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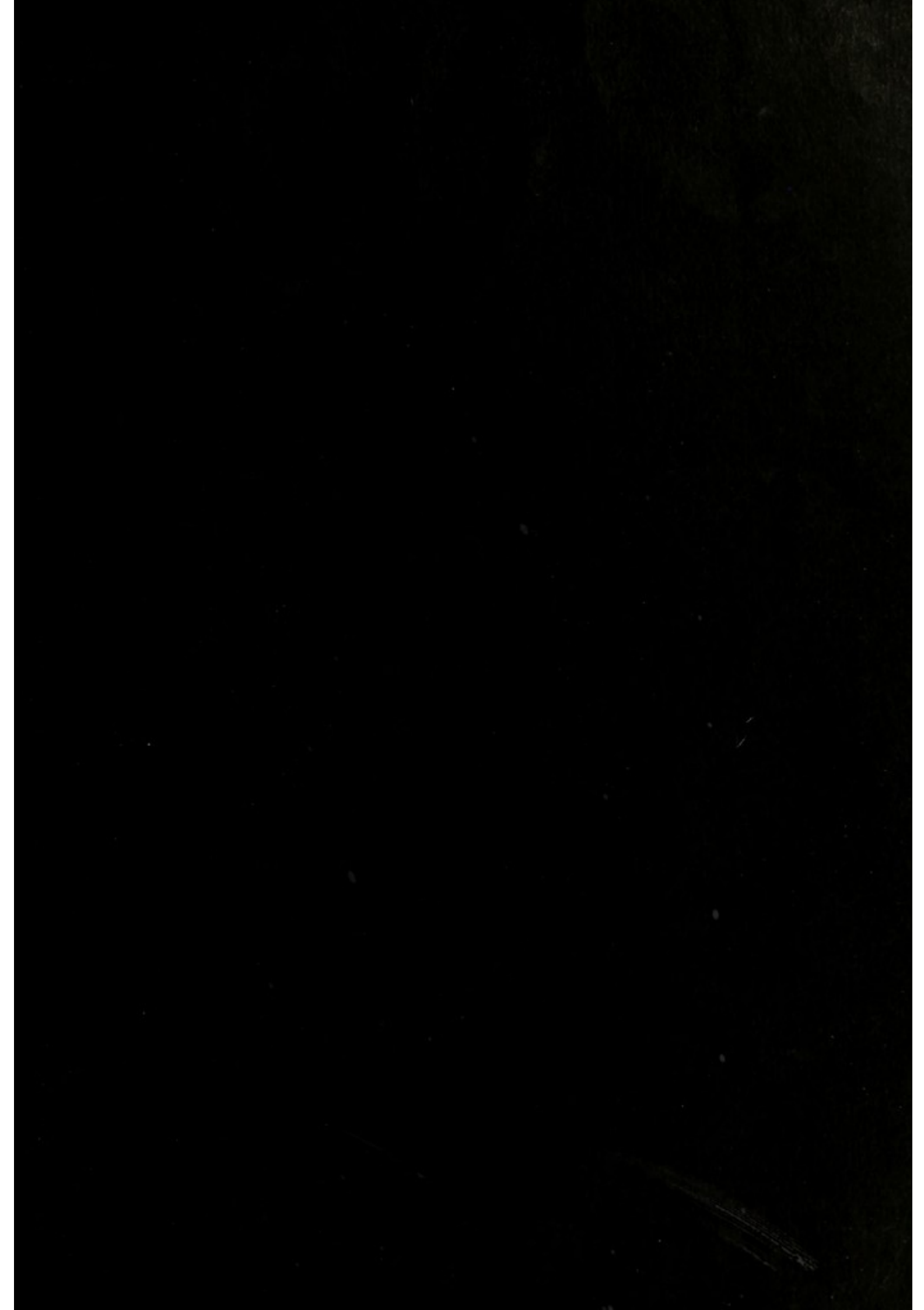
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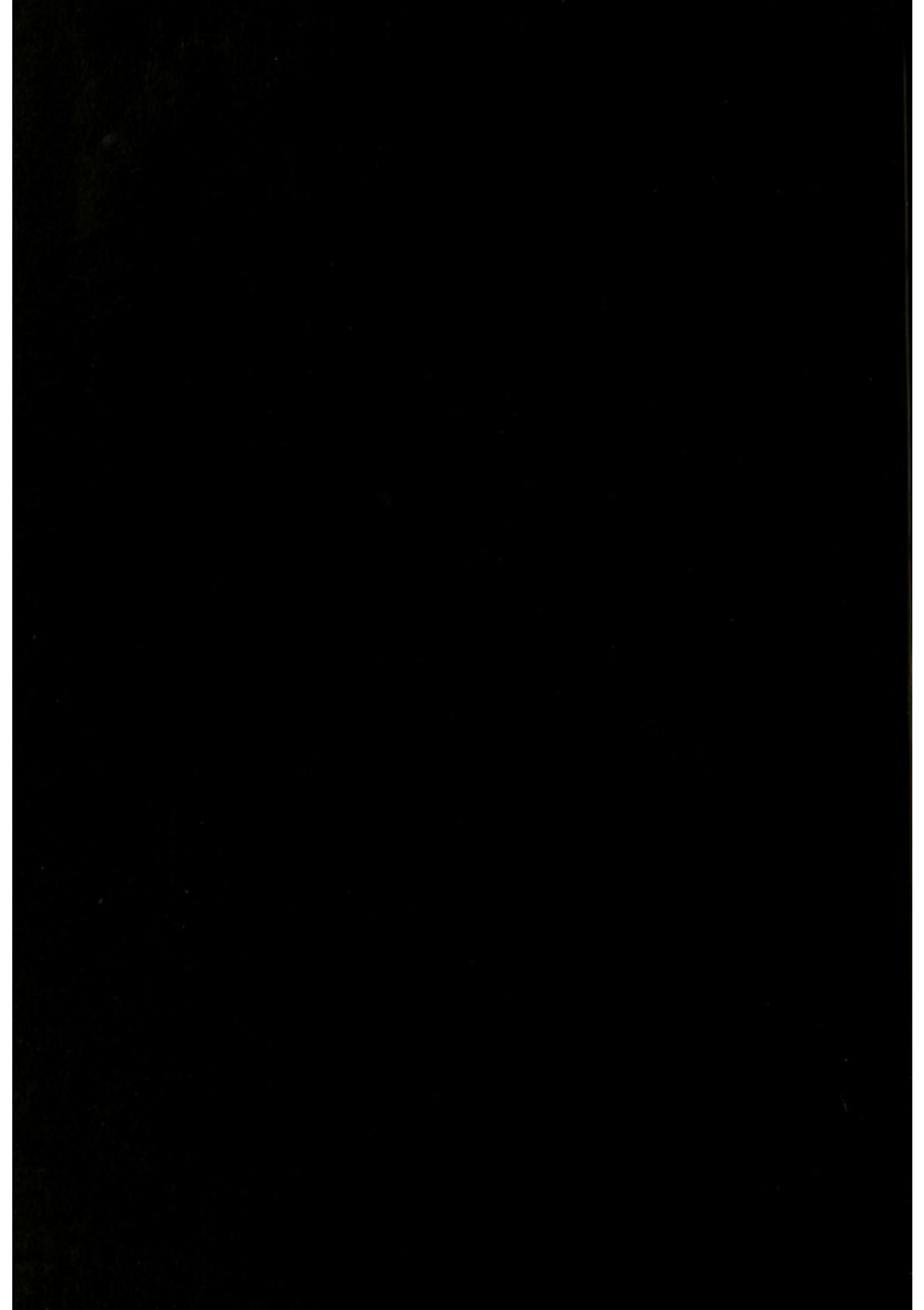
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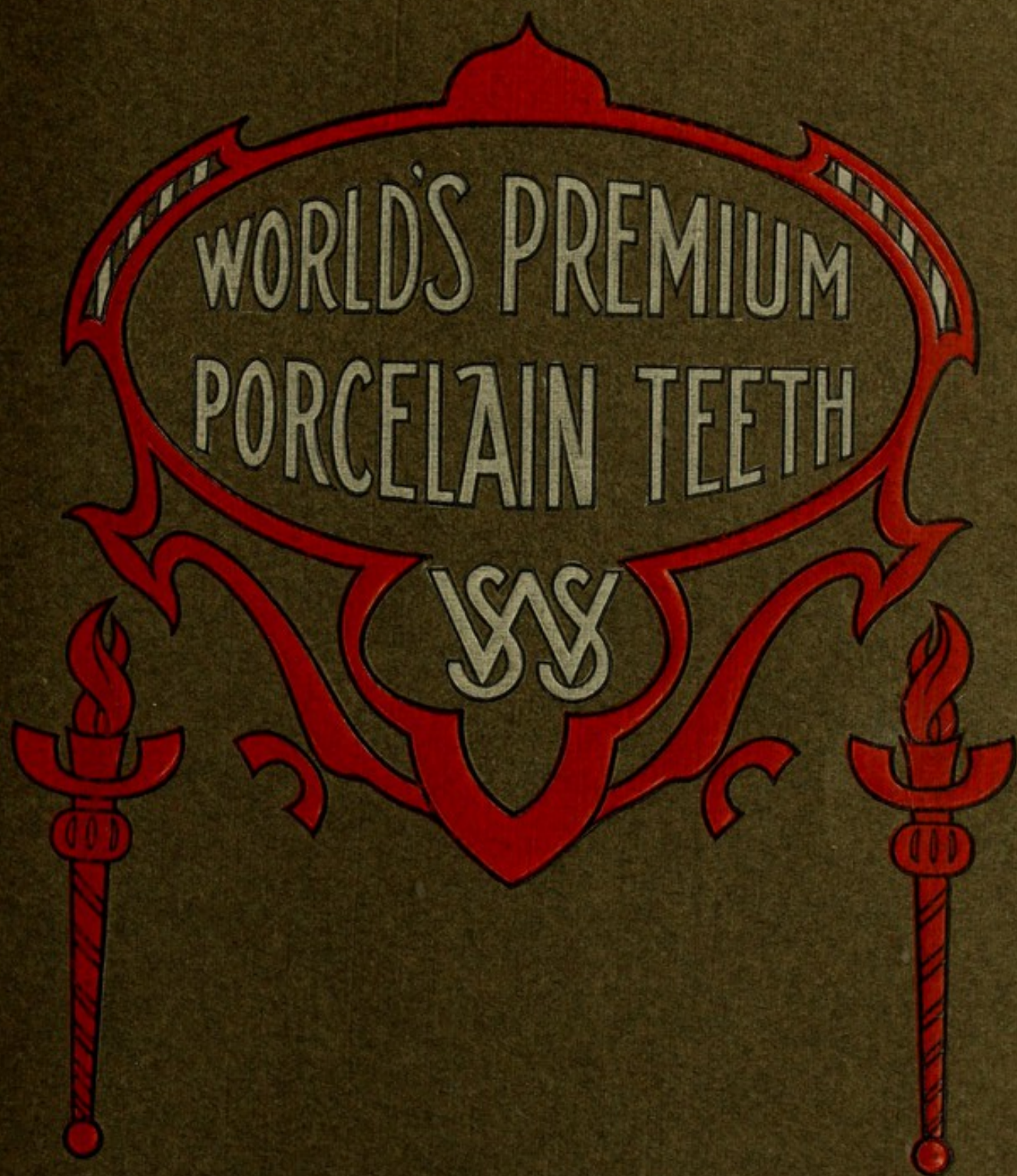
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A CATALOG

