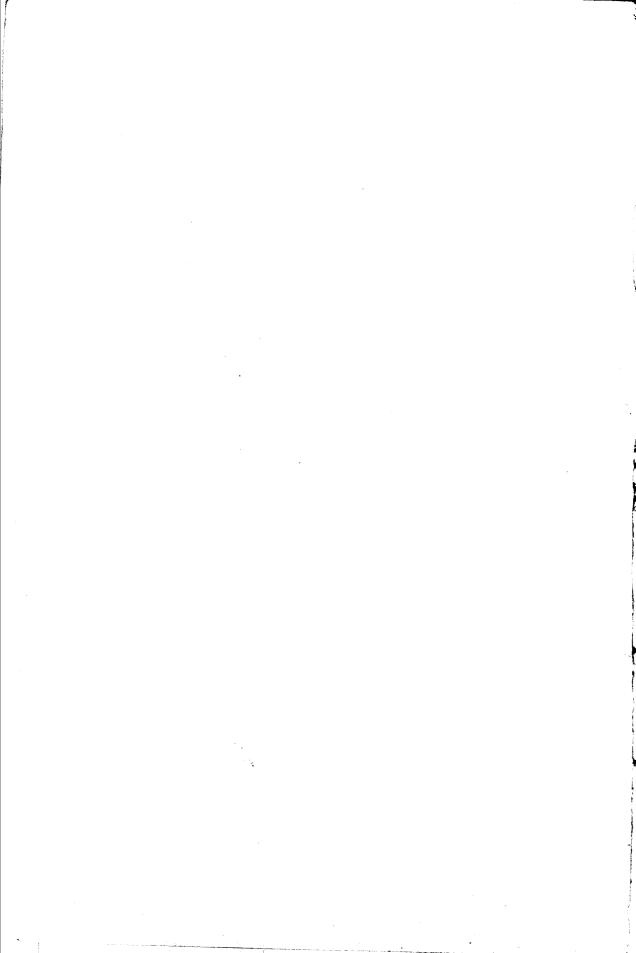
ORAL ANATOMY

SICHER



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Ву

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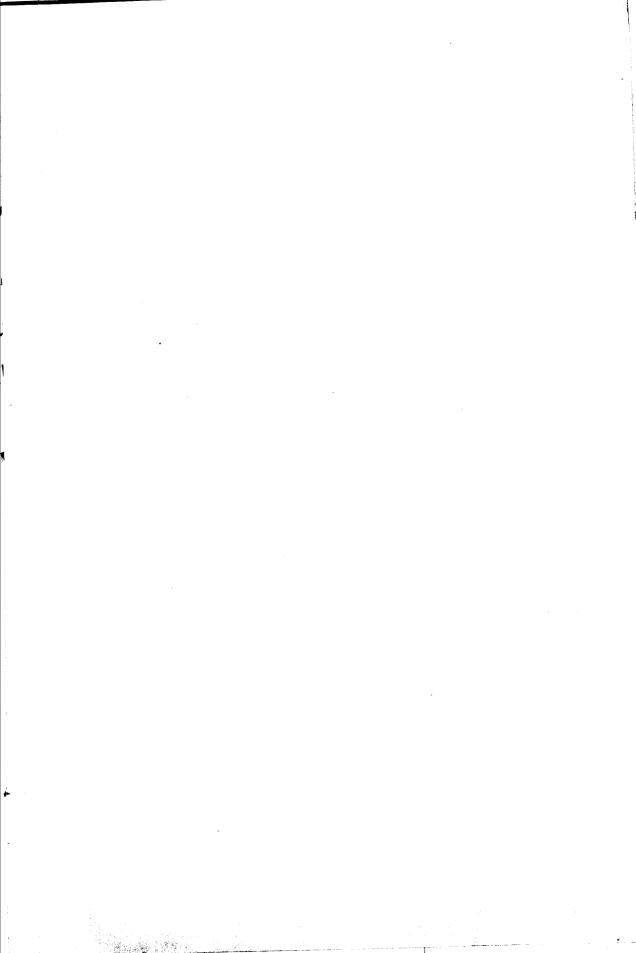
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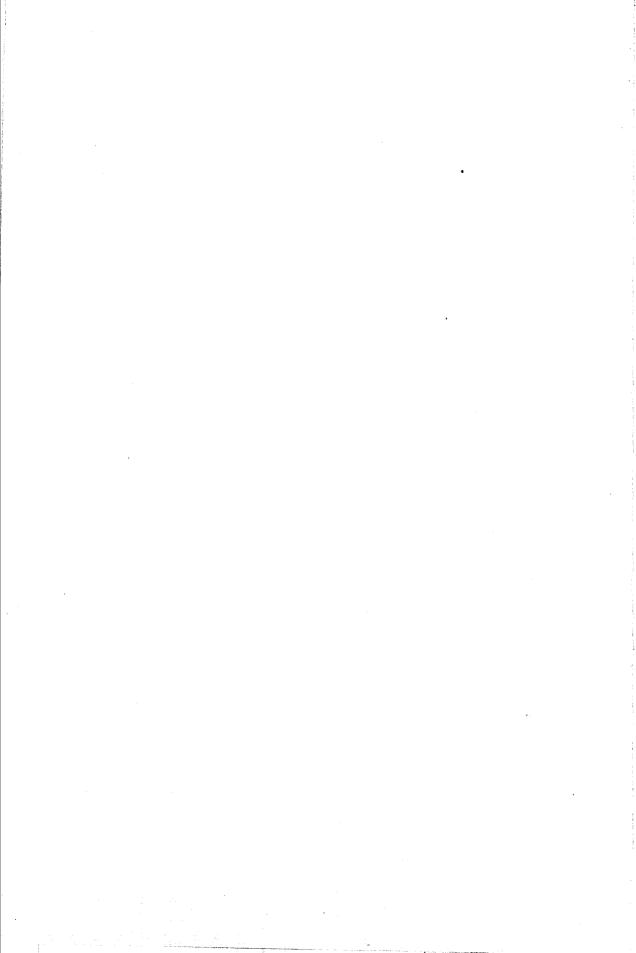
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Julius Tandler (1869-1936)



