

PRACTICAL ORTHODONTICS

ANDERSON

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PRACTICAL ORTHODONTICS

(Original Text by the Late Martin Dewey)

Fifth, Sixth, Seventh, and Eighth Editions

Revised by

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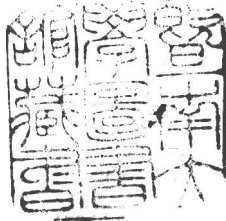
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贈送書



EIGHTH EDITION

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PREFACE TO THE EIGHTH EDITION

Professions acknowledge continuing education as absolutely essential. Through meetings, journals, and textbooks, the practitioner seeks to learn new and better ways to render service which patients in ever-increasing number require. Orthodontics is no exception. As a professional specialty it is a young group and the vitality that accompanies that period may account for much of its rapid progress and many of the significant changes which have come about. But there is no evidence of slackening effort to know the field better in order to fulfill the public need. That is the justification for this revision, for in the short period between the seventh edition and this, the eighth, there have been important additions to diagnostic and treatment procedures which every practitioner or student of the specialty must include in his service to his patients.

In the preparation of this edition we have eliminated the obsolete, amplified long-existing data which time has justified, and added large segments of text relative to measures and methods which research and clinical practice have emphasized as beneficial. There has been a sincere effort to include all of importance.

The term "normal occlusion" is analyzed and defined so that it better fits the adaptive pattern of the individual. This is most important to diagnosis and determination of the need for or extent of treatment, as well as being a deciding factor as to whether the needs of the individual have been satisfied through corrective measures. The older, accepted perfection standard with rigidly fixed occlusion has been adjusted to reality wherein "normal occlusion" is recognized as covering a range of variability within which useful and esthetic values can exist.

The equilibration of occlusion to eliminate disharmonies and as an aid to orthodontic treatment results is an addition to the text.

Inheritance, vital factor in all life processes, but in particular as it affects facial form, receives considerable attention, far more than previously, which is as it should be, for evidence continues to mount that genetics controls and directs many of our problems.

Additions of anthropometric considerations and cephalometric appraisal indicate the importance each of these fields has assumed in orthodontic practice. Facial growth is being measured, its probabilities indicated, and its effect on corrective methods anticipated through these adjuncts, and their place in orthodontic thought is well established.

Prophylactic or preventive orthodontics is included, and habits as an etiological factor are more definitely emphasized because of the public's interest and what might be called confusion in understanding how habits create forces which develop malocclusion of the teeth.

6 *Preface*

Extraction as an aid to treatment is broken down into its component parts, so that from incisors to third molars reasons for and against the practice are stated and discussed in much detail.

There is new material on cleft palate and the effect of musculature as an aid to the newborn infant in cleft closure.

The entirely new subject of osteoporosis or craniotabes as it affects the skull, face, and jaws and influences malocclusion is included.

Mechanistic improvement in the removable appliance field adds a real measure of technical interest, and the addition of more material relative to extraoral anchorage in the form of cervical or head strap outlines the possibilities in this intriguing phase of clinical effort.

Methods to aid in the betterment of business details and improvements in records are described and illustrated, for they comprise a most important adjunct in the smooth conduct of a busy practice.

All subjects derive stature from a record of the past, and the history of orthodontics has been rewritten to provide an even more comprehensive review than has appeared in previous editions.

While to some it may appear that we should have amplified where we have limited or included where we have excluded, there has been a sincere effort to include in reasonable volume the multitudinous issues which aid in the preparation for participation in the treatment of malocclusion of the teeth. Our primary thought has been to be practical, in keeping with the title of this book, so that the reader can learn without having his mind cluttered with extraneous matter. We consequently believe that the field, its problems, and methods for relief have been well covered and that the student or graduate who applies himself to this text will be able to assume his orthodontic responsibilities in a reasonably satisfactory manner.

The author is indebted to many individuals in the medical and dental professions for advice and written and illustrative material which have enhanced the quality of this text. To each of them he expresses his gratitude and sincerely thanks them for their graciousness and willingness to help him.

GEORGE M. ANDERSON

Baltimore.