OF THE

World's Premium Porcelain Teeth

SHOWING ALL THE MOLDS

CLASSIFIED FOR READY COMPARISON

TOGETHER WITH A NUMBER OF

Papers of Special Interest to Prosthetic Dentists

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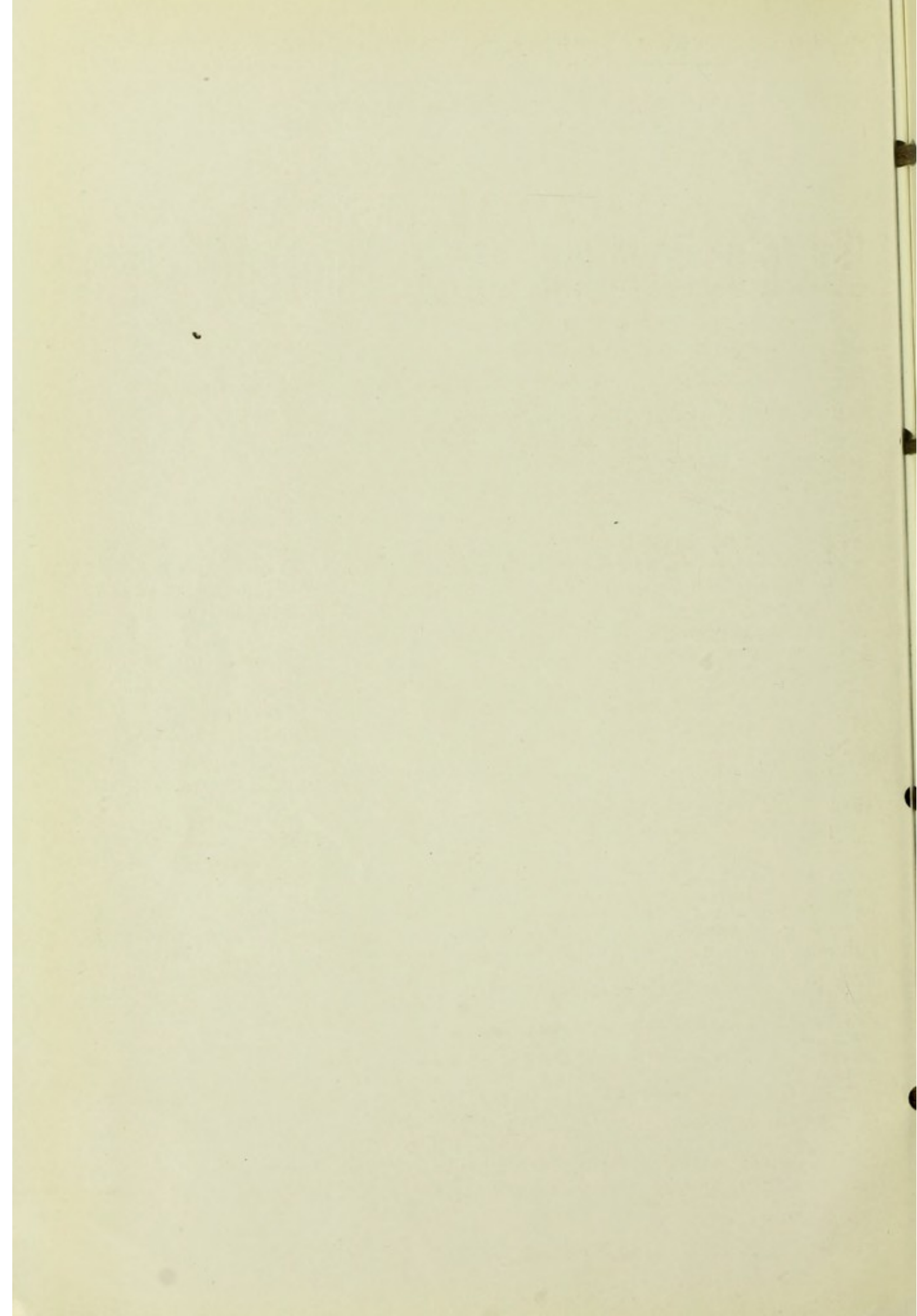
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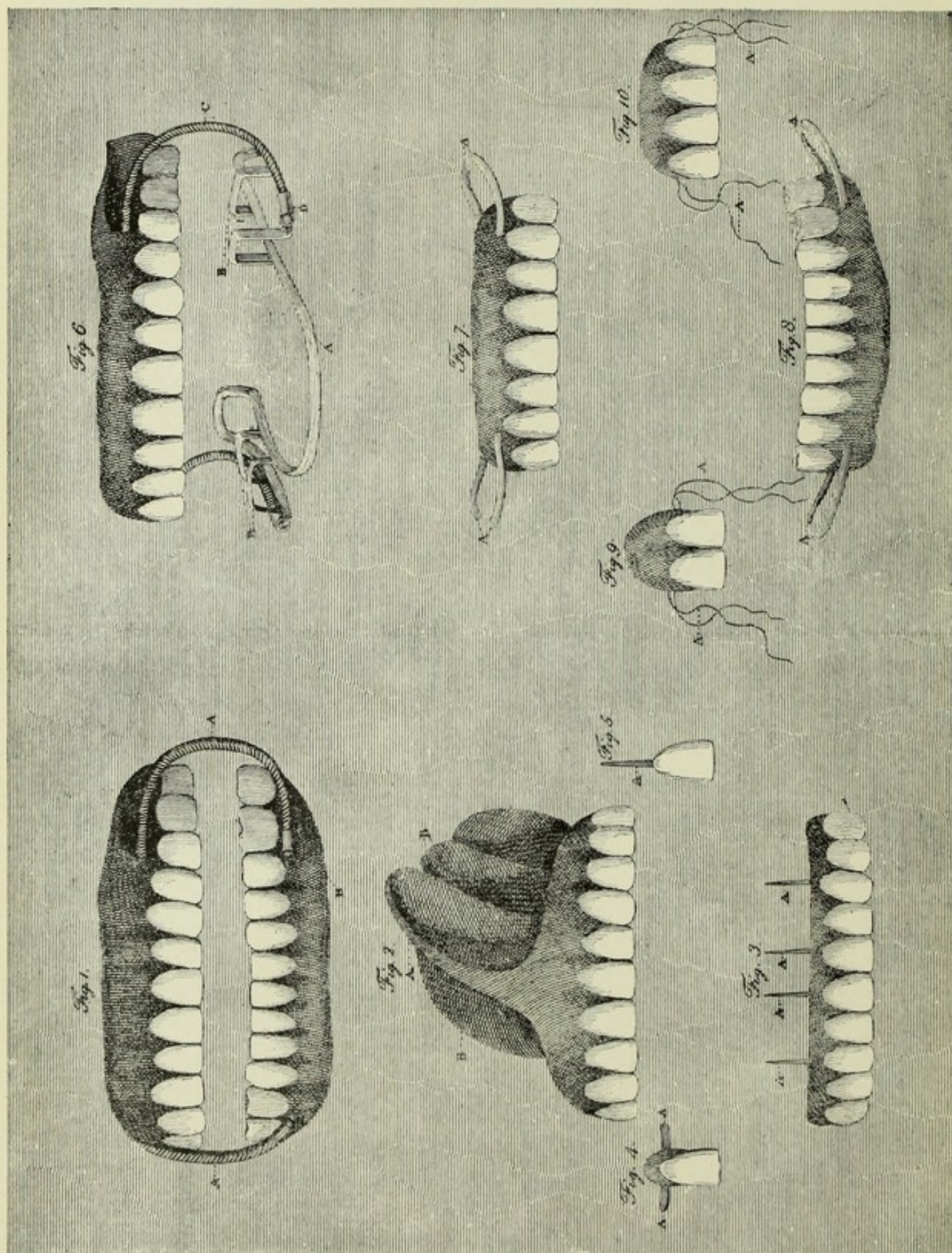
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ORIGIN AND DEVELOPMENT
of PORCELAIN TEETH

MINERAL PASTE TEETH



Photographic copy of early illustrations of Porcelain Teeth and Dentures



EXPLANATION OF THE PLATE,

Representing the different methods of fixing the teeth, and sets of teeth, made of mineral paste.

Fig. 1. A complete set of teeth with gums. A. The springs. B. the place of their attachment in that part resembling the gums

Fig. 2. A palate, to which are added the incisors, canine teeth, and small molars

Fig. 3. A Row of teeth with a part of the gums. A A A A. four pivots by which they may be fastened to stumps remaining in the jaw.

Fig. 4. A single tooth to be fixed by means of a small plate of gold marked A A.

Fig. 5. A single tooth with a pivot

Fig. 6. An upper row of teeth, with the method of fixing

it when the teeth of the upper jaw are lost, and the under teeth remain. A. a band of gold which passes on the internal side of the under teeth, and rests upon them. B. a kind of saddle which passes over one or more teeth. C. the springs which support the artificial teeth. D. the moveable hinges which receive the springs.

Fig. 7. A row of teeth with gums for the upper jaw, fixed by means of two elastic plates of gold marked A.

Fig. 8. A row of teeth with gums for the under jaw, fixed by means of two elastic plates of gold marked A.

Fig. 9. Two teeth in one piece, with a small portion of gums, to be fixed with silk ligatures. A A. the ligatures.

Fig. 10. A row of four teeth with the gums, to be fixed by ligatures. A A. the ligatures.

A BRIEF SKETCH OF THE ORIGIN AND DEVELOPMENT OF PORCELAIN TEETH

Clearing the Way

The question, Who made the first Porcelain Tooth? probably never will be settled beyond the peradventure of a doubt. There is no question that we are indebted to France for its production, and Dubois de Chemant is commonly accredited with the invention; but this is an error. It is scarcely to be doubted, however, that he bore an important part in bringing the idea which has developed into the Porcelain Teeth of our day into such notice as attracted attention to it and stimulated investigation and experiment.

A somewhat extended delving into old volumes has brought forth the facts recited below.

The Possible Beginning

As long ago as 1710 Guillemeau suggested a formula for a paste for artificial teeth composed of *white wax*, softened with a little *gum elemi*, to which was to be added a powder of *white mastic*, of *coral*, and of *pearl*. It was claimed that teeth made of this composition never became yellow. This appears to have been the first suggestion for a departure from the animal substances used at the time it was made and for long afterward. There was certainly little in common between this and the first actual step toward the production of real mineral teeth, although Audibran (1821) asks if it is not possible that this formula inspired the idea of manufacturing artificial teeth of porcelain paste.

The Real Beginning,—Enameling

In 1728 Fauchard, sometimes called the "father of dentistry," published his great work, "Le Chirurgien Dentiste: ou Traité des Dents." Here we find at least the germ of the idea of Porcelain Teeth. In Chapter XIX he says:

"I have thought that advantage might be derived from a regular and unalterable coloration from enamel artificially composed. I have also thought that I might from this not only perfectly imitate the enamel of teeth, but the gum, in cases where it is necessary to replace the teeth in whole or in parts of sets. With a view to success, I have consulted the most able enamelers, and by the conversation which I have had with them I have rendered practicable that which I believe no one else has ever thought of. The natural eyes have been imitated with eyes composed of enamel, but we have neglected the application of this art to the making of artificial dentures. However, be-

sides all the advantages which artificial teeth have over eyes made of enamel, they serve, as these, to ornament, and at the same time to repair deficiencies of parts whose deformities displease or offend the sight."

Matching Shades of Enamel

He further says, "In order that the enamel shall conform with the natural color, we should endeavor to imitate the shade of the natural teeth by the side of which the artificial teeth are to be placed." "The advantages of enamel employed for artificial teeth are not confined to the ornament which it affords, but from it there is a still greater result; the teeth or dentures made of enamel *will endure a very considerable time, since the enamel is a substance scarcely susceptible of change or alteration.*"

Did Fauchard Make Mineral Teeth?

Audibran, commenting on these statements, says that there is no doubt that Fauchard employed different coloring materials in his enamels. He argues that Fauchard must have gone on and made entire teeth of his enamels, but he advances no proof of this. He thinks that Faunay's discovery of the method of applying a red color to porcelain in 1740 might have suggested to Fauchard the supplying of his dentures with artificial gums. In a footnote Desirabode (1843) calls attention to the fact that Bourdet, who prided himself on his familiarity with Fauchard's work, tells (1756) of having used "rose enamel in order to form the gums of some pieces of artificial teeth."

A Specimen of Fauchard's Work

Desirabode says that he has a piece made by Fauchard which proves the truth of Audibran's conjecture as to his use of different coloring materials. Desirabode also strongly supports the idea that Fauchard was the first to suggest the substitution of mineral for animal substances for artificial teeth. Scouting the idea that Fauchard was inspired by Guillemeau's writings, he says, "Everyone must at once perceive, without being too much in favor of Fauchard, that there is an infinitely greater difference between his enameled teeth and the composition of Guillemeau, than between these teeth and those which are used at the present day."

None of these authors, it will be seen, offers any positive testimony that Fauchard actually went further than the enameling described; nor is there any evidence, so far as we have discovered, that any further progress was made by anyone for nearly fifty years from the time Fauchard described the process in 1728.

The First "Hard" Porcelain Teeth

In 1774 an apothecary of St. Germain, named Duchateau, was led to a study of the subject because of the unbearable condition of his own artificial teeth of bone through their absorption of the odors prevailing in his shop. There is no evidence that

he knew of Fauchard's work, although Audibran says we are not permitted to doubt that he did. Still, he offers no testimony, and, for anything to the contrary we have been able to find, Duchateau's conception of a denture of hard porcelain was an original inspiration. He reasoned that it would be impervious to odors, and would resist the action of the salivary secretions. He applied to M. Guerard of Paris, a manufacturer of porcelain, who constructed for him the first denture of this material. It appears to have been made in one piece, and it was a success, completely justifying the expectations of the inventor. Enchanted with the result, Duchateau communicated his discovery to the Academy of Surgery in 1776, but he did not receive great encouragement. He also attempted to supply the new dentures for various persons, but failed through lack of proper knowledge of the requirements. The invention seems to have been lost sight of, so far as any public advantage was concerned, for about twelve years.

Mineral Paste Teeth,—“Incorruptible”

In 1788 Dubois de Chemant, a Paris dentist, came on the scene. Through some means he obtained possession of Duchateau's processes, and at once began to exhibit the mineral paste teeth, to which he applied the name “incorruptible”; but his success in introducing them to general use was not very encouraging. He then addressed himself to the Academy of Surgery, but the committee appointed to examine into the matter, Messrs. Dubois, Foucou and Sue, required the test of time and experience before they would report favorably. The Faculty of Medicine, to which body he also addressed himself, gave a favorable report, and he then took out a patent securing to himself for fifteen years the sole right to manufacture mineral teeth. About this time Duchateau claimed priority of invention, but he lost the case, as the patent secured the title to De Chemant. Still failing to popularize the new production, De Chemant removed to London, where he again obtained the exclusive right to work the invention for twelve years.

Examples of Early Porcelain Teeth

We reproduce (pages 8 and 9) illustrations from “A Dissertation on Artificial Teeth,” by N. de Chemant, of London, with the description of the various pieces which follows, as perhaps the earliest representations of Porcelain Teeth now extant. We have at hand a copy of a German translation of Fauchard's work, published in 1733, showing somewhat similar dentures, but, as there is no certainty that Fauchard actually made teeth of mineral paste, they are not reproduced here. The first edition of De Chemant's work appears to have been published in 1788; the fifth, from which our illustration is taken, was printed in 1816. It will be noticed that the plate is credited to Dubois de Chemant, as of date October 1, 1802. The full dentures, upper and lower, shown in this plate are constructed in one piece, and held in position in the mouth by a set of curved spiral springs. The partial sets comprise from one to ten teeth, and are provided with cords or ligatures and metal wires for the purpose of tying the partial denture to the remain-

ing teeth. There are also a pivot tooth and a bridge of ten teeth provided with parts to attach the dentures to remaining roots.

Shades in Porcelain Dentures

Dubois Foucou, one of the members of the committee appointed by the Academy of Surgery to report on De Chemant's presentation, was attracted by the idea of preserving the freshness and sweetness of the breath which the method offered, and sought long and patiently to overcome imperfections which he found in the process. Finding that the hard porcelain required a degree of heat for fusing which he could not obtain in his furnace, he tried to use the softer porcelain of Sèvres, but found that it deteriorated in the mouth through the action of the secretions. In spite of many failures, he was not discouraged, but persevered, and finally was rewarded by success. He produced dentures of three principal shades, bluish white, grayish white, and yellowish white, these being of course susceptible of variations in coloring. He used kaolin for base, combined with other earths, and various coloring materials, with petuntze for enamel. Among the substances he used were umber, Belleville sand, Renard clay, manganese, and cobalt. Dubois Foucou published a description of his process in 1808.

