr. H. C. Barclay's *Anatomy and Physiology for Nurses*; FIGS. 30, 80, 90, 119, 122, from Dr. A. B. Calder's *Lectures to Midwives*; and FIG. 88 is from Drs. H. Jellett and D. S. Madill's *Manual of Midwifery* (the last four books are published by Baillière, Tindall and Cox).

I thank my publishers for their help and courtesy in all matters relating to the production of this book.

MARY MAYES.

LIVERPOOL,

February, 1937.

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## CHAPTER I

# A SHORT OUTLINE OF ANATOMY AND PHYSIOLOGY

## CELLS AND TISSUES

The smallest form of animal life is the amœba, a minute organism composed of a single cell. It looks like a tiny speck of jelly when seen under the microscope, for only then are its structure and activities observed. The cell consists of an outer covering or membrane containing protoplasm and vacuoles, and near the middle of the cell is a minute body of firmer consistence called the nucleus. In the nucleus are small bodies known as nucleoli. The activity of the cell depends upon the size of the nucleus.

A vacuole is a clear space in a cell filled with air or fluid.

**Protoplasm** is a vital substance. Professor Huxley called it "the physical basis of life." It is a living substance

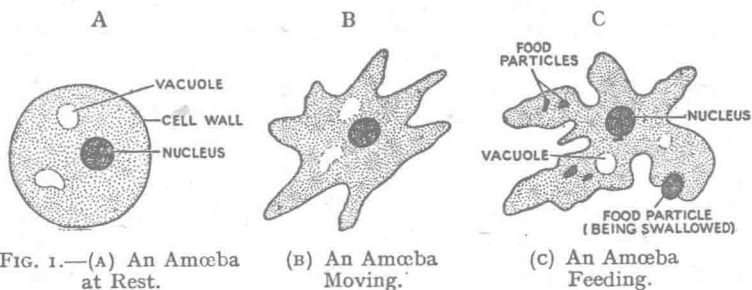


FIG. 1.—(A) An Amœba  
at Rest.

(B) An Amœba  
Moving.

(c) An Amœba  
Feeding.

which cannot be produced in the laboratory. All living organisms, animal and vegetable, contain the living protoplasm. "Proto means first, and plasm form (first form)."

The amœba has no consistent shape or limbs, yet it is able to move in a rolling motion from one place to another by protruding part of its cell wall and substance, so forming pseudopodia or false legs. It feeds by projecting its cell wall and encircling food particles and draws them into its own substance.

The amœba, though only a primitive organism, has feeble but definite powers of selecting the food particles which it needs.

The amœba has the following inherent powers :—

Contractibility.

Movement.

Respiration.

Nutrition.

Assimilation.

Growth.

Excretion.

Reproduction.

Life always springs from life. All cells proceed from existing cells, and their reproduction is brought about by a

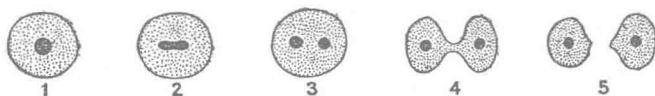


FIG. 2.—Cell Division.

process of “fission,” a simple division of cells preceded by the division of the nucleus. The nucleus first divides into two, each going to opposite ends of the cell which forms a waist or narrowing in its centre. Later the cell itself divides and two living cells are formed. Our bodies are made up of millions of highly organised cells, some of which resemble in structure and activity the amœba.

**Germ cells.**—These differ from cells in other parts of the body in that they are set apart for the purpose of reproduction. They are located in the glands of the genital

organs and remain there inactive until puberty. The human body is developed from a female and a male germ cell. After fertilisation the two cells become one and begin the process of division and multiplication until a mass of cells is produced, which undergo many and varied changes resulting in the development of a new individual.

*Differentiation of cells.*—Cells other than those described above begin to differ in structure, shape and character according to their special function. Bone, muscle, fat, nerve, epithelial, connective and other tissues.

The types of epithelial tissues are cubical, columnar, ciliated, stratified and squamous. Endothelium is a single layer of flat epithelial cells. Varieties of connective tissue are mucoid, areolar, fibrous, cartilage, elastic, bone, blood, dentine. They act as a binding, supporting and connective tissue to the softer and more vital tissues.