CONTENTS

CHAPTER 1	PAGE
ORTHODONTICS - - - - -	13
CHAPTER 2	
HISTORICAL RÉSUMÉ OF THE EVOLUTION AND GROWTH OF ORTHO- DONTICS (BY BERNHARD WOLF WEINBERGER) - - - - -	37
Introduction, 37; Origin of the Word "Orthodontics"; the Terms Used to Designate It, and Their Definitions, 40; Facial Expression as Influenced by the Teeth, 43; Observations on Occlusion, 45; Causes of Malocclusion, 48; Classification of Malocclusion, 51; Means Employed in Treatment of Malocclusion, 72; Summary, 84; Consideration of Orthodontic Progress, 86; Consideration of Modern Orthodontics From the Period of Specialization, 87.	
CHAPTER 3	
OCCCLUSION OF THE TEETH - - - - -	92
Static, Dynamic Occlusion, Physiologic Rest Position, Centric Occlusion, 95; First Stage: The Occlusion of the Deciduous Teeth After Their Complete Eruption, 109; Second Stage: Changes That Occur in the Occlusion Previous to the Eruption of the Permanent Incisors and First Permanent Molars, and After the Loss of the Deciduous Canines, First and Second Deciduous Molars, 111; Third Stage: The Occlusion of the Permanent Teeth of a Young Adult, 114; Fourth Stage: The Changes That Occur in the Adult Occlusion as the Result of Wear, 118; Force of the Surface Contact, 119; Muscular Activity, 122; Atmospheric Balance, 126; Overbite, 129.	
CHAPTER 4	
MALOCCLUSION - - - - -	134
Malpositions of the Teeth, 134; The Relation of the Dental Arches, 135; Neutroclusion, or Class I, 143; Distocclusion, or Class II, 145; Mesioclusion, or Class III, 146; Classification of Malocclusion, 148; Open Bite, Edge-to-Edge Bite, Overbite, 148; Malposition of the Mandible, and Malformation of the Jaws and Processes, Resulting in Facial Disharmony and Deformity, 152; Malocclusion and Facial Form, 158.	
CHAPTER 5	
ETIOLOGY OF MALOCCLUSION - - - - -	176
The Time the Causative Factors Occur, 177; Heredity, 178; Congenital Causes, 180; Acquired Causes, 185; Early Loss of Deciduous Teeth, 185; Tardy Eruption of the Permanent Teeth, 187; Early Loss of Permanent Teeth, 188; Improper Tooth Form Restoration, 191; Loss of the Mesiodistal Diameter of the Teeth, 192; Prolonged Retention of Deciduous Teeth, 192; Submerged Molars, 193; Alveolar Deficiency, 196; Disorderly Eruption of Permanent Teeth, 196; Transposed Teeth,	