Making Individual Teeth—Platinum Pins

Up to this time the mineral paste or porcelain dentures were made in one piece. The next step was the making of the individual teeth separately, which was first announced by Fonzi, in 1808. He also introduced the use of platinum pins, which were placed in the teeth before baking. For these improvements the Atheneum of Art granted to Fonzi a medal and crown on March 14, 1808, on the report of M. Fabre, M.D., who was not a dentist. He also received a favorable report from the Academy of Medicine. He called his teeth *Terro-metallic*, and offered to supply them to his *confrères* "at a just price."

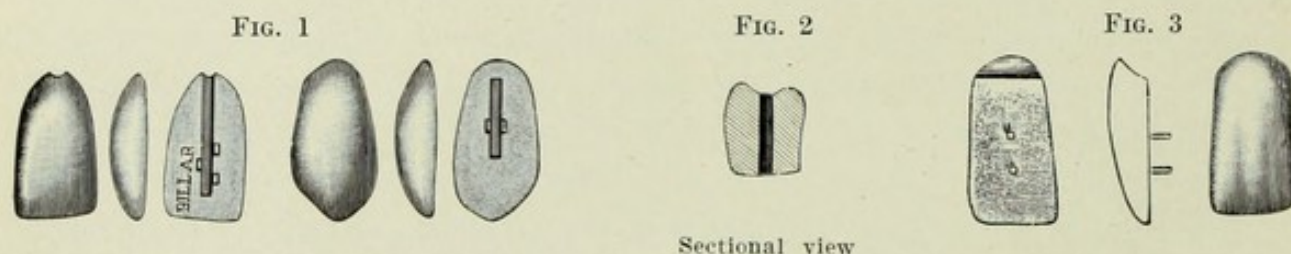
Such is the story of the origin of Porcelain Teeth, as culled from the writings of Fauchard, de Chemant, Audibrant, and Desirabode.

Porcelain Teeth in America

"A History of Dental and Oral Science in America," published in 1876, says, "Porcelain or mineral teeth, though used in France as early as 1774, were not introduced into this country until 1817, when Dr. A. A. Plantou arrived in Philadelphia from Paris and engaged in the practice of dentistry. The teeth made in France and brought here by Dr. Plantou were of such form, color, and material as would now be regarded with contempt. The front teeth were in shape almost like a split bean, the labial surface being rounded and enameled, the palatal perfectly flat. Lengthwise across this flat back was formed before baking a half-round groove, in each side of which were inserted small pieces of platinum. This groove was for the introduction of a round gold

wire against which the platinum points were hammered, and solder flowed on the metals, thus securing the wire to the tooth." (See Fig. 1.)

"It is almost exactly determined that Mr. Chas. W. Peale was the next after Plantou to manufacture mineral teeth in America. His first teeth, about 1822, were made with holes through them (Fig. 2) for riveting to the plates, as he had been



accustomed to do with teeth of animal substances, but these proving inefficient he placed platinum wire in the composition before firing it." The supposition is that the teeth were like the present metal plate teeth as shown by Fig. 3. A metal backing was attached to this tooth by the platinum pins being riveted and soldered to the backing, and then the backing was soldered to the plate.

Gold as a Base

It is supposed that Dr. James Gardette of Philadelphia, was the first who used gold plate as a base in this country. He arrived in Philadelphia from New York in 1784, and was for many years thereafter one of the most prominent dental operators in America.

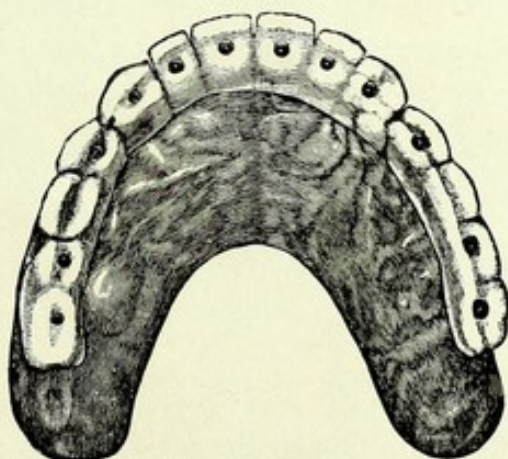
Porcelain Teeth as a Commercial Product

Samuel W. Stockton began his experiments in 1825, and was the first in this country whose manufacture of Porcelain Teeth attained to any commercial importance. Most of those who manufactured previous to him did so to supply their own needs, but Stockton endeavored to supply the profession. About 1830 his teeth became pretty well and widely known. His first tooth bodies were opaque, and the gum enamel was a smooth paint applied to the surface after the body was biscuited; then finally all fused together. The grinding-surfaces of the bicuspid and molars were formed by a three-sided file, in single or cross grooves. His stock was kept in bulk in bottles, the modern method of sorting and fixing on cards not having been then introduced. In 1844 Samuel S. White, a nephew of Stockton (with whom he had served seven years' apprenticeship "in the art and mystery of dentistry and the manufacture of incorruptible teeth"), began the production of these teeth in a small way, and his work, continued by his successors on the lines laid down by him, has developed the enormous business of the present day.

Carved Blocks

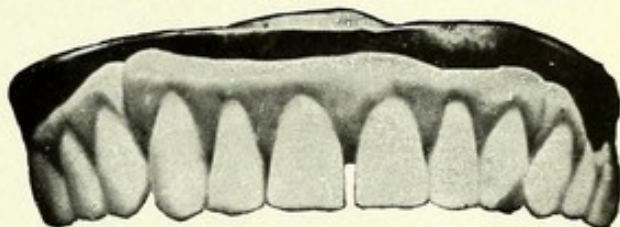
In the early history of the manufacture of the Porcelain Teeth many members of the profession made them for use in their own practice only. Among those whose results are worthy of record may be named Joseph E. McIlhenney, of Philadelphia (1826); D. C. Ambler, of New York, and J. R. Spooner, of Montreal, Canada (1828); J. F. Flagg, of Boston (1830); Shearjashub Spooner, of New York (1831); Daniel Harwood and Joshua Tucker, of Boston (1833-34); James Alcock, of New York, and John Allen, of Cincinnati (1835); and last, though not least, Elias Wildman, of Philadelphia, who began his experiments in 1837. The teeth made by them were usually carved blocks, made in sections of two or more, as shown in the illustrations (Figs. 4 and 5, a set of teeth made by Dr. McIlhenney), and were attached to a metal plate by rivets similar in form to the English tube teeth, as illustrated in Fig. 6.

FIG. 4



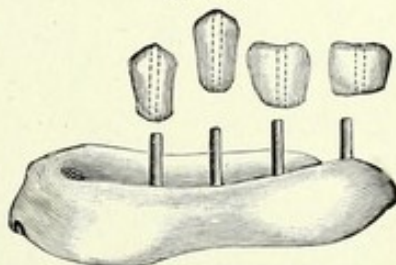
Showing the Mounting of Teeth on Plate.
Teeth made by J. E. McIlhenney

FIG. 5



Showing face of Front Teeth carved by J. E. McIlhenney

FIG. 6



Mounting English Tube Teeth

On a Scientific Basis

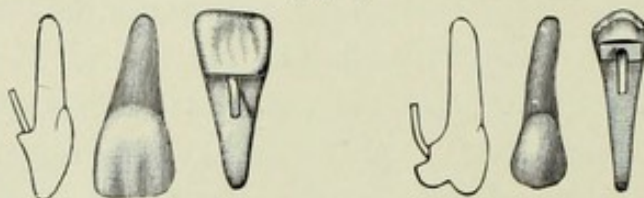
Dr. Wildman's work was of an enduring character. He made exhaustive, painstaking investigations along the lines of the composition of bodies and enamels, in which he demonstrated considerable improvements. He achieved notable results in the translucency and lifelike appearance of his products, but his most notable success was in devising the methods by which it became possible to secure uniformity of result in the gum enamel. His work was so important and far-reaching that he has been accorded the honor of having been the first to place the manufacture of Porcelain Teeth upon a scientific basis.

Continuous Gum

Continuous-gum dentures, as understood at the present day, consist of a platinum plate to fit and cover the human jaw, having Porcelain Teeth mounted thereon with

porcelain compound covering the plate and surrounding the teeth, covered with gum enamel and fused in one piece. The teeth used are like the illustrations (Fig. 7). Probably the first actual Continuous-Gum Sets were made by Delabarre, 1819-1820.

FIG. 7



About the years 1846-47 Dr. John Allen, then of Cincinnati, Ohio, afterward of New York, began investigating this subject, and Dr. Wm. A. Hunter, of Cincinnati, also experimented at this time. There were many difficulties to overcome, and a report to the associated alumni of American Dental Colleges, March 1854, by M. D. French, states that "the plate is liable to spring and the gum to crack off, and many dentists who adopted it practiced it only to find their high hopes of its ultimate success disappointed, and have abandoned it. The invention is still in use to a considerable extent, and takes rank as nearly the most perfect of artificial dentures. The difficulties experienced in its preparation and manipulation still exist and form a barrier to its general employment, as only great skill and experience may make it a success. Therefore it is confined to specialists, but the process produces very elegant dentures."

Porcelain Base

Porcelain as a base for a denture was introduced to the profession in this country by Mahlon Loomis, of Cambridgeport, Mass., in 1854, although the making of a plate and teeth of porcelain in one piece was practiced in France in 1774. The great objection to the use of porcelain as a base was the difficulty of properly governing the shrinkage of the material in firing. Dr. Dunn, of Delaware, Ohio, made improvements in this form of base. The same class of teeth was used as in the continuous gum, except that they were only biscuited, until they were assembled in the denture, and were then fused.

Molding Teeth

To show the then state of the art, it may be well to state here that on March 25, 1852, W. S. McIlhenney, M.D., of Philadelphia, Pa., secured a patent for shaping teeth by molding them, and his claim reads:

"What I claim as my invention, and desire to secure by letters patent, is the formation of an artificial tooth or teeth from spar, silex, clay, sand, glass, or any materials used for the above purpose, into a suitable condition for the finishing furnace, by the simple operation of molding, thereby avoiding the tedious and uncertain process of enameling."

Tin Base

Molded or poured tin bases were experimented with and improved upon, and finally presented to the profession by Dr. Alfred A. Blandy, of Baltimore, in 1856. They had previously been experimented with by Dr. Edward Hudson, of Philadelphia, in 1820; Dr. Wm. A. Royce, of Newburgh, N. Y., in 1836; also Dr. Geo. E. Hawes, of New York, in 1850. Dr. Blandy devised an alloy of tin which proved superior to the pure metal in ease of manipulation and in durability, and, having patented his alloy and process, introduced them under the title of Cheoplasty. This process received from time to time very flattering notices from men eminent in the profession. The teeth used were like those shown in Fig. 8.

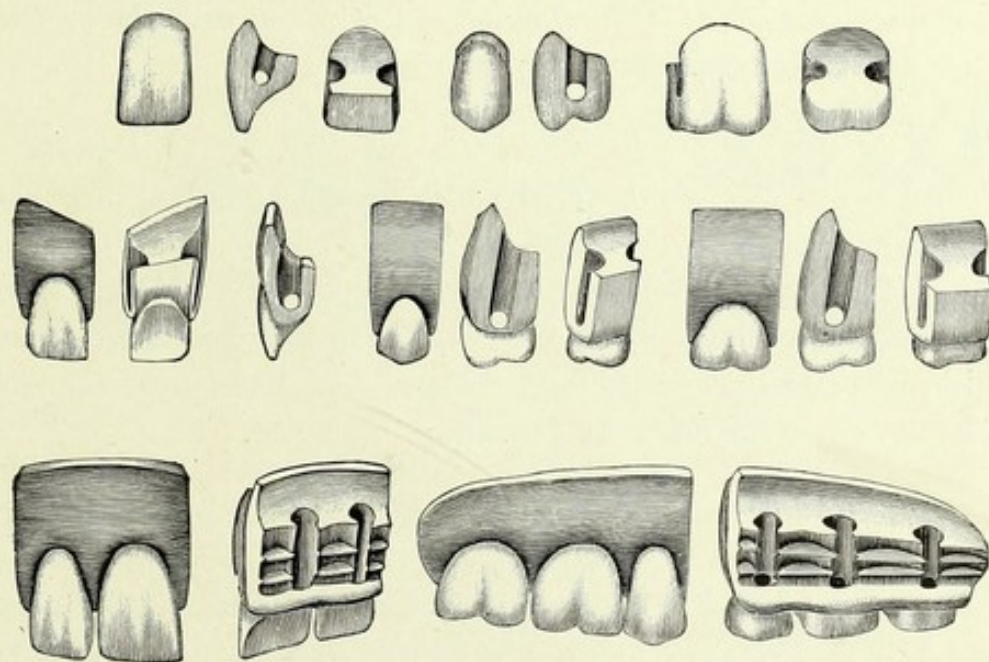
FIG. 8



The teeth were assembled upon a wax denture and flaked the same as the vulcanite teeth of the present time, and the metal poured into the investment completed the denture.

W. G. Oliver and Thos. Harrison patented May 20, 1856, a tooth to be used in the Blandy process. The illustrations show the forms (see Fig. 9).

FIG. 9



They were made as plain teeth, single gum, and in sections. Like the Blandy teeth they depended entirely upon an attachment other than metal pins to the base.

Vulcanite (Rubber) Base

In 1851 the publication of Nelson Goodyear's process of making the hard rubber compound, afterward called "Vulcanite," turned the attention of those interested in many manufactures to the adaptation of this material, which was announced to be a substitute for horn, bone, and ivory, as susceptible of being colored, and as having all the plasticity of gutta-percha or caoutchouc, while exempt from the action of heat, cold, and acids. With such a combination of properties in one material it seems unaccountable that the dental world did not at once adopt the new discovery. It was not until 1855 that Chas. Goodyear, Jr., obtained in England a patent for making a dental plate of hard rubber in which the teeth were secured before the compound was vulcanized. Subsequent to the patent of Goodyear, John A. Cummings, of Boston, Mass., obtained, June 7, 1864, a patent in this country for a similar purpose. Cummings had filed a caveat in the matter as far back as 1852, and had applied for a patent in April 1855.