A collection of cells of the same type is known as tissue. Cells begin to differ in structure, shape and character according to their special function, so that bone, muscle, fat, nerve, epithelial connective and other tissues are formed.

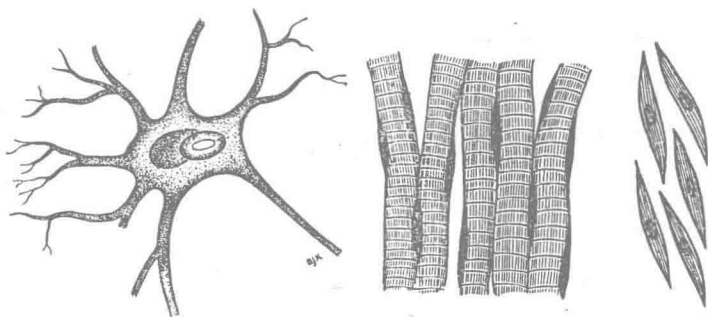


FIG. 3.—(A) Nerve Cell.

(B) Muscle Cells.

**Tissues of the body.**—*Bone* forms a supporting skeleton for muscular and other soft structures.

*Muscular* tissue is attached to the skeleton and produces movement. It gives form and shape to the body.

*Cartilage* is used as a buffer or pad to protect other tissues, and is chiefly associated with bone tissue.

*Elastic tissue* is present where stretching is required.

*Blood* is a circulating fluid.

*Connective tissue* binds the different tissues together.

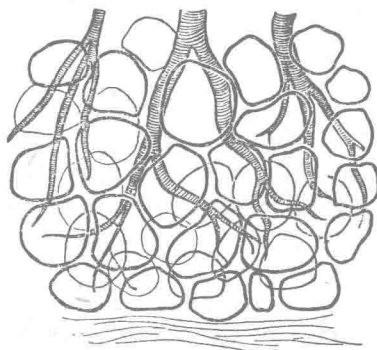


FIG. 4.—Group of Fat Cells with Capillary Vessels.

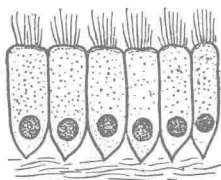


FIG. 5.—Ciliated Columnar Epithelial Cells.

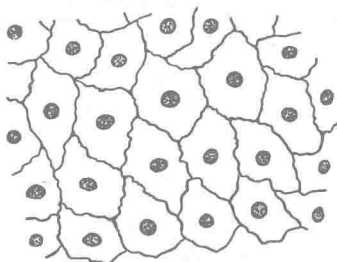


FIG. 6.—Simple or Squamous Epithelium.

*Adipose* tissue, commonly called “fat,” acts as padding and protection, also as reserve tissue.

*Nerve* tissue is highly organised ; it ramifies in the muscular tissues and carries stimuli from the brain and spinal cord.

*Lymphoid* : a fine system of strands similar to the meshes of a net, found in lymphatic glands,



## ORGANS OF THE BODY

**Thorax :** (a) Heart.  
(b) Lungs.  
(c) Diaphragm.  
(d) Œsophagus.  
(e) Trachea.

**Abdomen :** (a) Stomach.  
(b) Intestines.  
(c) Liver.  
(d) Pancreas.  
(e) Spleen.  
(f) Kidneys.  
(g) Bladder.

**Pelvis** (*in the female*) :—

Uterus.  
Fallopian tubes.  
Ovaries.

**Physiology.**—Human physiology is the science which treats of the functions or uses of the various parts of the body when in a healthy state.

**Anatomy.**—Anatomy is the science which treats of the structure and relative positions of various parts of the body.

**Hygiene.**—Hygiene, derived from a Greek word “Hygieia” meaning health.

**Pathology.**—Pathology is the science which treats of the body when suffering from disease. It may be disturbed function or actual disease of a part of the body. In the latter case it is called organic disease.

**Organ.**—An organ is a special part of the body which performs a definite work : the heart, thyroid gland, stomach, for examples.

**Glands.**—A gland is an organ capable of secreting or manufacturing certain substances from the blood as it circulates through the blood vessels of the glands, *e.g.* the breast secretes milk, parotid glands secrete saliva, the liver secretes bile.