	PAGE
196; Malformed Teeth, 197; Nest of Miniature Teeth, 197; Cysts, 198; Deflected Canines, 198; Lack of Spacing, 199; Habits, 199; Accidents, 204; Mouth Breathing, Nasopharynx, 205; Muscular Activity, 211; General Causes of a Nonspecific Nature (Disease, Pathology, Nutrition, Physiologic), 211; Measles, 212; Syphilis, 212; Rickets, 212; Tuberculosis, 213; Diabetes, 213; Epilepsy, 214; Faulty Development of the Child and Diet, 214.	
CHAPTER 6	
DIAGNOSIS - - - - -	222
The Dentist, the Physician, and the Written Record, 223; Impressions and Denture Reproductions, 225; Procedure for Taking Impressions and Making Models, 228; Materials for Impression, 228; Trimming the Mandibular Model, 231; Trimming the Maxillary Model, 232; Duplicating Orthodontic Models, 233; Classification, 233; Occlusal Relations, 234; Arch Predetermination, 236; Photography, 241; Color Photography, 246; Facial Casts, 247; Anthropometry, 247; Roentgen-Ray Examination, 252; Equipment for Dark Room, 257; Technique for Roentgen-Ray Examination, 257; Radiographic Profiles, 262; Cephalometry, 267; Gnathostatics and Photostatics, 277.	
CHAPTER 7	
MEASUREMENT OF DENTOFACIAL CHANGES IN RELATION TO THE CRANIUM (By B. HOLLY BROADBENT) - - - - -	285
Growth and Development, 285; Standards of Measurement, 286; Roentgenographic Cephalometer, 289; Technique of Using Cephalometer, 289; Adjusting Patient's Head to Cephalometer, 292; Models With Cephalometer, 295; Developmental Growth Patterns, 297; Bolton-Nasion Plane, 298; Normal Growth, 298; Abnormal Development and Malocclusion, 303.	
CHAPTER 8	
EXTRACTION IN ITS RELATION TO ORTHODONTIC DIAGNOSIS AND TREATMENT - - - - -	307
Extraction of Deciduous Teeth, 321; Serial Extraction, 322; Incisor Extraction, 323; Cuspid or Canine Extraction, 324; Premolar or Bicuspid Extraction, 324; First Permanent Molar Extraction, 325; Second Molar Extraction, 326; Third Molar Extraction, 330; Unerupted or "Impacted" Teeth, 331.	
CHAPTER 9	
TISSUE CHANGES INCIDENT TO ORTHODONTIC TOOTH MOVEMENT - - - - -	334
Tipping Movement; Transformation of Bone, 335; Bone Changes in Orthodontic Elongation and Depression of Teeth, 339; Bone Changes During the Period of Retention, 340; Position of Fulcrum, 341; Results of Excessive Force, 342; Continuous Versus Intermittent Forces, 343; The Value of Experiments on Man, 345; Root Resorption, 346; Changes in the Mesiodistal Relations of the Jaws; 349; Influence of Orthodontic Movement of Deciduous Teeth Upon the Germs of the Permanent Teeth, 350; Roentgenographic Interpretation of Bone Changes in Orthodontic Tooth Movement, 350.	
CHAPTER 10	
THE APPROACH TO TREATMENT - - - - -	351
Preventive, Interceptive, or Prophylactic Orthodontics, 351; Early Treatment, 352; Observation of Cases, 352; The Nervous Child, 353; The Problem Child, 353; The Anxious Parents, 354; Deviation From Normal, 354; Favorable Periods	

for Treatment, 354; Immediate Treatment or Observation? 355; Open-Bite, 356; Caries, 357; Pathologic Oral Conditions, 358; Adult Malocclusion, 358; Root Resorption, 358; Crowded Mandibular Incisors, 359.

CHAPTER 11

METHODS AND AIDS TO TREATMENT - - - - - 361

Types of Force, 362; Types of Treatment, 364; Types of Tooth Movement, 365; Nonmechanical Aids, 369; Occlusal Equilibration, 370; Mechanical Aids, 370; Bands, 374; Tubes, 375; Labial Arch, 376; Lingual Arch, 377; Spring Wires, 377; Bite Plate, 377; Ligatures, 378; Elastics, 380; Retention Appliances, 381; Attachment of the Parts, 381; Soldering, 381; Materials, 383; Precious Metals, 383; Stainless Steel, 386; Welding, 388.

CHAPTER 12

MYOFUNCTIONAL TREATMENT OF MALOCCLUSION (By ALFRED PAUL ROGERS) - - - - - 389

General Considerations, 389; The Malnourished Child, 390; Treatment of Neutroclusion, 390; Masseter-Temporal Exercise, 391; Treatment of Distocclusion, 392; Pterygoid Exercise, 393; Hawley Retainer, 393; Treatment of Mesioclusion, 394; Tongue Exercise, 395; General Tonic Exercise, 395; Orbicularis Oris Exercise, 395.

CHAPTER 13

MECHANISTIC TREATMENT OF MALOCCLUSION OF THE TEETH - - 397

Appliances, 397; Requirements, 398; Efficiency, 398; Durability, 398; Cleanliness and Ease of Manipulation, 399; Inconspicuousness, 399; Types of Appliances, 400; Fixed, 400; Fixed Removable, 400; Removable, 404; Removable Plate, 405; Vulcanite or Acrylic Retained, 407; Anchorage, 407; Intraoral Anchorage, 408; Intramaxillary Anchorage, 409; Intermaxillary Anchorage, 413; Extraoral Anchorage, 414.