FIG. 10



The teeth employed for vulcanite dentures were like the illustrations annexed (Fig. 10), except that they had at that time a straight pin not headed, which was bent into a loop to form an attachment to the rubber, until 1862, when Dr. Samuel S. White invented and adopted in his manufacture a double-headed pin.

Cummings's patent covered the method and process of the manufacture of vulcanite dentures of the present day. The enforcing of this patent upon the profession created a desire for a substitute for the rubber.

Collodion Base

Collodion as a dental base material was devised and patented in England in 1859 by John Mackintosh. An improvement was made by Dr. J. A. McClelland, of Louisville, Ky., in 1860, who introduced his material under the somewhat flowery title of "Rose Pearl." At the first appearance of this compound there were found many defects, which were largely corrected, and the process assumed some importance in the West. The teeth used for this work are shown in Fig. 11.

FIG. 11



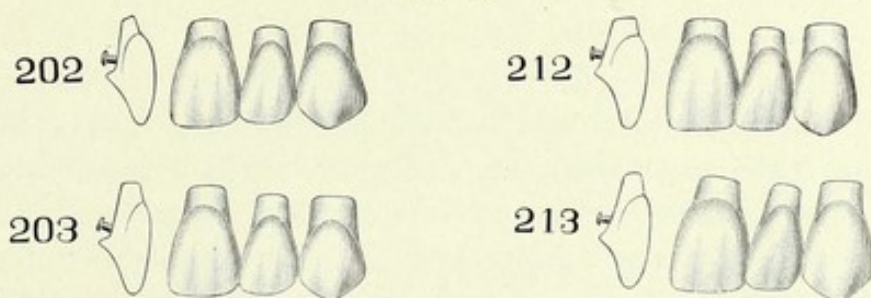
The plate was made from the sheet material, and the teeth attached to it by the same material made plastic, which had a tendency to shrink, from the solvent drying out, and so warping the denture.

Celluloid Base

Celluloid was invented and patented in 1870 by Isaiah Smith Hyatt and John W. Hyatt, Jr., of Albany, N. Y., who solved the problem of converting collodion into a homogeneous and durable solid mass, which when heated was capable of being molded into the desired shape or form for a denture. The color of the material was so much of an improvement over the rubber that a desire was created for teeth of a higher standard in shape and form than the former conventional kinds, and a line of teeth was made taking natural teeth as the type.

Fig. 12 shows samples of the line made:

FIG. 12

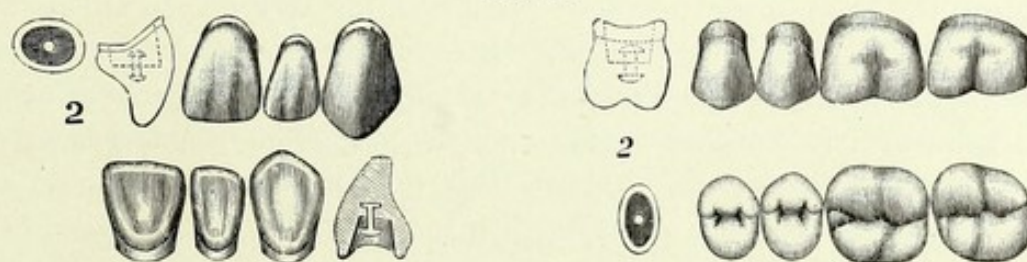


Countersunk-Pin Teeth

A further attempt was made to copy nature in the line of teeth known as countersunk-pin teeth (see Fig. 13).

The forms of the lingual and palatal surfaces are more thoroughly preserved in these teeth, which makes them more acceptable to the tongue than teeth backed in the ordinary way, renders articulation easier and more distinct, and prevents disclosure of artificiality when the mouth is opened.

FIG. 13



Other Methods

Several other bases, in addition to those named, have been from time to time brought to public notice, in almost every case accompanied by the assurance that the long-desired perfection in bases had at length been reached. We may mention, for instance, the electrotpe process, in which properly prepared casts received a galvanic deposit of the metal desired, thus producing a perfect facsimile of the parts at the minimum of expense and trouble, the durability and freedom from hurtful extraneous influences being limited only by the extent of those qualities in the metal employed. These attempts, however, have generally been unattended by the success and benefits

hoped for from them. Gold and platinum, vulcanite and celluloid, are today, as they have been for many years, the principal materials on which prosthetic dentistry relies.

Pivot Teeth and Crowns

Since the beginning of the manufacture of Porcelain Teeth, many forms of pivot teeth have been made and supplied to the profession. Several of the more important of these are described at page 31 *et seq.*

Bridge-Work

For some years past and at present dentures mounted upon metal, generally gold, and fixed to some remaining teeth in the jaw, either permanently or removably, have been considered the *ne plus ultra* of dental substitution. This is known as bridge-work, as the denture depends entirely upon teeth used as piers and abutments for its support. The teeth generally used are the same in shape as the earliest Porcelain Teeth made in America (Fig. 3), and it would seem that it is returning to the earliest period of dentistry where the dentures were attached by ligatures to adjoining teeth, the exception or improvement being the permanence or fixedness of the attachments. In the bridge denture the teeth are connected to one another at their approximal sides, and not at their neck ends, as in plate-work. Other special forms of teeth for this work have been devised.

Periods of Development

In all of this showing there would seem to be four or five periods of development, times when a great stride was made in advancement. The first was when it was discovered that artificial teeth could be made from porcelain. They were called incorruptible to distinguish them from the teeth made from animal matter, such as ivory, bone, etc. Second, the time when the continuous-gum denture had reached its zenith, when specialists had brought it near to perfection, not only for cleanliness, but for the restoration of lost features, and the copying of nature in the assembling of the teeth. Third, the introduction of the cast metal base, quickly followed by the advent of the molded vulcanized rubber base, simplifying the process of mounting, and (the latter especially) reducing the cost of artificial dentures to an extent that placed their benefits within the reach of everyone. Fourth, when the profession was compelled to use celluloid as a substitute for rubber, it being the occasion for the first introduction of really close imitation of natural forms of teeth into artificial dentures. Then came bridge-work, the greatest recommendation of which is the fixedness in which it is held in place.

It would seem from this record that there are fashions even in dentistry, or, more properly speaking, times of activity and rest. Many times new and apparently good things have sprung up and flourished, as it were, for a day, and then died away, leaving the manufacturer who had stood ready to supply them stranded with a stock of *not wanted* on his hands. On the other hand, those which had real elements of enduring usefulness have stood the test of time, and after long years still remain as necessities to the practice of prosthetic dentistry.



TEMPERAMENT IN RELATION TO THE TEETH

THE animal kingdom, for the purpose of facilitating its study, is divided into subkingdoms, classes, orders, families, genera, species, and varieties. The last include in minor groups individuals whose salient characteristics are correspondent or similar. Thus every living creature has certain physical peculiarities by which its position in this classification is determined. Man, as the head of the animal kingdom, besides having his place in this general scale, is distinguished by a still finer classification under the denomination of temperament,—an association of several distinguishing characteristics, such as size and form of body, complexion, color of the eyes and hair, and to a certain extent the disposition and character of the individual.

Temperament may be defined as a constitutional organization, depending primarily upon heredity,—national or ancestral,—and consisting chiefly in a certain relative proportion of the mechanical, nutritive, and nervous systems, and the relative energy of the various functions of the body,—the reciprocal action of the digestive, respiratory, circulatory, and nervous systems. The stomach, liver, lungs, heart, and brain,—digestion, assimilation, respiration, circulation, and innervation,—are all factors in the differentiation of temperament; and according to the congenital predominance of one or the other, and the relative activity of these functions, is the modification of the characteristics of the individual which assigns him to one or other of the basal or mixed temperaments. Each temperament is the result as well as the indication of the preponderance of one or another of these systems, and of relative functional activity.

A perfect equilibrium of the different systems is rarely if ever presented in any individual. One having a balance of all the temperaments would be temperamentless, or of no special temperament. It is difficult, in some cases, to decide positively to which variety a special case belongs, the several temperaments being combined and blended in such ever-varying proportions. Not infrequently the indications are even contradictory, and the blending of several temperaments requires a nice discrimination to define the admixture. The primary elements of temperament are susceptible of such manifold combinations, the determining forces are so complex, and our knowledge of their comparative values is so limited that no rule can be given which will not fail in numerous instances to apply in all respects to individual cases; but that there is a general relation between constitutional qualities and external signs does not admit of question.

Temperaments are readily divisible into four basal classes—bilious, sanguineous, nervous, and lymphatic; then again into sub-classes of mixed temperaments—a combination of two or more of the primary divisions. In these combinations one or other of the so-called basal temperaments predominates, and a compound term is used to express the complexity,

as, for instance, the nervo-bilious, signifying that the bilious base—the foundation temperament—is qualified by an admixture of the nervous element, and so throughout the series. Twelve varieties of temperament, in addition to the four basal, may thus be designated by the combination in pairs of the original four. The admixture of the peculiarities of three or of all four of the basal temperaments results in what are denominated respectively ternary and quaternary combinations. In these temperamental differences, no single sign is more significant than is to be found in the physical characteristics of the teeth,—their size, shape, color, density, and alignment being as much an index as is the distinctive complexion, the color of the hair, eyes, etc. In other words, there is a constituent difference, in harmony with the constitutional organization.

The value of a practical application of the study of temperament in the practice of dentistry is apparent. That the relation of the teeth to temperament—to facial requirements—is as a rule ignored in prosthetic dentistry is evident in the mouths of a majority of those who are so unfortunate as to be under the necessity of wearing substitutes for lost natural dentures. In no department of dental practice does the want of that taste which indicates artistic culture become so manifest as in the failure to restore the natural expression by the replacement of lost dental organs. To this account are to be charged the unseemly incongruities constantly staring the observer in the face from mouths whose lost organs have been replaced in disregard of a universal law.

No matter how anatomically correct, or how skilfully adapted for speech and mastication an artificial denture may be, yet, if it bear not the relation demanded by age, facial contour, etc., it cannot be otherwise than that its artificiality will be apparent to every beholder.

The law of harmony thus found in nature between the teeth and other physical characteristics requires due respect to size, shape, color, and other qualities in an artificial denture, in order that it shall correspond with other indications of temperament. The artificiality of artificial teeth is the subject of remark by those who have little or no conception of the reason therefor,—simply an instinctive appreciation of their incongruity and unreality. It is indeed rare to see a case in which there is occasion for a moment's hesitation as to the fact of replacement. There is no dental service that from the esthetic standpoint is as a rule so ill performed as the prosthetic. Thousands of dentures are constructed which serve the needs of the wearer for speech and mastication, but which are nevertheless deserving of utter condemnation as art-productions. Correct articulation is generally secured, correct adaptation is usually obtained, so that the denture is made to serve with comfort its mechanical offices, but too frequently the esthetic demand is absolutely ignored.

What is needed is such an appreciation of the law of correspondence that the dentist can cipher out, as by the rule of three, the character of teeth required in any case, with the same precision as the comparative anatomist or paleontologist can from a single bone indicate the anatomical structure of the animal to which it belonged. The probability is that in many, perhaps in most, of the cases of incongruous artificial dentures the fault

is not in carelessness or indifference of the dentist, but in a failure to recognize the requirements of temperament. A certain family resemblance to each other in a set of teeth is considered essential, but the adaptability of the set as a whole to a given case should be esteemed of even greater importance. Especially is there a notable failure to recognize the color demanded by form. A set of teeth in which not only the relative length and breadth but every line and curve characterize it as belonging to a certain temperament, is in contravention of every law of correspondence, made of a color which was never found in nature associated with such forms. Thus we see constantly such incongruities as the association of the massive tooth of the bilious temperament with the pearl-blue color belonging to the nervous temperament, and the long, narrow teeth of the nervous temperament of a bronze-yellow color never seen in the mouths of any but those of a bilious temperament.

A broad, square face, or an oval; a large, coarse-featured man, or a delicately organized woman; a miss of eighteen, or a matron of fifty; a brunette or a blonde,—these and other varieties present as many different types, with teeth, in size, shape, color, density, etc., corresponding. If, then, teeth correlated in their characteristics to those which nature assigns to one class be inserted in the mouth of one whose physical organization demands a different order, the effect cannot be otherwise than displeasing to the eye, whether the observer be skilled in perception, or intuitively recognizes inharmony without understanding the cause. A careful observation and record of these distinguishing characteristics—correlations—would go far toward establishing prosthetic and esthetic dentistry as “exact” sciences.

The requirements of the law of correspondence must be observed, and the first study of the dental artist, when proposing to replace a lost denture, should be how to restore the natural appearance of his patient. This can only be effected through an appreciation and observance of the temperamental characteristics and the law of correspondence or harmony. Age and sex will doubtless modify the requirements in a given case, but the basal fact on which he should proceed is temperament. A failure to recognize its demands will result in failure,—from an esthetic standpoint. A knowledge of the distinguishing characteristics of the various temperaments and of the style of teeth which conforms to nature's type in the physical organization marks the difference between the dental mechanic and the dental artist.

“In the loss of the teeth, the absorption of the processes, and the wasting away of the muscles and tissues, as we have seen, the greatest possible detriment is caused to the expression of the human countenance. The complete restoration of these features, with all their power of expression, by art—art so consummate in the selection, arrangement, and adaptation of its means as to defy detection—is one of the crowning glories of dentistry as an art.”

By permission of the publishers, Messrs. Lea Brothers & Co., we present tables of the basal temperaments and the indications thereof in the teeth, prepared by Dr. E. M. Flagg for “The American System of Dentistry.”