To the Memory of JULIUS TANDLER



PREFACE AND POSTSCRIPT

One of the most difficult problems in teaching anatomy, or any of the other basic sciences, in a dental school is that of correlation. Most students never become aware of the applicability of theory to practice. This failure is due in some degree to the arrangement of the schedule. When the student is taught anatomy he cannot apply his knowledge because he has as yet to learn the fields in which, as the teacher insists, anatomic knowledge is indispensable. When, two years later, the student starts his clinical education, he cannot apply anatomic knowledge because he has retained at the very best a few fragments of memorized chapters. Time is running out and a review of anatomic details in a course of applied anatomy is almost impossible. As a consequence, clinical teaching and learning are more and more mechanized and the student arrives at the conclusion that he can become a successful dentist without much knowledge in basic sciences. The incoming freshman succumbs only too easily to the whispered temptation not to take the basic science courses too seriously, and a vicious circle has been closed.

This book tries to bridge the gap between theory and practice and to prove that anatomic understanding does not only facilitate clinical work but that it also allows for the substitution of a rigid clinical technique by an adaptable and therefore potentially progressive action.

The Oral Anatomy is not intended to replace but to supplement textbooks on dental anatomy or textbooks on human anatomy. The latter are written primarily for the use in medical schools and the chapters on the regions of head and neck, that are the domaine of dentist and oral surgeon, are at the same time too broad and not deep enough. In addition, applied anatomy for the dentist and oral surgeon can hardly be touched, even if applied anatomy is given some space.

Though it is impossible and not even desirable to avoid practical remarks in the descriptive chapters, applied anatomy is dealt with in a separate, second part of the book. Here the principle of arrangement is the clinic and not the regional division of the human body.

In many chapters the boundaries of pure anatomy have been transgressed where for instance surgical technique is touched upon to show that it can be developed as a logical consequence of anatomic study.

I have omitted references to the innumerable original papers and to the many textbooks that are the fountain of our anatomic and clinical knowledge. A list of references could only contain selections and I think that each teacher would prefer to assign reading material that he personally thinks instructive. If the omission of references seems unfair to all those whose labor went into the writing of this book, it deprives at the same time the author of the quotation of his own works, a habit in which authors so often and so deeply indulge.

The Oral Anatomy is intended to replace selected chapters of a textbook of anatomy in the freshman course, but also to accompany the student through his clinical years and to serve as a basic introduction to many practical courses.