CHAPTER 14

ORTHODONTIC BANDS (By EARL W. SWINEHART) - - - - - 417

Nomenclature, 417; Plain Anchor Bands, 418; General Principles, 418; Band Material, 419; Construction of Plain Anchor Bands, 420; Indirect Anchor Band Techniques, 421; Making the Model, 421; Indirect Band Fitting by the Preforming Method, 421; Indirect Fitting by the Pinch Method, 422; Direct Plain Anchor Band Technique, 424; Method A. Force-Driven Bands, 424; Size and Gradation of Bands, 425; Making Cylinders in the Office Laboratory, 425; Molar Band Adaptation, 430; Test for Safety and Strength, 433; Psychologic Reaction, 433; Accuracy of Seating, 434; Conservation of Time, 434; Direct Pinch-Joint Anchor Band Technique, 435; Soldering of Pinch-Joint Anchor Bands, 438; Adjusting the Pinched and Soldered Band to the Tooth, 438; Attachment Band Technique, 439; Location on the Teeth, 439; Forming the Bands, 439; Attachments, 441; Attaching Half-Round Tubes to Anchor Bands, 441; Attaching Buccal Tubes to Maxillary Anchor Bands, 442; Attaching Buccal Tubes to Mandibular Anchor Bands, 443; Soldering Molar Buccal Tubes in Multiple Attachment Band Techniques, 444; Cementing Anchor Bands, 445; Removal of Plain Bands, 446; Anchor Clasps for Removable Appliances, 447; Forming the Clasps, 448.

CHAPTER 15

THE LABIAL ARCH - - - - - 450

Modifications of Labial Arch, 450; Adjustment of Simple Labial Arch, 452; Labial Arch With Coil and Auxiliary Springs, 454; High Labial Arch, 457; Pin

and Tube, 459; Half-Round Pin and Tube, 460; Ribbon Arch and Bracket Bands, 461; McCoy Open Tube, 464; The Twin-Wire Appliance, 464; The Universal Appliance, 469.

CHAPTER 16

THE EDGEWISE ARCH MECHANISM (By CHESTER F. WRIGHT) - - - - - 472

The Bracket Principle, 473; The Ideal Arch, 474; Measuring for the Maxillary Arch, 475; Measuring for the Mandibular Arch, 477; Marking and Forming the Arch, 477; Forming the Ideal Arch, 478; Modifying the Ideal Arch for Type, 479; Manipulation, 480; Mass Movement, 483; Second Order Bends, 485; Torque, 487.

CHAPTER 17

THE LINGUAL ARCH AND THE REMOVABLE LINGUAL ARCH - - - - - 490

The Lingual Arch, 490; The Removable Lingual Arch, 490; Materials, 493; Position of Lingual Tubes, 493; Breakage of Arch, 493; Technique of Making Arch, 494; Auxiliary Spring, 496; Adjusting the Arch, 499; Loop in Lingual Arch, 502; Position of Mandibular Lingual Arch, 503; Position of Maxillary Lingual Arch, 503; Labial Auxiliary Wire, 504; Attachment of Bite Plates and Guide Planes, 505; Lock for Lingual Arch, 505; The Coil Spring, 505.

CHAPTER 18

TREATMENT OF MALOCCLUSION - - - - - 513

Neutroclusion, or Class I (Angle), 513; Maxillary Incisors in Linguoversion, 513; Protruding Maxillary Incisors, 514; Mesial Posterior Teeth, 516; Labial, Lingual Canines; Bunched or Crowded Incisors, 516; Rotation of Incisors, 518; Crowded Mandibular Incisors, Root Movement, 518; Expansion, Widening, or Enlargement of the Arches, 519; Missing Incisors, 524; Missing Canines, 526; Missing Premolars, 526; Missing Molars, 527; Underdeveloped Arches, 529; Unerupted Teeth, 531; Symmetry of the Arch, 532; Distocclusion, or Class II, 532; Bilateral Distocclusion With Labioversion of the Maxillary Incisors (Class II, Division 1), 532; Unilateral Distocclusion With Labioversion of the Anterior Teeth (Class II, Division 1, Subdivision), 546; Bilateral Distocclusion With Retruding Anterior Teeth (Class II, Division 2), 546; Unilateral Distocclusion With Retruding Teeth (Class II, Division 2, Subdivision), 549; Mesioclusion of the Maxillary Teeth, 549; Bilateral Mesioclusion, or Class III, 554; Bilateral Mesioclusion of the Mandibular Arch, 554; Unilateral Mesioclusion of the Mandibular Arch (Class III, Subdivision), 558.