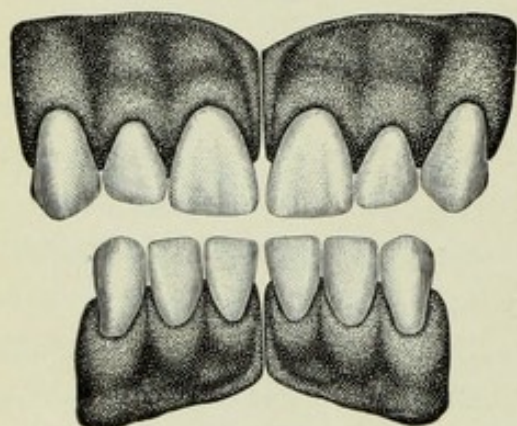
BILIOUS



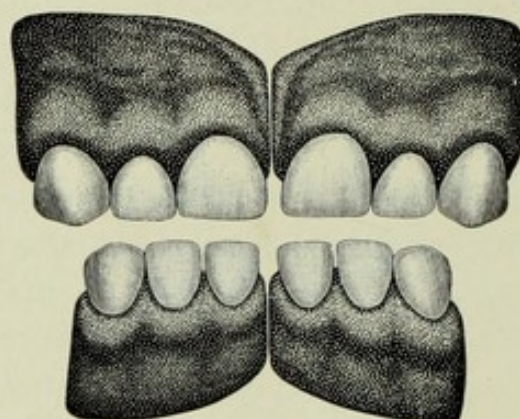
SANGUINEOUS



NERVOUS



LYMPHATIC



These illustrations are typical, not practical. We do not carry in stock Porcelain Teeth made after these patterns, but can supply them on special order.

THE TEETH AS INDICATED BY TEMPERAMENT

GENERAL DIVISIONS	BILIOUS	SANGUINEOUS	NERVOUS	LYMPHATIC
General Color and Quality of Color . .	Bronze-yellow, with strength or power of coloring.	Cream-yellow, and inclined to translucency.	Pearl-blue or gray; inclined to transparency.	Pallid and opaque, or muddy in coloring.
General Form	Large and inclined to angular; rather long in proportion to breadth.	Well proportioned; abounding in curved or rounded outlines; cusps rounding.	Length predominating over breadth; fine, long cutting-edges and cusps.	Large, but not shapely; breadth predominating over length; cusps poorly defined.
Surfaces of the Teeth	Inclined to transverse ridges and abounding in strong lines; neither brilliancy nor transparency of surface, but slight translucency.	Smooth, or nearly so; elevations and depressions rounded; cutting-edges and cusps translucent. Fair degree of brilliancy.	Brilliant and transparent depressions and elevations, abounding in long curves.	Surfaces of incisors devoid of depressions or elevations; opaque and dead in finish, even to cutting-edges.
Articulation	Firm and close; well locked.	Moderately firm; jaw inclined to rotate in mastication.	Very long and penetrating.	Loose and flat.
Gum Margin or Festoon	Heavy and firm, but inclined to angularity.	Round and full, as regards both breadth and depth.	Delicate, shapely, and fine; oval in curve.	Thick and undefined in shape.
Rugæ	Heavy and rugged in shape; squarely set.	Numerous and graceful in outline; not heavy, but well-rounded.	Close, not numerous; small and long.	Sparse and flat.

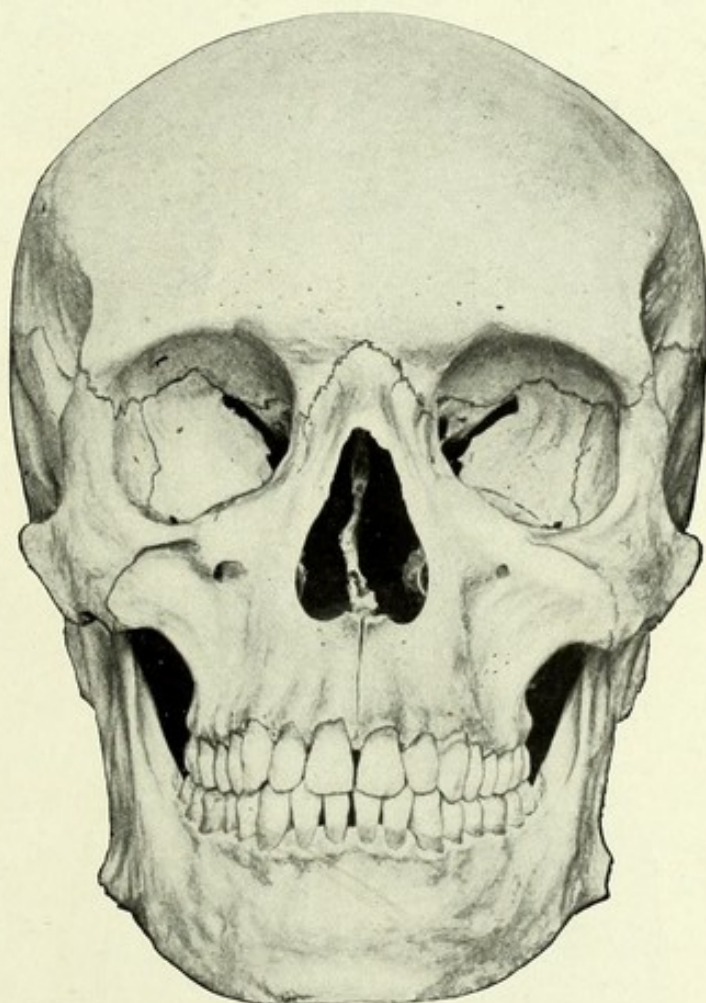
THE OCCLUSAL RELATIONS OF THE TEETH

The Natural Teeth

It is not our purpose to enter into an exhaustive scientific discussion of occlusion, but merely to refer to such facts as bear upon the assembling of Porcelain Teeth,—fronts (incisors and cuspids) with backs (bicuspid and molars) to make full sets of either uppers or lowers, and the proper mating of these full uppers and lowers.

To afford a visible and sound starting point we present several views of an exceptionally fine natural denture,—front and side views in occlusion, and the occlusal sur-

FIG. 1



faces of the teeth of the upper jaw. The teeth of both arches are well formed, and they articulate in what may almost be called an ideal normal manner. The subject was probably from twenty-five to thirty years of age.

The principal points of value in this discussion to which Figs. 1 and 2 testify

FIG. 2

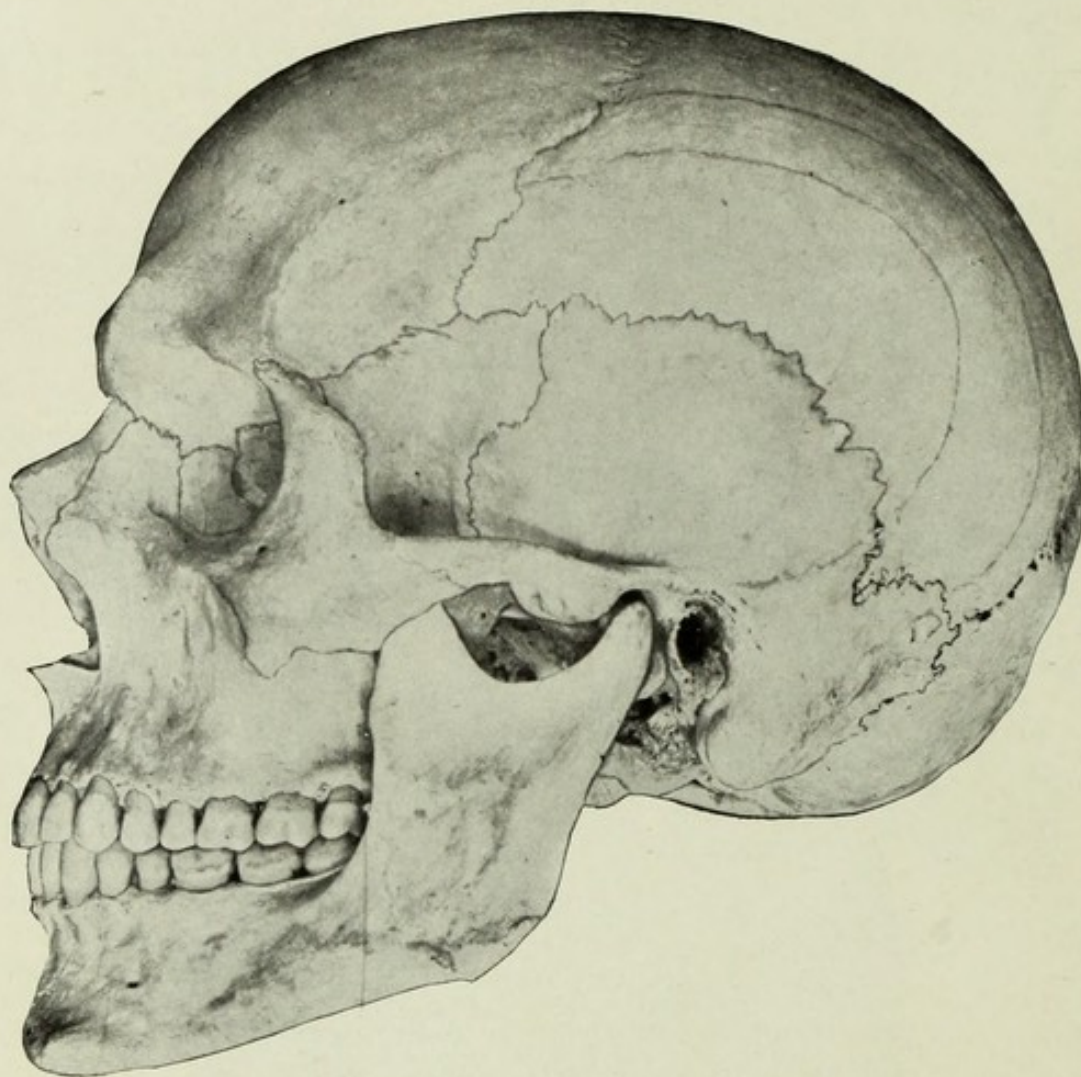
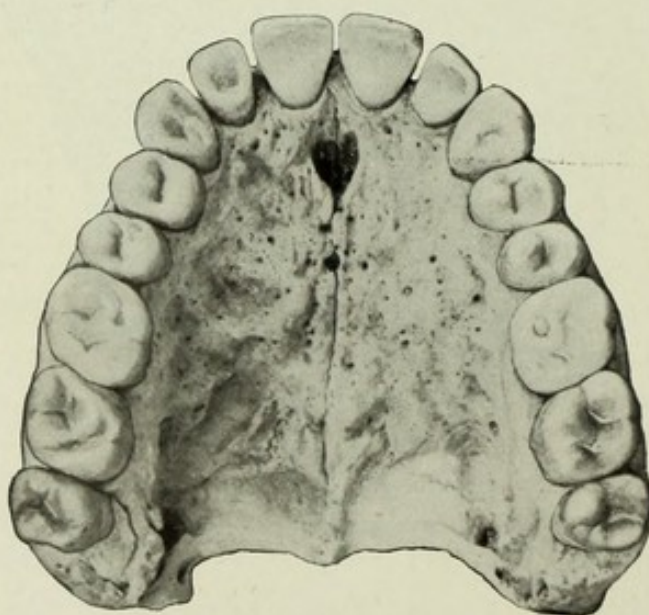


FIG. 3



are the curve of the line of occlusion, which dips downward from the centrals to the second bicuspid, from which it rises again to the third molars; to the line of the alveolar border in the upper jaw, which is nearly level from central incisors to cuspid, whence it curves downward slightly to the second bicuspid, thence again upward to the prominence at the third molar; and to the nearly equal length of the three molars.

Fig. 3 shows the occlusal surfaces of the upper jaw of the same denture, illustrating, among other things, the progressive effects of the wear of mastication. Observe in the first molars—the oldest teeth in the set, which have been in use the longest time that the cusps are flattened until they are nearly level with the fissures, which have almost disappeared. The second molars, the next oldest of the larger masticating teeth, show a less advanced state of the same condition, while the third molars exhibit still less traces of wear. This wear progresses as the years go by, until all the grinding-surfaces of the teeth are worn perfectly smooth. That is nature's way of producing the perfect occlusion; not by growth, but by wear, which involves time. In the incisors the wear is shown first in the disappearance of the delicate cusps which grace the cutting-edges when the teeth are first erupted, then by the gradual chamfering of the edges into a chisel shape. In the upper incisors the edge of the chisel is at the labial surface, in the lower at the lingual.

Changes Following Extraction

So much for the natural conformation and occlusion. At first glance, it would seem that the dentist need only conform to these natural lines to make an artificial denture which would perfectly replace the lost natural teeth.

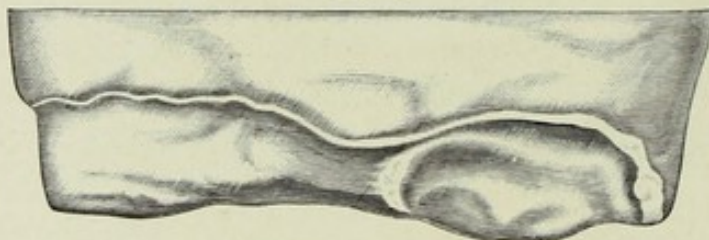
The difficulty with carrying out this program is that after extraction and the ensuing resorption of the alveolar process, a very different set of conditions prevails. The moment a tooth is extracted, nature is interfered with, and divergence from the normal and natural course is inaugurated.

First, the arches of the jaws change in shape. That of the upper jaw becomes notably smaller, through the unequal absorption of the external and internal plates, the former of which disappears much more rapidly than the latter. The shrinkage is nearly or quite twice as great in the breadth as in the height. It follows that the teeth for an artificial denture should be smaller than their natural predecessors were. It is especially impossible in most instances to use as broad or as thick masticating teeth as were the originals; first, on account of the greater shrinkage across the jaws opposite the masticating teeth, causing too great encroachment upon the space required by the tongue. Then, again, after the loss of the natural teeth, the muscles of the cheeks become contracted, thus lessening the space on the buccal side of the jaw. If too broad teeth are used in an effort to preserve the fullness of the cheeks, they may overhang the maxillary ridge, which is the support of the plate upon which the teeth are mounted, and the leverage thus given may be sufficient in the upper jaw to split the plate. This lessening of the space also is the reason why, although there are sixteen teeth in the full

natural denture, only fourteen can be supplied in the artificial set. The tooth that is dropped is the third molar on each side.

