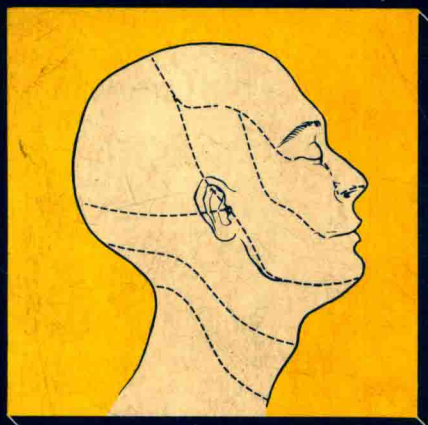
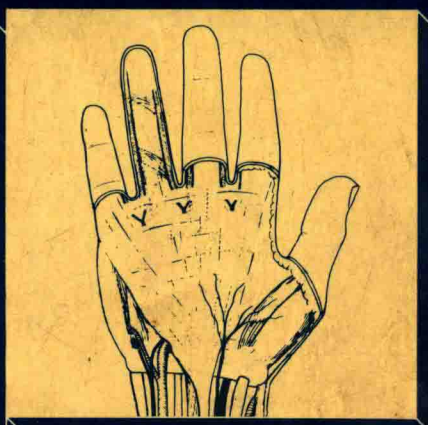
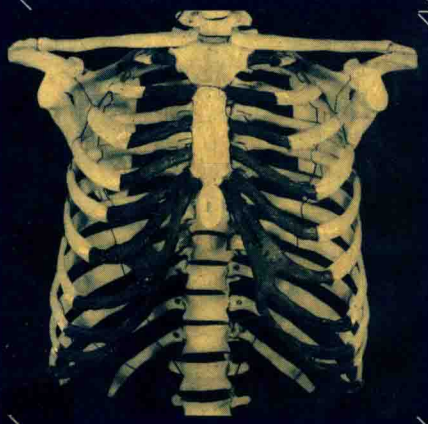
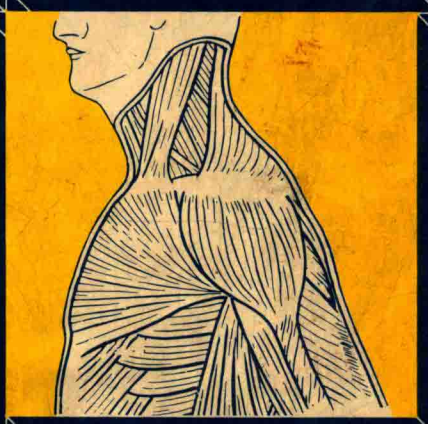
A Textbook of

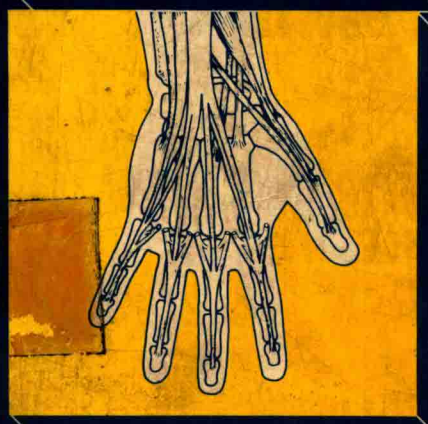
Regional Anatomy

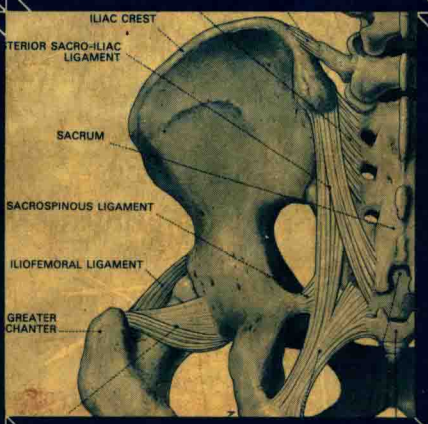












J. Joseph

A Textbook of Regional Anatomy

J. Joseph, MD, DSc, FRCOG
Professor of Anatomy, Guy's Hospital Medical School, London

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To my wife Carol
and our twins Nicholas and Andrew