CHAPTER 19

TREATMENT OF MALOCCLUSION (Continued) - - - - - 561

Correcting the Lingual Position of a Maxillary Central Incisor, 561; Correcting the Lingual Position of a Maxillary Lateral Incisor, 561; Correcting the Lingual Position of a Maxillary Canine, 563; Closure of Excessive Spacing Between Maxillary Central and Lateral Incisors, 563; Closure of Spaces for Missing Lateral Incisors, 565; Labial or Lingual Movement of the Anterior Teeth (Removable Plates), 568; Treatment of Malocclusion Caused by a Supernumerary Tooth, 571; Unerupted Teeth, 572; Surgical Removal of Frenum, 575; Habits, 578; Root Movement, 586; Maintenance of Space for Unerupted Teeth and Maintenance of Space Created by the Loss of Permanent Teeth, Maintenance of Function and the Restoration of Function, 587; Buccal or Lingual Movement of First Molars and

Other Posterior Teeth, 594; Closure of Spaces Created by Missing Posterior Teeth, 596; Rotation of Teeth, 598; Intermaxillary Elastics, 601; Edge-to-Edge Bite, 604; Prosthetics and Ceramics in Orthodontics, 604; Injured Teeth, 606; Fractures of the Maxilla and the Mandible, 608.

CHAPTER 20

RETENTION - - - - - 612

Natural Aids, 613; Cusp Guidance, Size, Form, and Number of Teeth, 613; Harmony in Size and Relation of the Arches, 614; Muscular Pressure, 616; Approximal Contact, 617; Quantity and Quality of the Alveolar Process, 619; Condylar Relation, 620; Cellular Activity, 621; Atmospheric Pressure, 622; Equilibration of Occlusion and Spot Grinding, 622; Mechanical Aids, 622; Fixed Retention, 624; Removable Retention, 625.

CHAPTER 21

PLASTIC SURGERY OF THE JAWS (By EDWARD A. KITLOWSKI) - - - - - 638

Preparation for Operation, 638; Deformities of the Bones of the Jaws, 639; Deformities of the Maxilla, 639; Posterior Displacement of the Premaxilla, 639; Lack of Development of the Maxilla, 639; Maxillary Prognathism, 640; Deformities of the Mandible, 640; Retraction or Posterior Displacement, 640; Cartilage Transplant, 644; Lack of Development, 645; Open-Bite, 645; Protrusion of the Mandible, 645; Atypical Deformities, 650; Malunion of Fractures, 651; Flat Angle, 651; Delayed Union, 651; Nonunion, 652; Loss of Bone Substance; Unilateral Shortening of the Mandible, 652; Bone Grafting for Unilateral Shortening of the Mandible, 655; Deformities of the Soft Parts, 657; Deformities of Bone and Soft Parts, 658; Deformities Due to Injuries, 658; Clefts of the Lip and Palate, 659; Closure of the Lip, 660; Closure of the Palate, 660; Secondary Defects After Operations for Clefts of the Lip and Palate, 662.

CHAPTER 22

PRACTICE MANAGEMENT - - - - - 664

Chapter 1

ORTHODONTICS

INTRODUCTION

The development of orthodontics and dental practice in general has been of fairly recent origin, for while Weinberger proves that ancient records establish some dental activity, it was not until 1840 that the first dental school was founded, and some sixty years elapsed before orthodontics received the impetus of specialized instruction. From those infant days of limited classes presided over by Edward H. Angle to the present well-organized and ably staffed university-sponsored graduate courses there has been a broadening of the orthodontic domain to a point where the public's demands for service are reasonably well met by the profession.

Throughout the fifty-year life of the specialty those devoting their energies to this particular field have failed to develop a terminology or nomenclature¹ of scientifically understandable words. Repeated and sincere efforts through society committees have been of little use in persuading the dentist and orthodontist that nomenclature is as important to an understanding of his field as is the technical detail of a procedure evolved to prevent or correct an adverse condition. Most suggestions died a-borning, but in recent days the American Dental Association has taken the matter seriously and created a unit within its structure whose purpose is to improve the descriptive terms we use and to see that they are used. Though this is a general dental program, the orthodontic committees, groups, and persons heretofore interested in the problem have indicated their hope for assistance and improvement in this special field.