Another important change which follows extraction is seen in the curve of the gum line, which must be taken into account in making an artificial denture. It will be remembered that in the jaw with a full complement of natural teeth the gum line was described as curving downward from the cuspid to the second bicuspid, thence again upward to the third molar. After the natural teeth are extracted, however, this curve of the gum is almost reversed, taking an upward direction from the position of the cuspid to that of the second molar, as shown in Fig. 4. This change necessitates the employment of longer bicuspid and molars in the artificial than were found in the natural denture. The altered configuration of the gum also requires that the second molar shall be shorter than the first. These facts have an important bearing on the selection of Porcelain Teeth.

FIG. 4



The Assembling of Single Porcelain Teeth, Fronts (incisors and cuspids) with Backs (bicuspid and molars)

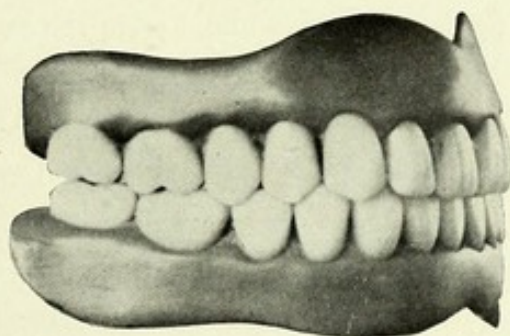
To explain clearly the meaning of "assembling" as applied to Porcelain Teeth, it will be necessary to enter a little into the detail of their manufacture, which differs according to whether single or sectional teeth are being made.

In single teeth, whether plain or gum, the fronts (incisors and cuspids) are made in a separate mold from that in which the backs (bicuspid and molars) are formed. Many sets of fronts are sold without the backs, as also are many backs without the fronts especially in plain teeth. But when a full set of fourteen, either upper or lower, is wanted, backs and fronts which harmonize perfectly throughout must be put together. This is called "assembling" fronts and backs. Formerly the dentist selected both the fronts and backs, and this custom is still largely observed in Europe, though it is practically unknown in America, where the assembled sets are almost universally called for.

This assembling, it will be seen, is an important matter to the manufacturer, whose reputation is as much at stake on its proper accomplishment as on the forms and strength of the teeth themselves. Recognizing this fact, assembling in our factory is carefully and methodically conducted. It is done not haphazard, by unskilled employes, but by people specially trained to do the work and under carefully formulated rules, laid down after a painstaking study of the factors involved. In fixing these rules the altered requirements of the arch, as described under the heading, "Changes Following Extraction," form the starting point. How best to fulfill these require-

ments is the problem which the rules set out to solve. That no proper effort to give the best results is omitted it is scarcely necessary to state. The ripened judgment of expert prosthetic dentists of high abilities guides and dominates the laying out of the scheme.

There are many more forms of incisors and cuspids than there are of bicuspid and molars. In many cases a mold of fronts will assemble excellently well with several backs, and, on the other hand, the backs of many molds go well with several fronts. So that there is frequently the opportunity for a choice which well may hesitate over the final decision. Formerly we varied the assembling; sometimes one back with a certain front, sometimes another which seemed to suit it equally well. Of late years, however, we have had a fixed assembling, one particular set of backs for each front. In other words, given the mold number of the incisors and cuspids wanted, the bicuspid and molars to accompany them are always the same.



In view of the fact that there are so many more molds of fronts than of backs in Plain Teeth, it may seem a little singular that while every front mold is provided with a back, some of the latter have no corresponding front. It is true, however. The reason is that certain of the back molds are made for special cases where only the molars and bicuspid require substitution. The forms of these molds are such as to unfit them for service in full dentures, although they are exactly what is wanted for the purpose they were designed to serve. Examples of these are Nos. 36 and 37, upper bicuspid and molars (page 112). The illustrations show all the molds of backs and fronts separately, for convenience in ordering partial as well as full sets.

Assembling Single Porcelain Teeth, Full Upper and Lower

The assembling of Porcelain Teeth in sets of twenty-eight—full upper and lower—must also necessarily be done by the manufacturer in the great majority of cases. Only where the dentist who is to make the denture has personal access to a large stock of Porcelain Teeth and has the inclination, is it possible for him to make personal selection of the lowers to occlude with the uppers. As a rule he prefers not to do it, even when he has the opportunity, so that the responsibility for the wise or unwise mating of uppers and lowers rests upon the manufacturer.

This responsibility is accepted, in our factory, in the same spirit as is the duty of assembling fronts and backs, and with the same painstaking effort to achieve a result which shall be satisfactory to our patrons. We assemble these teeth the same as we do everything else, the best we know how, and with the best expert assistance that can be obtained. The changes in the mouth following the extraction of the teeth are important factors in determining the rules for the guidance of the skilled employes whose actual duty it is to do the assembling. The proportionate length of upper to lower teeth, as also their relative width, the character of the occlusion, the effect of the movements of the lower jaw in occlusion, the influence of temperament in determining size and shape, are also factors which are considered in formulating a plan of combining uppers and lowers to provide a sufficient variety of harmonious matings to meet the wide range of conditions which confront the prosthetic dentist.

It is generally recognized that in the evolution of the natural teeth those of the lower jaw, being first to erupt, act as a form over which those of the upper arch are molded. In combining porcelain uppers and lowers the reverse is the procedure. The lower teeth are selected to conform to those of the upper jaw.

It is quite possible that a combination here and there may appear incongruous to some practitioners, who may be inclined to doubt the judgment of the man who directed it; but it must be borne in mind that there are a good many conditions to be met, and a good many tastes to be suited in these combinations, every one of which has an excellent reason for its being. As we have elsewhere remarked we make teeth for the world of dentistry. In event of stock combinations proving unsuitable, the large variety of partial sets at command renders every facility for proper assembling to meet the requirements of the case in hand.

The Assembling of Gum Sections

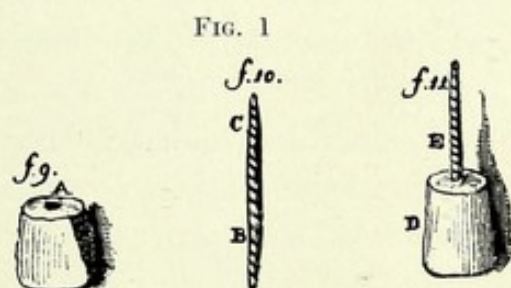
The assembling of Gum Sections is a much simpler matter than that of single teeth, because the entire set, whether upper or lower, is made in one mold. That is, incisors, cuspids, bicuspid, and molars for both sides, fourteen teeth in all, are engraved in a single mold. This is the reason why no separate illustrations of bicuspid and molars are shown in this class of Porcelain Teeth. The front section is the key to the entire set, which is necessarily properly combined so far as backs and fronts are concerned. The only problem is the proper mating of the upper and lowers. Here, again, there are many more uppers than lowers, and the same principles govern the selections as in the case of the single teeth.

THE LOGAN CROWN— THE DETACHED-POST CROWN

SOME INTERESTING STEPS IN THEIR DEVELOPMENT

Fauchard's Pivot Tooth

The earliest record of the pivot tooth accessible to the writer is in Fauchard's work, "Le Chirurgien Dentiste, ou Traité des Dents," published in 1728. Fig. 1 is a photographic reproduction of his illustration.



The root was cut down to the level of the gum or beyond it, the canal cleared of caries and filled with lead. Into the lead a hole was drilled, care being taken not to go beyond the foramen, and into this hole the pivot, previously cemented into the tooth, or crown as we should call it nowadays, was forced. The tooth was of course fitted to the root as prepared. The pivot was of gold

or silver wire, and was ground or roughened to give it a stronger hold in tooth and root. The crown used was presumably a natural crown obtained from some other mouth or one carved from bone or ivory; although, as Fauchard is known to have enameled his artificial dentures, it is not certain that he may not have used crowns of some form of "mineral paste" or enamel.

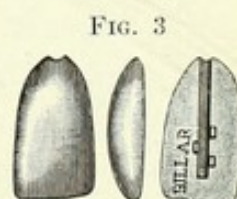
Early Porcelain Pivot Tooth

The first public description of a pivot tooth certainly made of porcelain was given, we believe, by de Chemant. The edition of his book in our possession (the fifth) bears date 1816, but the illustration of the pivot tooth which it carries is dated 1802.



As he began to write of mineral paste teeth in 1788, it is quite certain that the pivot tooth was made of this substance at least as early as the date of the illustration. The only description he gives of it is "a single tooth with a pivot." (Fig. 2.)

Some time later a form like Fig. 3 was used in France. In this the pivot was a wire, secured to the tooth by bending over the pivot little pieces of platinum which were baked in the porcelain on either side of the groove. We have no explanation as to how the tooth was mounted, or how the lingual face was built up, but as to the latter, it is a fair conjecture that it was with some plastic substance.



A Well-Known Form

Pivot teeth entirely of porcelain were made subsequently. The form most commonly used was substantially like that shown in Fig. 4. The pivot-hole extended only half way through the crown. The free end of the natural root was shaped to conform to the gum-margin by the use of a flat-

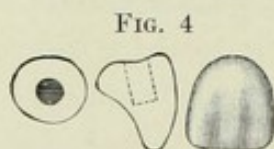


FIG. 4

tened round or shad-belly file made for the purpose. This formed a sort of socket into which the neck end of the crown was fitted (Fig. 5), thus preventing to a de-

gree rotation of the crown after it had been fixed in place. The attachment to the root was made, as a rule, with a round wooden pin or dowel, of fine hickory wood, made to fit as closely as possible to the holes in the porcelain and the root. The absorption by the wood of moisture and its consequent swelling was depended on to make the attachment tight. Occasionally the wood swelled so much as to split the root, and there was danger also of the moisture inducing decay of the root. In spite of its drawbacks, although many attempts were made, with more or less success, to supply improved ways of mounting pivot teeth, this method continued to be largely used until within a quarter of a century.

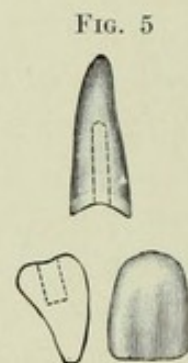


FIG. 5

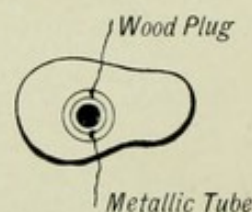
Attempts at Improvement

An early modification of this plan was the use of a wooden plug in the root, the plug being perforated from end to end for the reception of a metal pivot fastened in or to the crown.

Dr. J. Smith Dodge, of New York city, patented a pivot crown March 13, 1844 (No. 3485). We have not at hand any data as to what the pivot was made of or how it was attached to the crown, which was intended to be removable. The patent specifications state that the invention consists in "providing a metallic cylinder or tube to be placed within the cylinder of wood now commonly made use of in cases where a metallic pivot is necessary or desirable in securing artificial teeth to roots or stumps of natural teeth, thereby providing for the removal and replacement of the artificial tooth without the disadvantage of the tooth becoming loose by friction as is the case in the common mode of insertion. I construct my cylinder of gold, silver, platina; any other metal or composition of metals that may or can be used for such purpose."

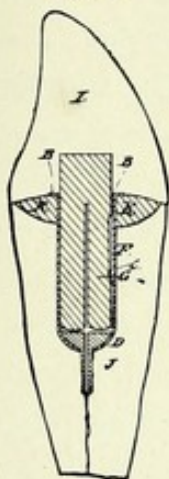


FIG. 6



The next improvement on record was made by Dr. F. H. Clark, who patented, February 13, 1849, a detachable crown, with provision for the escape of the gases gener-

FIG. 7



ated in the root (Fig. 7). A metal tube was inserted in the root and secured to it by a headed screw. The screw was perforated from one end to the other, so that gases which might accumulate near the apex of the root could escape. The free end of the metal pivot, which was attached in the crown, was split to form springs. A recess at the point G engaged with a lug on the inside of the tube. It will be observed that this method made provision for the escape of pus, gas, etc. This was quite a common feature of many methods, as it was not considered proper to tightly close the joint between the root and crown. More correct practice has since decided that disease should be cured or removed before the insertion of pivot teeth.

In May 1849, Henry Lawrence, of Philadelphia, patented a tooth (Fig. 8) which under another name had quite a demand in later years, although it never became known to any extent under the name of Dr. Lawrence. It was known in trade, or commerce, as the Foster Crown, having been practically a reinvention by Dr. Foster. The Lawrence Crown was held in place on the root by a screw passing through the porcelain crown, with the screw thread imbedded in the natural root.

FIG. 8



Bing's Bridge Teeth

As early as 1869, Dr. Bing, of Paris, originated the idea of employing the natural teeth on either side of a dental vacancy as abutments for a prosthetic bridge firmly and permanently fixed to those teeth, and carrying an artificial tooth or teeth, which, while conforming nearly to the space vacated by the removed tooth, was yet kept from resting upon the gum and was wholly supported by the abutting teeth (see Fig. 9). The tooth-crown was provided with two stout platinum pins extending clear through. These pins were anchored into cavities prepared for them in the abutting teeth by gold or amalgam packed around them. Bing's bridge teeth were made in incisors, cuspids, bicuspid, and molars but were not widely used.