Preface

One must assume that some justification is required for another textbook on human anatomy. Two main reasons can be put forward. Because of the very large changes in the preclinical curriculum there have also been changes in the teaching of anatomy both quantitatively and qualitatively. The introduction of new subjects in many of the medical curricula (psychology and sociology for medical students, genetics and statistics) has resulted in the time spent on anatomy being reduced. Within anatomy itself the amount of time spent on dissection has been curtailed and other aspects of anatomy have claimed an increased proportion of the time spent on the subject. In spite of this it may be said that although other aspects of anatomy have increased in importance, for example cellular biology, experimental and comparative embryology, neuroanatomy, a corpus of knowledge about the topography of the human body together with ways of studying living gross anatomy remains an essential part of the basic knowledge of anyone studying medicine, or any other subject involving the examination and treatment of a human being. After all the changes, gross anatomy, together with some knowledge of osteology and surface and radiological anatomy, can be regarded as one limb of the many appendages which belong to the subject. Hence the first reason for writing another textbook – to give a medical student or doctor, in a fairly brief compass and within the limits of the time available, sufficient information to enable him or her to learn and understand the basic gross structure of the different regions of the body.

The second reason for writing this book was the encouragement by several people to put on record the experience of teaching the subject for more than 35 years. It is possible to make much of anatomy interesting, some of it easy to understand and remember, and a small part even amusing. It is regrettable that one cannot make the whole of anatomy all of these. However, it has been suggested that putting good teaching into written and pictorial form is *nearly* as important as publishing research. The author himself cannot say that his teaching is good. He must leave that to his students, and it is appreciated that good oral teaching does not necessarily make a good textbook. The reverse of what was said about Oliver Goldsmith may be true:

> 'Here lies Nolly Goldsmith, for shortness called Noll
> He wrote like an angel and talk'd like poor Poll'
> (David Garrick, impromptu epitaph)

Modern educationalists say that examinations should be an extension of teaching. They seldom approve of the corollary that teaching should be based on examinations. In fact it is often claimed that teaching should have no relationship to examinations, but since examinations are there, students are inevitably interested in them. Broadly speaking this book, except for some of the clinical applications, contains much of what most examiners expect students to learn during a course in topographical anatomy, and hence what

they require for their examinations, written or oral. They are, however, not expected to know everything in this book. It must be added that it is assumed that courses in cellular biology (histology, microscopic anatomy), embryology and neuro-anatomy, together with some lectures on general topics, form other parts of the anatomical curriculum. Reference to these aspects of anatomy are therefore incidental to the main description of the regional anatomy of the body.

It is hoped that the different subdivisions of anatomy are integrated so that students are learning the gross anatomy of a part of the body at the same time as they are learning its microscopic structure and development. Integration between the different preclinical departments, and with clinical medicine is also a feature of some medical schools. Whatever the organization of the curriculum, a knowledge of gross anatomy is a basic essential of medical education. Its importance in the past may have been overestimated but attempts to eliminate it have resulted in its being quickly restored as one of the pillars of a sound medical curriculum.

Acknowledgements

Very few books are the result of one person's efforts. It gives me great pleasure to thank Frank Price (thorax), Paul Darton (abdomen and pelvis), Bridget Hough (head and neck) and Anne Barrett (limbs) for their drawings. I am very grateful to Kevin Fitzpatrick (photography), Department of Anatomy, and Jerry Rytina (reproductions of X-rays), Department of Medical Illustration, both of Guy's Hospital Medical School, for their substantial contribution to the illustrations. The publishers and editors of *Hamilton's Textbook of Human Anatomy* have very kindly given permission for the reproduction of a number of illustrations from that book, and I would like to thank Dr John Keishishian for permission to reproduce figure 148.

I owe a great debt to Margaret Collins for her typing, and retyping, the text and to Elizabeth Horne and The Macmillan Press for their encouragement and co-operation. Thanks are due to them, to Drs Sue Standring and Michael Hutchinson of the Department of Anatomy, Guy's Hospital Medical School, for their reading the manuscript and making many corrections and helpful suggestions and to Dr Nigel Bickerton for reading the page proofs and noticing all the errors which I overlooked.

