

**THE ANATOMY OF THE
BRAIN: A MANUAL FOR
STUDENTS AND
PRACTITIONERS OF MEDICINE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649052844

The Anatomy of the Brain: A Manual for Students and Practitioners of Medicine by J. F. Burkholder

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

J. F. BURKHOLDER

**THE ANATOMY OF THE
BRAIN: A MANUAL FOR
STUDENTS AND
PRACTITIONERS OF MEDICINE**

The Anatomy of the Brain

A Manual for Students *and*
Practitioners of Medicine

THE BRAIN OF THE SHEEP (OVIS ARIES) BEING SELECTED
FOR DESCRIPTION AND ILLUSTRATION BECAUSE
OF ITS AVAILABILITY AND ITS PRACTICAL
IDENTITY WITH THE HUMAN BRAIN
FOR LABORATORY USE.

By J. F. BURKHOLDER, M. D.

Professor of Ophthalmology in the School of
Medicine of the Loyola University.

□ ○○○ □

With an Introduction by
PROF. HENRY H. DONALDSON

□ ○○○ □

WITH FORTY FULL PAGE PLATES (SIX OF THEM COLORED)
FROM ORIGINAL DRAWINGS BY THE AUTHOR.



G. P. ENGELHARD & COMPANY
Chicago :: :: :: 1912

CONTENTS.

	Page
Preface to First Edition.....	7-9
Preface to Second Edition.....	11-12
Introduction	13-14
CHAPTER I.—The Brain—Its Removal and Preparation...	15-16
CHAPTER II.—Coverings of the Brain.....	17-18
CHAPTER III.—Dura Mater Enecephali.....	19-23
CHAPTER IV.—Arachnoidea Enecephali	24-25
CHAPTER V.—Pia Mater Enecephali.....	26-27
CHAPTER VI.—Blood Vessels at the Base of the Brain....	28-30
CHAPTER VII.—External Surface of the Brain.....	31-32
CHAPTER VIII.—Dorsal Surface of the Cerebrum.....	33-37
CHAPTER IX.—Dorsal Surface of the Cerebrum.....	38-40
CHAPTER X.—Lateral Surface of the Cerebrum.....	41-42
CHAPTER XI.—Ventral Surface of the Cerebrum.....	43-46
CHAPTER XII.—The Medulla Oblongata.....	47-48
CHAPTER XIII.—Mesial Surface of Cerebrum and Cerebellum	49-54
CHAPTER XIV.—Cerebral Substance and Corpus Callosum.	55-60
CHAPTER XV.—The Lateral Ventricles.....	61-64
CHAPTER XVI.—The Fornix	65-66
CHAPTER XVII.—The Hippocampus.....	67-69
CHAPTER XVIII.—The Optic Thalamus.....	70-74
CHAPTER XIX.—The Pineal Body.....	75-76
CHAPTER XX.—The Anterior Commissure.....	77-79
CHAPTER XXI.—The Third Ventricle.....	80-81
CHAPTER XXII.—The Corpora Quadrigemina.....	82-83
CHAPTER XXIII.—Cerebral Peduncles.....	84-86
CHAPTER XXIV.—The Pons	87-89
CHAPTER XXV.—The Trapezium.....	90-92
CHAPTER XXVI.—Structure of the Medulla Oblongata— Ventral Surface.....	93-101
CHAPTER XXVII.—The Medulla Oblongata—Lateral Sur- face	102-105
CHAPTER XXVIII.—The Medulla Oblongata—Dorsal Sur- face	106-108
CHAPTER XXIX.—The Fourth Ventricle.....	110-113

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters.

2. The second part outlines the various methods and tools used to collect and analyze data. This includes the use of surveys, interviews, and statistical software to ensure that the information gathered is reliable and valid.

3. The third part focuses on the ethical considerations surrounding data collection and analysis. It highlights the need to protect individual privacy and to use data responsibly, avoiding any potential for misuse or discrimination.

4. The fourth part discusses the challenges faced in conducting research, such as limited resources, time constraints, and the complexity of the subject matter. It offers strategies to overcome these challenges and to ensure the quality of the research.

5. The fifth part provides a detailed overview of the research findings, including the key results and the implications of the study. It also includes a discussion of the limitations of the research and suggestions for future work.

6. The sixth part concludes the document by summarizing the main points and reiterating the significance of the research. It expresses the hope that the findings will contribute to a better understanding of the topic and inform future research and practice.

LIST OF ILLUSTRATIONS.