FIG. 9

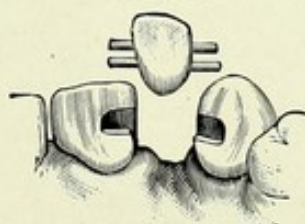
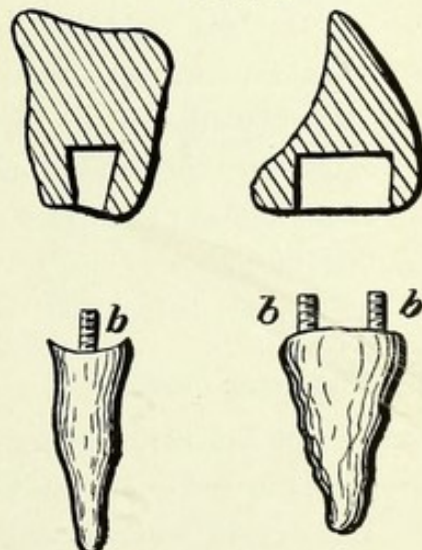


FIG. 9a



The Mack Attachment

In January 1872, Dr. Chas. H. Mack patented a pivot tooth, which appears to have been the first in which the pivot or anchor-post was fixed in the root before attaching the crown. The patent describes this tooth (Fig. 9a) as follows:

"The object of this invention is to permanently

secure artificial tooth-crowns to natural tooth-roots while in the mouth in a manner that permits of easy manipulation and better results than have heretofore been possible; and my said invention consists, first, in an artificial tooth-crown having an undercut, shouldered, or dovetailed vertical opening, said opening, at the base of the crown, extending from near the lingual to near the labial or buccal surface thereof; secondly, in the combination of an artificial tooth-crown having an undercut or shouldered vertical opening with a natural tooth-root by means of, first, two retaining-pins projecting from the root, and second, a material contained in said crown-opening in which said retaining-pins are imbedded, said material being put into a soft state to permit the crown to be fitted to the root over the retaining-pins, and then allowed to harden to firmly imbed said pins."

Gold Cap Crown

FIG. 10

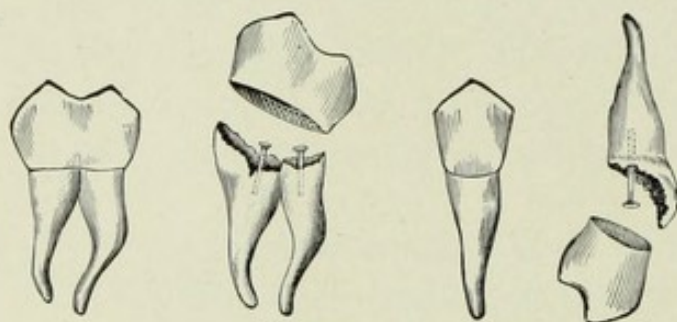
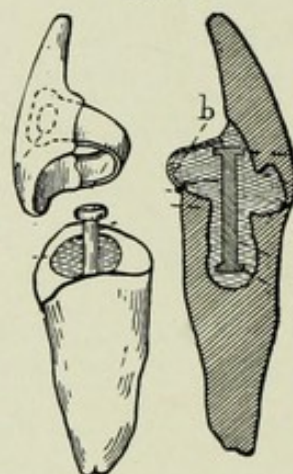


FIG. 11



Dr. John B. Beers patented his gold cap crown (Fig. 10), made entirely of metal, principally gold, November 4, 1873.

The Gates Crown

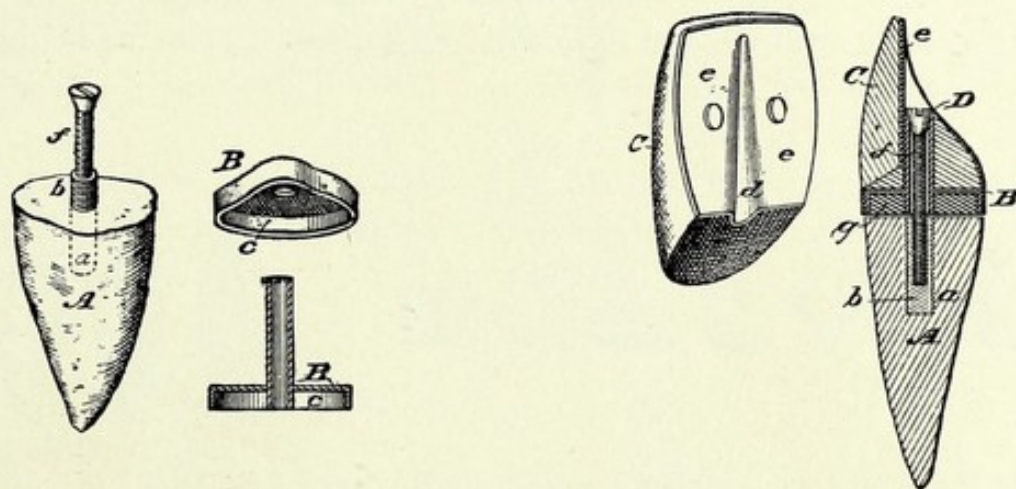
On June 29, 1875, Dr. Wm. H. Gates was granted a patent for a vertically open contour crown, composed of metal and porcelain (Fig. 11). The anchor-post was first to be attached to the root and then the crown was fitted on and held in place with cement or other plastic material. This crown was never placed on the market, because of the difficulties in manufacturing, but the principle involved was so broadly claimed that the patent which was granted covered a subsequent patent taken out by Dr. W. G. A. Bonwill, which will be referred to later.

The Richmond Crown

In February 1880, Dr. C. M. Richmond patented a pivot crown made partly of porcelain and partly of metal, usually gold, the construction of which is shown in Fig. 12. It will be observed that the banding of the root appears here for the first time. The patent describes the method as follows:

"To attain the objects of my invention and carry my improved art of setting artificial tooth-crowns into effect, I cut, grind or wear off the natural root or stump, preferably on a level with the gum, and bore or drill a hole or recess therein, into which is fitted or screwed a preferably internally and externally threaded bushing or metallic socket-piece. A metallic base is then fitted upon and correspondingly shaped to the prepared root of the tooth, and is provided with a tube or extension which is fitted or secured thereto. The artificial crown, which is provided with a metallic backing

FIG. 12



or attachment, and with a longitudinal groove for the reception of the tube or extension of the metallic base, is then fitted upon said base, which constitutes the intermediate connection between the natural root and the artificial crown. The metallic base is preferably first secured to the artificial crown, and the two then fitted upon the natural root and firmly and permanently secured thereto by means of a headed screw, the screw being passed through the tubular extension of the base into the internally-threaded metallic socket-piece secured in the root, whereby, when said joining-screw is firmly screwed up, the artificial crown is securely held in place, and presents, when finished, the appearance of a wholly natural tooth, while capable of performing its function."

FIG. 13

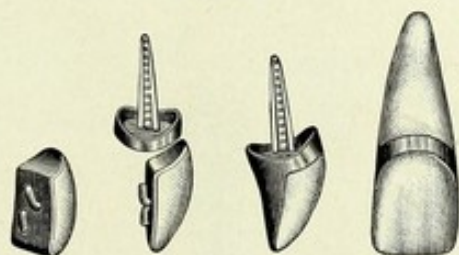
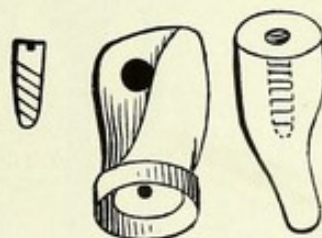


FIG. 14



This form has since been modified by dispensing with the grooved tooth and screw attachment, the crown being permanently attached to the root. Fig. 13 shows the various steps in the modified method of making the Richmond Crown. Dr. Richmond seems to have been the first to appreciate the advantage of banding the root in adding to the strength of a pivot operation. Fig. 14 is a reproduction of a rough sketch found in

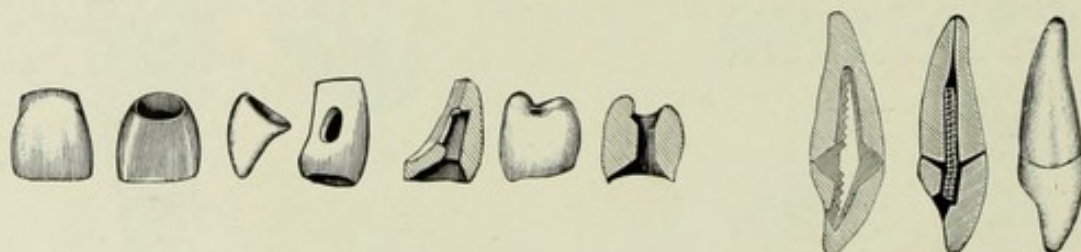
the latter part of 1879 on the desk of the late Dr. S. S. White, with whom it had been left by Dr. Richmond.

The Gates-Bonwill Crown

The date of Dr. W. G. A. Bonwill's patent for his porcelain pivot crown was March 1, 1881. Fig. 15 shows the crown and the method of attachment. The underlying idea in the construction of this crown had been anticipated by Dr. Gates six years earlier; hence the crowns as put upon the market were called "Gates-Bonwill."

These crowns were supplied in considerable variety of form and shade,—incisors, cuspids, bicuspid, and molars (upper and lower); also three-sided or triangular

FIG. 15

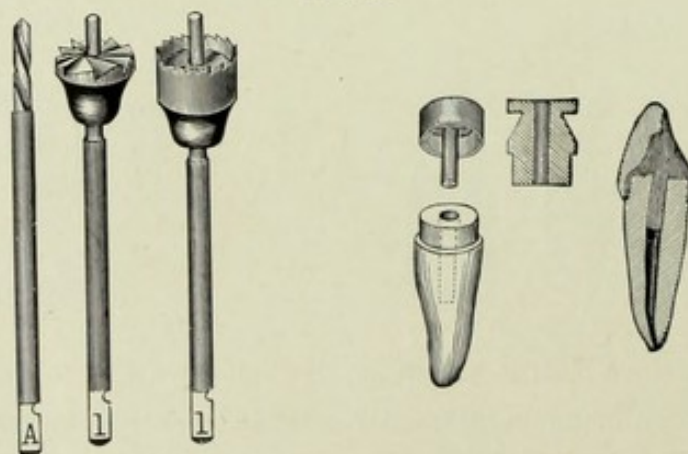


wire for pivots, and an amalgam prepared by Dr. Bonwill especially for use with these crowns.

The Büttner Crown

In August of the same year Dr. H. W. F. Büttner patented a metal and porcelain crown, in which the method of attachment to the root was the novel feature. A special set of instruments was used in the process. These are shown in the illustration (Fig. 16). The principal novelty was the forming of the exposed end of the root into

FIG. 16

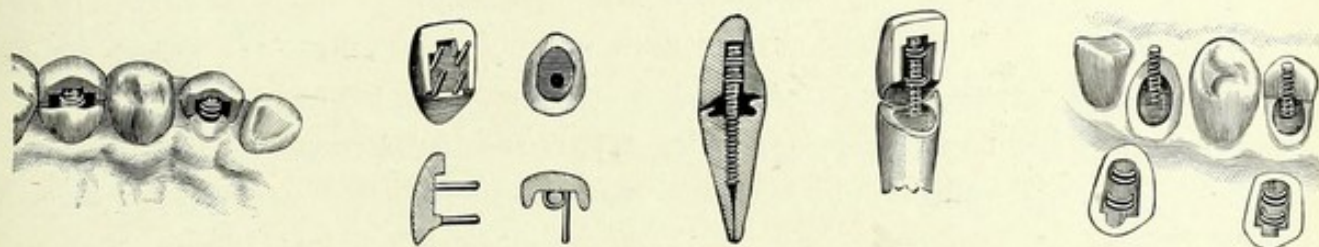


a dowel pin, fitting closely a metal band, to which was attached a strong pivot to enter the root-canal and upon which the porcelain was fixed.

The How Four-Pin Crown

This crown was patented by Dr. W. S. How in April 1883. The illustration (Fig. 17), clearly shows the general form of the crown and the method of attachment

FIG. 17



to the root. This crown was supplied in centrals, laterals, and cuspids. When it was desired to mount a bicuspid, a cuspid was used, the backing being contoured to form the inner cusp.

The How Dovetail Crown

In August 1889, Dr. W. S. How introduced his Dovetail Tooth-Crown (Fig. 18). This had a dovetail-shape opening extending through the crown, and was made for bicuspids and molars only. Screws were inserted into the root with ends extending; the cap was adjusted to fit and put on over the ends of the screws and the space around the screws and between the crown and root filled with amalgam or other plastic filling material. In some cases, especially in bicuspids, a screw with a nut was used.

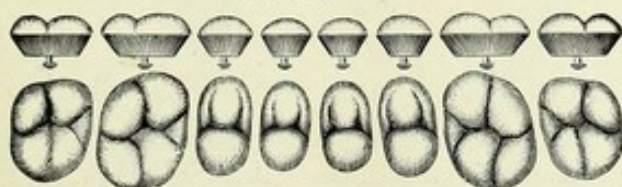
FIG. 18



Porcelain Cusp Crowns

Porcelain Cusp Crowns, patented May 18, 1886. These were simply porcelain cusps with one or two headed pins for use with a gold band representing the body of the tooth (Fig. 19).

FIG. 19

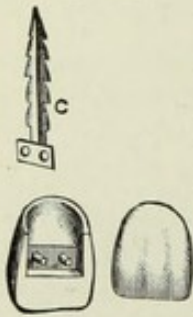


Screw-posts are first inserted into the roots, extending up into the collar.

The band or collar was first fitted to the suitably prepared root, and the cusp crown fitted to the collar. The collar was then filled with gutta-percha, cement, or amalgam, and the crown pressed to place.

The Weston Crown

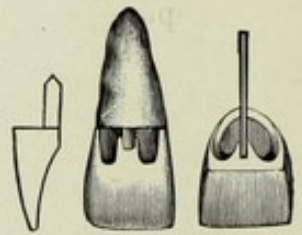
FIG. 20



In April 1883, Dr. Henry Weston introduced his Porcelain Pivot Crown (Fig. 20). The illustration shows the crown and anchor-post, which are connected by solder and attached to the root with gold, amalgam, oxyphosphate of zinc, etc.

Subsequently Dr. Weston devised a tooth having the anchor-post baked in the crown, and with the porcelain longer (Fig. 21) on the lingual surface. The crown was fitted to the root and the luting material was packed around the anchor-post through the opening.