Formerly the term "orthodontia" was almost exclusively used to designate the field, but today the term "orthodontics" has superseded it and is in common use. Among the older definitions, the one given by Angle in 1900, speaks of *orthodontia as that science which has for its object the correction of the malocclusion of the teeth*. This definition though brief is sound. Had Angle seen fit to use the word "alleviation" instead of correction he would have covered the ground later covered by other definitions which stress that orthodontics seeks to *prevent* as well as *correct* malocclusion of the teeth. Some thirty years later Abram Hoffman² defined the field as "*A biomechanical science which has for its object the prevention or correction of malocclusion of the teeth and the harmonizing of the structures involved so*

¹McCoy, James D.: Naming Dental Anomalies—A Study in Orthodontic Nomenclature, *Am. J. Orthodontics* 27: 169, 1941.

Moore, George R.: Naming Dental and Oral Anomalies, *Am. J. Orthodontics* 24: 1051, 1938.

Denton, George B.: Past Efforts to Improve Dental Nomenclature, *J.A.D.A.* 42: 345, 1951.

Mayoral, Jose: Orthodontic Nomenclature, *Am. J. Orthodontics* 34: 178, 1948.

²Hoffman, Abram: Rational Methods in Orthodontic Therapy, *Internat. J. Orthodontia* 19: 233, 1933.

that the dental mechanism produced will be best suited to the functional activities of the human organism as a whole. In theory or in practice it is a study of growth and development linked with physical and mechanical principles." And James D. McCoy³ within the past decade defines the field as *"A study of dental and oral development; it seeks to determine the factors which control growth processes to the end that a normal, functional and anatomical relationship of these parts may be realized, and aims to learn the influences necessary to maintain such conditions once established."*

The primary purpose of orthodontics is to prevent and correct dental and oral anomalies, but the field is not so limited as this statement seems to indicate, for in carrying out the process we become involved with growth and structural change, which are influenced by inherited and environmental factors often not anticipated and frequently unknown.

To the thoughtful individual these and other definitions⁴ and explanations speak clearly of the changes in the understanding and interpretation of the science that have occurred in the relatively short span of fifty years. Prior to 1900 few members of the dental profession devoted their full time and efforts to this field. Corrective methods and mechanisms were considered of the utmost importance in clinical application of the science. They overshadowed what little appreciation there was for knowledge of etiology, diagnosis, and prognosis. The years have developed a broader concept.

For instance, note what Jackson has to say about his conception of the orthodontic domain.⁵

"In its broad comprehensive aspect, orthodontic practice actually consists of bold and audacious attempts to alter the entire natural genetic and functional patterns of certain specific, unique, infinitely variable, scientifically incalculable and unpredictable human individuals. These changes include their teeth, bones, temporomandibular joints, and esthetic facial proportions. To be more specific, the factors involved include the whole gamut of heredity and environment, the infinite variations and combinations of anatomic proportions, physiologic functions, psychologic motivations and habits, diseases, endocrine unbalances, traumatic injuries, mutilations, and gross abnormalities. The resultant composite combinations which all these factors, with their infinite variations, are capable of producing must be appraised and balanced by the would-be orthodontist into single, all-inclusive, specific and individual mental pictures, and when judged 'unsatisfactory,' altered by natural and artificial means into other specific, unique, all-inclusive, three-dimensional arrangements which will remain in satisfactory and stable conditions of structural, functional, and esthetic equilibrium. This is orthodontics, and there is nothing in 'the heavens above or the earth beneath or the waters under the earth' that can make it anything different or simpler. Brash has well defined it as the 'experimental control of the experiments of nature.'"

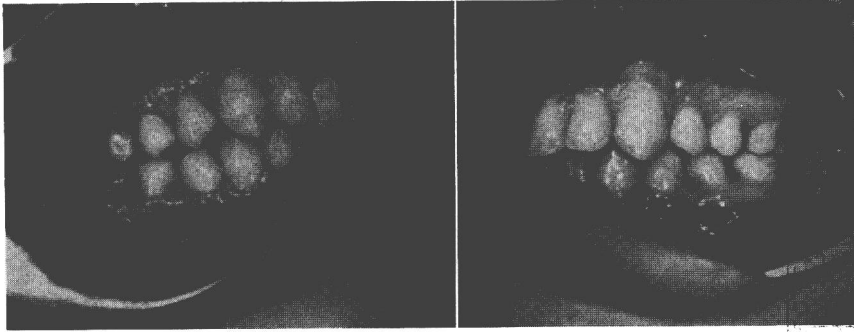
Malocclusion of the teeth is defined as any deviation from the "normal" (Fig. 1) relation of the teeth in the same arch to each other and to the teeth in the

³McCoy, James D.: *Applied Orthodontics*, ed. 6, Philadelphia, 1946, Lea & Febiger.