	Page.
PLATE I.—Dorsal area of Sheep's Skull.....	119
PLATE II.—Lateral area of Sheep's Skull.....	121
PLATE III.—Dorsal Aspect of Dura Mater.....	123
PLATE IV.—Arteries on Ventral Surface of the Brain.....	125
PLATE V.—Dorsal Surface of the Brain.....	127
PLATE VI.—Lateral Surface of the Brain.....	129
PLATE VII.—Ventral Surface of the Brain.....	131
PLATE VIII.—Mesial Surface of the Brain.....	133
PLATE IX.—Anterior Surface of the Brain.....	135
PLATE X.—Extension of Cerebrum to Show Gray and White Matter	137
PLATE XI.—Corpus Callosum—Dorsal Surface.....	139
PLATE XII.—Corpus Callosum—Showing Radiating Fibres of the Splenium.....	141
PLATE XIII.—Lateral Ventricles of the Brain.....	143
PLATE XIV.—Third Ventricle and Choroid Plexus.....	145
PLATE XV.—Lateral and Third Ventricles of the Brain...	149
PLATE XVI.—Fornix, Hippocampus, and Cingulum Inferior	149
PLATE XVII.—Fascia Dentata and Mesial Surface of the Hippocampus	151
PLATE XVIII.—Corpus Striatum	150
PLATE XIX.—Anterior Commissure	155
PLATE XX.—Pillars of the Fornix.....	157
PLATE XXI.—Proximal Termination of Optic Tract.....	159
PLATE XXII.—The Corona Radiata.....	161
PLATE XXIII.—Ventral Surface of Pons, Trapezium, and Medulla Oblongata	163
PLATE XXIV.—Lateral Surface of Crus Cerebri, Pons, Trapezium, and Medulla Oblongata.....	165
PLATE XXV.—Dorsal Surface of Pons, and Medulla Oblongata	167
PLATE XXVI.—Fig. 1. Coronal Section through Olfactory Bulbs. Fig. 2. Section Through Anterior Portion of Lateral Ventricles	169
PLATE XXVII.—Fig. 1. Section Just Posterior to Fissure of Sylvius, Fig. 2. Section through Substantia Inter- media	171

PLATE XXVIII.—Fig. 1. Section through the Corpus Pineale. Fig. 2. Section 2.5 mm. Anterior to Posterior Extremity of Cerebrum	173
PLATE XXIX.—Sections through the Colliculus Superior and Crura Cerebri	175
PLATE XXX.—Sections through the Pons and Trapezium..	177
PLATE XXXI.—Sections through the Medulla Oblongata..	179
PLATE XXXII.—Sections through the Medulla Oblongata and Spinal Cord.....	181
PLATE XXXIII.—Enlarged Section of Spinal Cord .5 cm., Caudal to Medulla Oblongata.....	183
PLATE XXXIV.—Section through the Lower Portion of Medulla Oblongata Showing Decussation of Pyramidal Fibres	185
PLATE XXXV.—Section through Nuclei Arcuati.....	187
PLATE XXXVI.—Section through Caudal Third of Fourth Ventricle	189
PLATE XXXVII.—Section through Trapezium Cochlear and Vestibular Nuclei	191
PLATE XXXVIII.—Section through Colliculi Superiores...	193
PLATE XXXIX.—Base of Skull Showing Dura Mater with Exits of Cranial Nerves	195
PLATE XL.—Base of Skull	197

PREFACE.

It may seem an unwarranted liberty to ask the student to add this little volume to his already overcrowded library, but after the contents have been carefully examined, I trust the intrusion will be pardoned.

I feel, as I think all teachers of anatomy do, that the teaching of the architecture of the human brain has been a failure for the average medical student, not because of a want of many very admirable works on the subject, both descriptive and practical, but on account of the great scarcity of appropriate laboratory material, or perhaps the proper appreciation of the material ready at hand. That neurology can be intelligently taught by any other than the laboratory method, no teacher has the hardihood to affirm.

In looking up the matter of anatomical material suitable for the present requirements of laboratory work in neurology, the sheep (*ovis aries*) was found to offer an inexhaustible supply, and a source easily reached. This material can be procured as fresh as need be, and at a cost quite within the reach of any institution or individual.

Its adaptability for the teaching of the anatomy of the brain to the medical student was ascertained by the dissection of a number of sheep brains, and by writing an outline of description as a guide to the student for laboratory work. This outline was mimeographed and each student was supplied with a copy and with three sheep brains, two of which were removed while the third was left in the brain case. The student then worked out each dissection as outlined and made drawings of his preparations. The experiment was an unqualified success, and removed all apprehension, so far as the neurological laboratory was concerned, in the matter of working material.

At the suggestion of Professor Donaldson of the University of Chicago, I undertook the elaboration of my first description, and the result is contained in the following pages.

This small effort is of necessity very imperfect, as little literature is available for reference; but the writer trusts that it may assist in some measure those who, like himself, are compelled to conduct a course on the brain, and who are in need of material or a laboratory guide.

The Basel association nomenclature (BNA) has been followed as closely as possible. The association name, where it is thought necessary, is followed by the common or popular names in parenthesis; this facilitates the consultation of other works on the subject:

For a like reason the following terms are employed:

CEPHALAD (anterior or toward the head).

CAUDAD (posterior or toward the tail).

VENTRAD (ventral or toward the under parts).

DORSAD (dorsal or toward the upper).

MEDIAD (median or toward the middle line) and

LATERAD (lateral or toward the side).

The terms ventral, dorsal, etc., are used as being more in conformity with the spirit of the "BNA" than the terms anterior, posterior, superior and inferior.

The drawings, with the exception of plates I and II, which are photographs, are the work of the author; they were made from dissections, and unless otherwise indicated represent the actual size of the structures under consideration.

Perhaps the only inconsistency in the work is the subdivision of the substantia alba and the substantia grisea of the medulla spinalis (spinal cord) into tracts and columns somewhat after the manner in which Toldt arranges them in the human medulla spinalis; and, furthermore, this arrangement is illustrated by means of an histological preparation, a departure from the original idea of the work that could not well be obviated. Histology, pathology and embryology may prove this arrangement to be at variance with the truth, but until such evidence is forthcoming, the description here given will be helpful.

The close correspondence between the encephalon of the sheep, and that of man, is a powerful argument in favor of a like correspondence obtaining in the medullae spinales