This book is based on a German text that was written in collaboration with my teacher and friend, Dr. Julius Tandler. For almost thirty years his Department of Anatomy in the Vienna University was a center for the study of applied anatomy. Surgeons, internists, gynecologists, urologists, neurosurgeons, otologists and laryngologists, and dentists and oral surgeons were steady and welcome visitors who asked for advice and, in asking, stimulated new research. For all I received in almost thirty years of helping to forge the links between anatomy and clinic, the dedication of this book to the memory of Julius Tandler is only a small token of gratitude.

H.S.

ACKNOWLEDGMENTS

The illustrations for the *Oral Anatomy* are in part photographs, in part original drawings. The photography was in the hands of my trusted friend, M. P. Orlopp. The majority of the drawings are the work of Miss Elizabeth Story, Assistant Curator of the Division of Anatomy in the Chicago Natural History Museum, three paintings were done by Mrs. E. Orban, and two drawings I owe to Dr. E. L. Du Brul, of the College of Dentistry, University of Illinois. To all of them I want to express my sincere thanks.

I am also indebted to my friends Dr. B. Orban and Dr. J. P. Weinmann for their interest and helpful suggestions.

CONTENTS

PART ONE

DESCRIPTIVE ANATOMY

	CHAPTER 1	PAG
THE	Introduction, 17; The Bones of the Skull, 24; Occipital Bone, 24; Sphenoid Bone, 27; Frontal Bone, 33; Ethmoid Bone, 36; Temporal Bone, 38; Parietal Bone, 44; Maxilla, 45; Palatine Bone, 52; Zygomatic Bone, 54; Nasal Bone, 56; Lacrimal Bone, 56; Inferior Nasal Concha, 57; Vomer, 58; Mandible, 58; Hyoid Bone, 64; The Sutures of the Skull, 65; Cavities of the Skull, 69; Cranial Cavity, 69; Orbit, 75; Temporal and Infratemporal Grooves, 77; Pterygopalatine Groove, 78; Nasal Cavity, 79; Oral Cavity, 83; Functional Analysis of the Facial Skeleton, 84; Sexual Differences of the Skull, 88; Anthropologic Remarks, 90; Cephalometry and Craniometry, 90; Growth of the Skull, 99; Introduction, 99; Growth of the Brain Capsule, 103; Growth of the Cranial Superstructures, 105; Growth of the Facial Skeleton, 107; Facial Growth and Tooth Eruption, 119; Growth of the Pneumatic Cavities of the Skull, 121; Variations and Anomalies of the Neurocranium, 124; Variations and Anomalies of the Facial Skeleton, 126.	13
	CHAPTER 2	
Тне	Muscles of Mastication, 130; Masseter Muscle, 130; Temporal Muscle, 132; Internal Pterygoid Muscle, 135; External Pterygoid Muscle, 136; The Suprahyoid Muscles, 137; Digastric Muscle, 138; Stylohyoid Muscle, 139; Mylohyoid Muscle, 139; Geniohyoid Muscle, 142; The Infrahyoid Muscles, 142; Sternohyoid Muscle, 142; Omohyoid Muscle, 143; Sternothyroid Muscle, 143; Thyrohyoid Muscle, 144; The Superficial Muscles of Head and Neck, 144; Platysma Muscle, 145; Muscles of Mouth and Nose, 146; Muscles of Eyelids and Brows, 154; Muscles of the Outer Ear, 155; Muscles of the Scalp, 155.	130
	CHAPTER 3	
Тем	Anatomy of the Temporomandibular Articulation, 157; Movements of the Temporomandibular Articulation, 163.	157
	CHAPTER 4	
Visc	Oral Cavity, 178; Introduction, 178; The Lips—Labia, 178; The Cheeks—Buccae, 180; The Oral Vestibule, 181; The Oral Cavity Proper, 185; The Tongue, 190; The Muscles of the Tongue, 192; Glands of the Oral Cavity, 195; The Oral Mucous Membrane, 201; The Teeth, 203; General Description, 203; Color and Size of Teeth, 204; Phylogenetic Remarks, 205; Terminology, 207; Special Description of Teeth, 208; Age Changes and Anomalies of the Pulpal Spaces, 237; Attachment of the Tooth, 240; Eruption of Teeth, 242; Arrangement of the Teeth, 261; Anomalies of Teeth and Dentition, 268; Attrition, 273; Correlation of Active and Passive Eruption, 274; Pharynx, 278; Muscles of Soft Palate and Pharynx, 281; Muscles of the Soft Palate, 281; Muscles of the Pharynx, 283; Lymphatic Tissue of Oral Cavity and Pharynx, 287; Nasal Cavity, 288; Paragonal Signets and Pharynx, 280.	178