⁴Weinberger, B. W.: *What Does One Mean by Orthodontics?* *Am. J. Orthodontics* 37: 125, 1950.

⁵Jackson, Andrew F.: *Orthodontic "Growing Pains,"* *Am. J. Orthodontics* 38: 485, 1952.

opposing arch. Such a definition requires explanation. Minor deviations occur frequently in human dental occlusion so that the word "any" must not be allowed to carry a too narrow meaning. In addition, the term "normal" as applied to occlusion is one of great variability. It is illusory. That is because tooth surface contact is so definite and the symmetrical balanced relation of each tooth to its opposing one in the other arch and to its adjoining one in the same arch seems to fix the coronal relationship to such an extent that a description of the contact areas



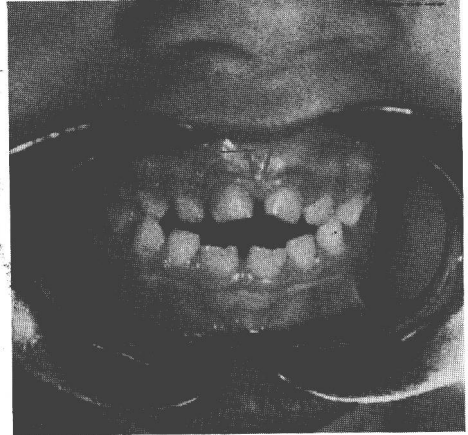
A.

B.

Fig. 1.—A, "Abnormal" occlusion. B, "Normal" occlusion.



A.



B.

Fig. 2.—A, Maxillary central incisors biting lingually to the mandibular incisors. B, Malocclusion in form of open-bite induced by habit (thumb-sucking).

leaves no doubt as to what particular teeth are being studied as various areas come under consideration. For instance, with the deciduous teeth we note that the lingual cusp of the maxillary first molar occludes in the central or main fossa of the mandibular first molar, and with the permanent teeth we note that the mesio-lingual cusp of the maxillary first molar occludes in the central fossa of the mandibular first molar. Equally specific fixation of other contact areas allow the student of the human denture to accept the arrangement as one to which the term

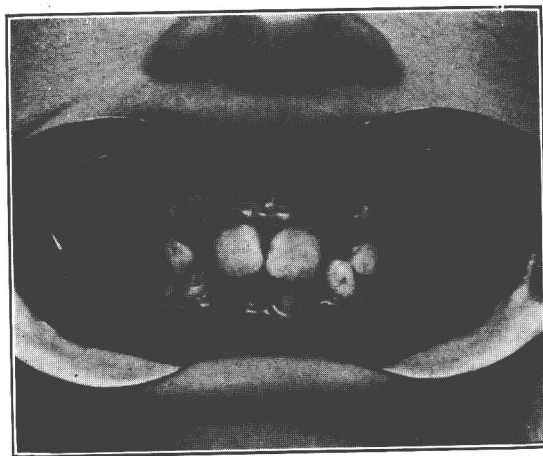
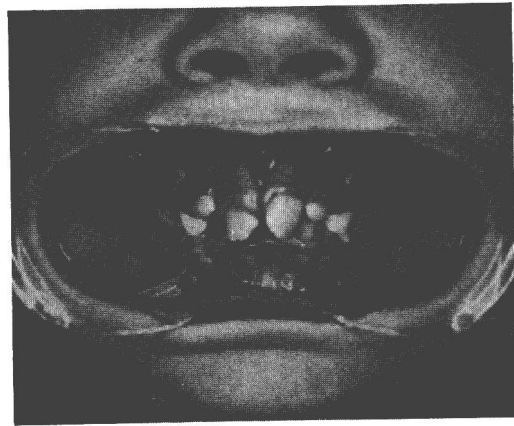


Fig. 3.—Three different cases in which the lateral incisors (maxillary) have insufficient space for ideal alignment.