London, 1981 J.J.

Anatomical Terminology

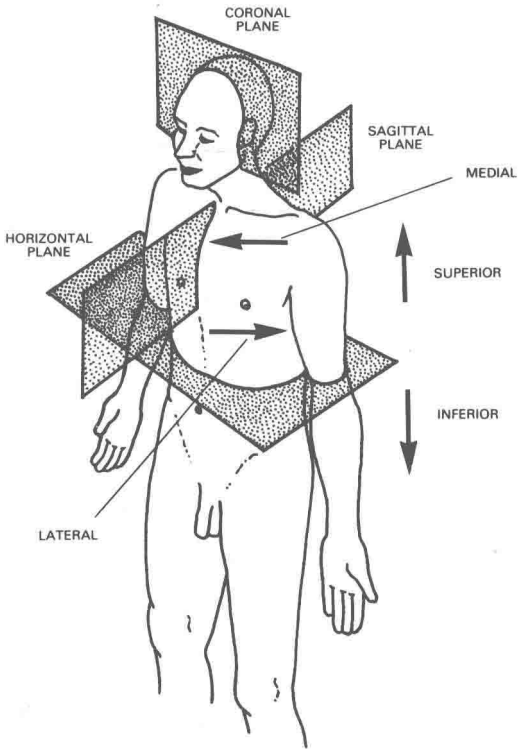

Figure 1 The anatomical position and some common anatomical terms.

In order to facilitate the description of parts of the body and to relate accurately one part to another, a standard position of the body is used. This is the *anatomical position* (figure 1) in which the body is erect with the head facing forwards, the upper limbs are at the sides of the trunk with the thumb pointing outwards, and the lower limbs are together and parallel to each other with the feet pointing forwards. In all relations between structures, the body is assumed to be in the erect position.

The three cardinal planes which are used are the *sagittal* (*sagitta* = *arrow*, Latin), a vertical plane in the midline running anteroposteriorly, the *coronal* (*frontal*) (*corona* = *crown*, Latin), a vertical plane at right angles to the sagittal and the *horizontal* (*transverse*) running at right angles to the other two. The sagittal plane is often called the *median* and *parasagittal planes* are parallel to the sagittal. All vertical planes at right angles to the sagittal are called coronal.

The front surface of the body is *anterior* (*ventral*) and the back surface is *posterior* (*dorsal*). (In biology the term *anterior* means nearer the head.) These terms are also used to describe relative positions of parts of the body to one another, as are the terms *medial* and *lateral* which refer to the midline. The former is nearer the midline; the latter is further away from the midline. For example, in the anatomical position the index finger is medial to the thumb and the thumb is lateral to the index finger. Vertical relationships are indicated by the terms *superior* and *inferior*. For example, the head is superior to the neck. *Cephalad* (nearer the head; *cephale* = *head*, Greek), *cranial* and *rostral* (nearer the beak; *rostrum* = *beak*, Latin) are synonyms for superior, and *caudal* (nearer the tail; *cauda* = *tail*, Latin) is synonymous with inferior. The terms *superficial* (nearer the surface) and *deep* (nearer the inside) refer to the surface of the body on any of its aspects. *External* and *internal* have similar meanings but refer especially to cavities or hollow organs. In the limbs a *proximal* structure is nearer the trunk and a *distal* structure is nearer the fingers or toes.

There are some common terms used for movements. *Flexion* is a forward movement about a transverse axis in the sagittal plane and *extension* is a backward movement about the same axis. *Abduction* is a movement about an anteroposterior axis in the coronal plane away from the midline of the body, and *adduction* is a movement towards the midline about the same axis. Many special terms are used to describe movements at various joints, such as *pronation* and *supination* of the forearm.

In general the terms used in this book are the accepted English translations of or the most recently revised version of the Nomina Anatomica. Frequently terms are translated or explained and common alternative terms, even if eponymous, are given, together with the dates, country and speciality of the individual after which a structure has been named. If it is thought that the first reference to a structure requires further explanation, more information is given, for example a spinal nerve or the term *anastomosis*.

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