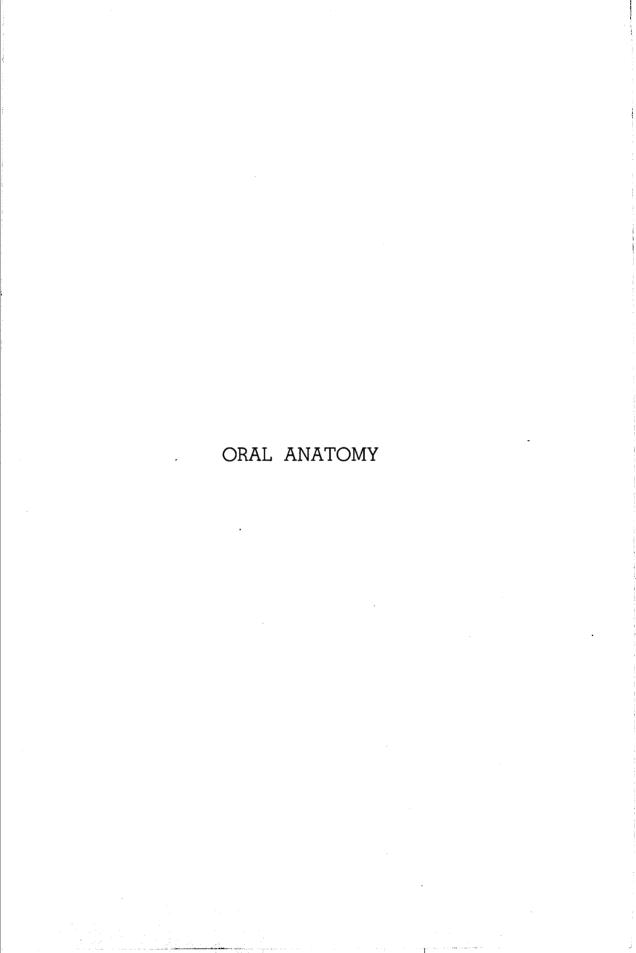
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CHAPTER 5	PAGI
Blood Vessels of the Head and Neck The Arteries, 307; External Carotid Artery, 307; Anterior Branches of the External Carotid Artery, 309; Posterior Branches of the External Carotid Artery, 315; Medial Branch of the External Carotid Artery, 316; Terminal Branches of the External Carotid Artery, 316; Internal Carotid Artery, 322; The Veins, 324; The Sinuses of the Dura Mater, 332; Communications Between Intracranial and Extracranial Veins, 334.	307
CHAPTER 6	
THE LYMPHATIC SYSTEM OF HEAD AND NECK	337
CHAPTER 7	
Nerves of Head and Neck Introduction, 346; Cranial Nerves, 348; Trigeminal Nerve, 350; General Remarks, 350; Ophthalmic Division, 353; Maxillary Division, 356; Mandibular Division, 361; The Facial Nerve, 367; The Glossopharyngeal Nerve, 371; The Hypoglossal Nerve, 372; Visceral Nerves of the Head, 373; Introduction, 373; The Sympathetic Nerve Supply of the Head, 374; The Parasympathetic Nerve Supply of the Head, 375.	346
PART TWO	
REGIONAL AND APPLIED ANATOMY	
CHAPTER 8	
THE PALPABILITY OF THE FACIAL SKELETON	381
CHAPTER 9	1,00
	385
Alveolar Process of the Maxilla, 385; Alveolar Process of the Mandible, 396.	
CHAPTER 10	
ANATOMY OF LOCAL ANESTHESIA Introduction, 403; Applied Anatomy of the Dental Plexus, 404; Applied Anatomy of the Nerves of the Upper and Lower Jaws, 406; Topography of the Posterior Superior Alveolar Nerves, 406; Topography of the Anterior Superior Alveolar Nerves, 408; Topography of the Palatine Nerves, 410; Topography of the Inferior Alveolar Nerve, 412; Topography of the Mental Nerve, 422; Topography of the Lingual Nerve, 423; Topography of the Buccal Nerve, 424; Topography of the Second Division of the Trigeminal Nerve, 425; Topography of the Third Division of the Trigeminal Nerve, 427.	403
CHAPTER 11	
ARTERIAL HEMORRHAGES AND LIGATION OF ARTERIES Danger Zones in the Oral Cavity, 430; Ligation of Arteries, 433; Ligation of the External Maxillary Artery, 433; Ligation of the Lingual Artery, 434; The Submaxillary Triangle, 434; Exposure of the Lingual Artery, 440; Ligation of the External Carotid Artery, 440; Introduction, 440; The Carotid Triangle 441; Exposure of the External Carotid Artery in the Carotid Triangle, 446; The Retromandibular Fossa, 447; Exposure of the External Carotid Artery in the Retromandibular Fossa, 449.	430

CONTENTS

CHAPTER 12	PAGE
THE PROPAGATION OF DENTAL INFECTIONS	450
CHAPTER 13	
TRACHEOTOMY AND LARYNGOTOMY	468
CHAPTER 14	-
THE TEMPOROMANDIBULAR ARTICULATION	476
CHAPTER 15	
THE EDENTULOUS MOUTH	484

LIST OF ILLUSTRATIONS IN COLOR

FIG.		PAGE
20.	Temporal bone of a 1-year-old child	39
56.	The trajectories of the mandible	85
58.	The supporting pillars of the maxillary skeleton	87
71.	Sutural sites of maxillary growth	110
105,	B.—Frontal (buccolingual) section through the upper right second molar and the	
·	neighboring structures	183
220.	Diagram of the main arteries of the head	308
	The superficial and deep arteries of the face	313
224.	Lingual artery, palatine artery, and posterior nasal arteries	314
	Diagram of the veins of the head	326
227.	The superficial veins of the face and the scalp	328
228.	Deep veins of the face	329
236.	Diagram of the main sensory branches of the trigeminal nerve	354
	Oblique section through a head which had been fixed with the mouth wide open	414
	Submaxillary triangle, superficial layer	434
288.	Submaxillary triangle, deep layer	435
289.	Submaxillary triangle after removal of the submaxillary gland	436
	Surgical exposure of the lingual artery	439
	The carotid triangle	442
292.	Surgical exposure of the external carotid artery in the carotid triangle	443
	Retromandibular fossa, superficial layer	446
294.	Retromandibular fossa, deep layer	447
295.	Surgical exposure of the external carotid artery in the retromandibular fossa	448
297.	Frontal section through the cavernous sinus	466
	Parotideomasseteric region	181





Part One DESCRIPTIVE ANATOMY

Chapter 1

THE SKULL

INTRODUCTION

Phylogenetically the skeleton of the head can be traced back to primarily independent parts. The first, neurocranium, protects the brain and forms capsules for the organs of seeing, hearing, and smell. The second, splanchnocranium, surrounds the cranial parts of the respiratory and digestive tracts. In higher animals this division can be only diagrammatic because these two parts fuse in a static and functional sense into one unit. Moreover, the nasal cavity has become, in higher vertebrates, not only an organ of smell, but also the beginning of the respiratory tract after its separation from the primitive oral cavity. What one calls in man and mammals the facial skeleton is not identical with the splanchnocranium.

Primarily, the neurocranium forms the posterior and dorsal, the splanchnoeranium, the anterior and ventral parts of the skull, just as, in the trunk, the spinal cord, even in higher mammals, is situated dorsally and the viscera ventrally to the axial skeleton. The ever greater expansion of the brain is responsible for a change in the relation of neurocranium and splanchnocranium in the course of evolution, so that the splanchnocranium is more and more overgrown by the neurocranium. In man, finally, the neurocranium alone forms the cranial end of the body (Fig. 1).

The final and decisive changes in the skull of man are related to the acquisition of the upright posture which necessitated a strong curvature of the skull around an axis passing through the two acoustic organs. These final changes can still be seen by comparing the most highly developed apes with the lowest types of man and by following through to recent man. This phase in evolution did not merely bring about a change in the position of the two parts of the skull and a gradual enlargement of brain and, therefore, brain capsule, but also a gradual decrease in size of the facial skeleton mostly as a result of reduction of the masticatory apparatus.

It is interesting to note that, in this respect, phylogenetic and ontogenetic changes are not parallel. The primitive races of man, Pithecanthropus of Java and Sinanthropus of China, possessed a powerful and protruding masticatory skeleton which was gradually reduced in relative size in the Neanderthal man and his successors. On the other hand, the human newborn infant is characterized by the enormous preponderance of the neurocranium over the splanch-nocranium which is almost concealed below the bulging forehead.