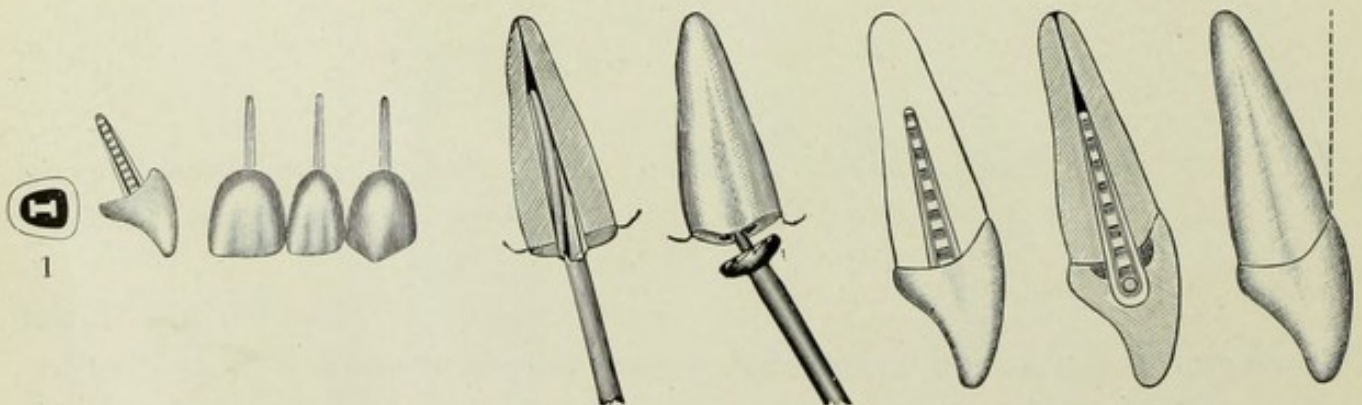
FIG. 21



The Logan Crown

All the foregoing described crowns have had their day. They were steps in the development of the perfected "pivot tooth,"—not all the steps, not all the varieties in method or underlying idea, but each typical of progress, of the reaching out after the perfect crown. It is, perhaps, too much to say that this has been realized, but it is certain that the Logan Crown, first introduced in 1885, comes nearer perfection than any of its predecessors or followers. Its use has steadily grown until it has practically superseded all others. It goes without saying that, so far as the present development of prosthetic dentistry is concerned, an all-porcelain crown has almost untold advantages over any other. Most of the preceding crowns have had more or less metal surface exposed to collect the secretions of the mouth. The Logan (Fig. 22) is all-porcelain. That is, the entire exposed surface is porcelain. It is unquestionably the best all-porcelain crown ever placed before the profession, whether as regards simplicity of mounting or result as to appearance and strength. It combines the large

FIG. 22



basal opening of the Bonwill for the reception of the luting material with a strong fixed anchor-post. For twenty-six years its superiority has been steadily gaining it adherents, until now other forms are almost forgotten. They are certainly neglected. Numerous

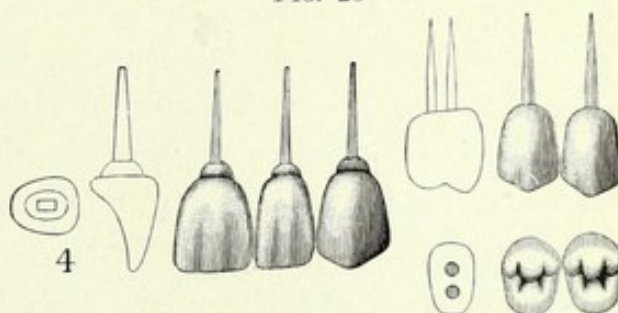
attempts have been made to produce better crowns. So far they have failed. The Logan holds the field against all comers. It will suffice to refer to two of these attempts.

For illustrations and further description of the Logan Crown see pages 202 to 207 inclusive.

The Brown Crown

March 18, 1890, Dr. E. Parmly Brown patented the crown shown in Fig. 23. It will be observed that this crown follows the Logan in many features. The principal difference is that, whereas the Logan Crown is hollowed out at the base to provide room for a considerable body of cement or other luting material, the Brown Crown is built out around the pin, requiring the end of the root to be hollowed out to receive it. This construction inevitably weakened the root, already the weakest, least dependable member of the combination. Although put forward on equal terms with the Logan, so far as advertising was concerned, it failed to make headway against it, and in a few years was withdrawn from sale because of the paucity of demand for it.

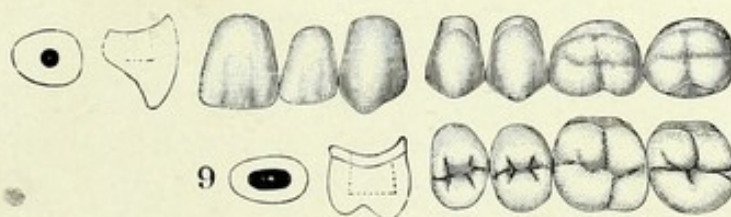
FIG. 23



Howland-Perry Crown

In 1888 the Howland-Perry Crown was introduced. In form this was like the original pivot tooth except that the base was hollowed out from the labial to the

FIG. 24



lingual side; the hole for the pivot is larger than in the pivot tooth. The Howland-Perry Crown was set on a platinum and iridium post, which was cemented in place.

The S. S. White Detached-Post Crown

This latest addition to the list of crown forms is a variation from the Logan. It is made of the same porcelain in the same molds by the same hands and has the same depression in the crown to facilitate fitting and allow of a good body of cement to afford a strong joint. The post, however, is detached, to be cemented into the crown when mounted. For full description, see pages 209 to 211 inclusive.

SOME PRACTICAL HINTS ON SELECTING AND ADAPTING PORCELAIN TEETH

THE success or failure of the prosthetic dentist is dependent largely upon the wise or unwise selection of the porcelain teeth which he uses in the dentures he produces.

It matters not how expert the man may be in mechanics, the denture will not be satisfactory if teeth entirely unsuited for the particular case are made use of. The manufacturer receives the blame for many failures with which the dentist meets, either through the teeth fracturing or the denture failing to prove satisfactory to the wearer; when, as a matter of fact, the trouble is often due to using teeth in places for which they never were intended. Each one of our molds of porcelain teeth was designed to meet some certain type in the human mouth, and to misapply it is to take more or less risk.

It is for this reason that we endeavor to briefly give a few practical hints on the selection of teeth for the model, bringing out the essential features to be borne in mind.

We also take up some of the different cases met with in the course of every-day practice, explaining them one at a time and including some illustrations. By referring to the index whenever one of these cases presents itself you can ascertain the molds adapted to the case in hand.

The Class of Teeth

The first point to determine in the selection of Porcelain Teeth is the class of teeth needed, whether Plain Teeth for Vulcanite, Plain Teeth for Crown and Bridge work, Gum Sections for Vulcanite, Gum Teeth for Metal Plate, Saddle Backs, Veneers, or any other class. Much time and labor can be saved if this first step in selection is intelligently considered.

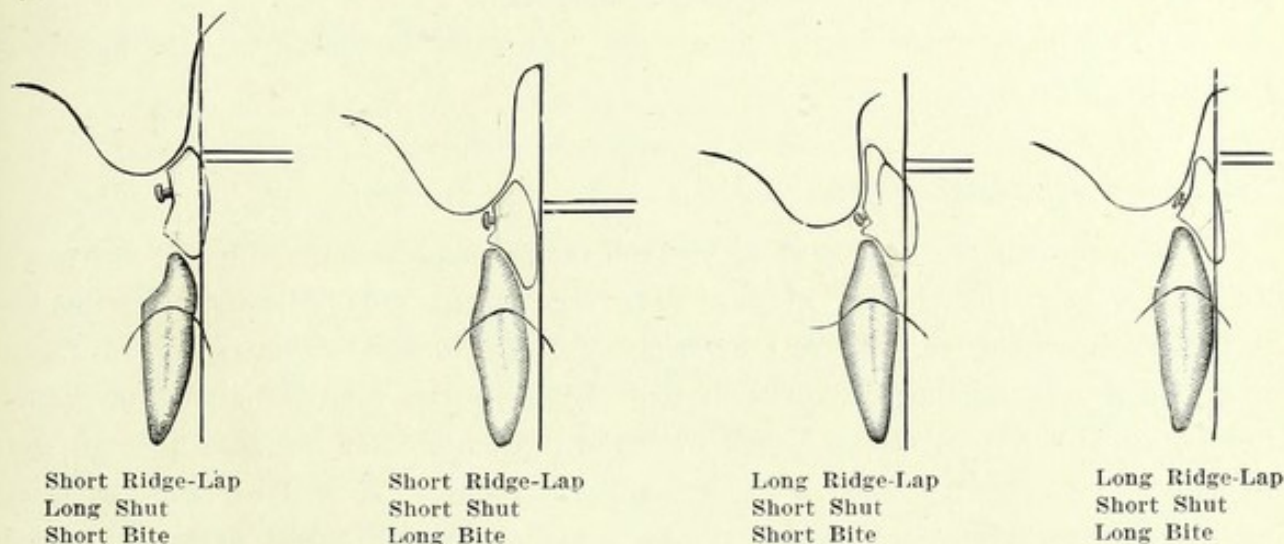
General Form

The second point to determine is the form—that is—the ridge-lap and bite—the size, whether large, medium or small, short, broad or narrow.

Ridge-Lap

Ridge-Lap is the name given to the line which measures the heel or butt in a Plain Porcelain Tooth or the inner surface of a Gum Tooth or Section from a point just beyond the pin to the extreme edge of the gum. It is usually, although not always

or necessarily, concave in form. It may be long or short, these terms being relative and not accurately differentiated (see illustrations below). It should approximate, as closely as may be, the natural contour of the gum as shown by the cast.



There is commonly too much grinding of Porcelain Teeth to get the proper ridge-lap,—too much because it is unnecessary. If the proper care is taken in selecting, so that the ridge-lap is adapted to the case in hand, the need for four-fifths of the grinding otherwise necessary will be obviated. Our line of molds grew to its present great extent, largely because of our desire to save this grinding, to have a variety of forms to meet any possible need with the minimum of grinding, so that our teeth would go into the mouth as nearly as possible as they go out from the factory. Teeth with a long ridge-lap have come to be more largely used in America than any others, because they save grinding. With a proper stock to select from and due care in the selection, little grinding should be required except that for perfecting the occlusion or for “aging” the teeth. For those to whom personal selection from our stock is possible, a few minutes at the tooth-counter may save hours in the laboratory. Those to whom this is impossible can still save the time by having our trained men select for them.

Bite

The “bite,” is as in the natural teeth, the extent of the lap of the upper incisors over the lower (see illustrations above). Approximately, it is the distance between the cutting edge and what we may call the pin-guard, the shoulder or ridge of porcelain extending across the tooth, marking the interior edge of the lingual face and immediately behind which the pins are placed. This pin-guard, or pin-bar, as you please, may be regarded as the backbone of the tooth or section, as it is the thickest part of the porcelain.

Shut of the Jaws

The length of the bite depends upon the "shut of the jaw." This term, qualified by "short," "long," or "medium," indicates approximately the distance between the jaws when the mouth is closed. The bite is shown accordingly (see illustration, page 41). The bite of the teeth selected is important. The supplying of the proper bite is a step in the production of an artistic denture, to say nothing of the practical gain to the wearer.

Relation Between "Ridge-Lap" and "Bite"

There is commonly a proportion between the ridge-lap and the bite of a Porcelain Tooth. A long ridge-lap is in most cases accompanied by a short bite, though this is not invariably so. Where the variety of forms to select from is limited, there is a tendency to use shorter bite teeth than should be used to save the labor of grinding. This is a serious error. Teeth with the proper bite for the case in hand can be had with a ridge-lap which will not require grinding. More labor can be saved by selecting teeth exactly adapted to the needs of the individual patient, whether they be long-bite, short-bite, or medium-bite. The denture will better meet the needs of the patient, and its artificial character will not be so readily discernible.

The Leverage of the Jaws

The incising teeth of the lower jaw work against those of the upper with a shearing movement, forming in effect a lever. If the upper denture is artificial and the lower natural, we have the long, strong bearing of the roots in the alveolus opposing the usually comparatively slight and at any rate short attachment of the upper teeth to the plate. The bite and the ridge-lap are the two arms of the lever, the attachment to the plate is the weight or resistance, the force with which the lower teeth strike the upper is the power. Necessarily whatever strain there is comes upon the attachment. If the power arm—the bite—is unnecessarily long, a tremendous leverage may be brought to bear upon the attachment, depending upon the length of the bite. This leverage, acting on the pins, bending them back and forth will break them by crystallizing the metal, just as any piece of wire bent repeatedly at one point will be broken. Or, in case the pins stand the strain, the porcelain in which they are imbedded may fracture. It should be remembered that porcelain, the best material so far found for artificial teeth, is of a friable nature, with a limit to its resistance which should not be overlooked in making an artificial denture.

Long-Bite Teeth Misused

It is for the reasons just stated that we sound a note of warning against the selection of Long-Bite teeth for cases to which they are not adapted. In these the power arm of the lever is relatively long, as a rule, because it is commonly—though

not always—accompanied by a short ridge-lap, and the pins are placed near the necks. We have consequently the conditions for breakage of the tooth. Of course, breakage occasionally occurs in other forms of teeth, but it is much more likely to happen with Long-Bite teeth.

Proper Use of Long-Bite Teeth

There are cases in which the Long-Bite Tooth is a necessity. The choice for the patient is between Long-Bite and no teeth at all. Such cases are those in which masticating teeth remaining in the jaws have been worn by abrasion, so that when these teeth are occluded the anterior portions of the jaws are brought close together, or where for any other reason, as extraction of some of the teeth forcing others out of alignment, what is called a short shut of the jaws is artificially produced. It is readily seen that, from the nature of the case, Long-Bite teeth are the only ones which will meet the requirements. See illustrations, pages 102, 105, 106, 107, 108, 109, 168.

Expedients to Overcome Leverage

For the cases to which Long-Bite teeth are suited—especially short-shut jaws—there is nothing else that meets the needs. In these cases the difficulty to which we have alluded may usually be readily overcome. One expedient is to cut out the plaster cast to accommodate the lingual portion of the neck of the tooth. This will make the tooth rest hard upon the gum, and eventually bury itself in it. Another is to so shape the plate that as much of the rubber forming it as possible shall extend under the heel of the tooth or section. This will prevent to a degree their independent movement, or rocking, which in time would break the pins. Still another is to so align the incisors that there shall be a space between them and their opposing natural teeth to prevent the wedge or shearing action before referred to. We have suggested these expedients for remedying some of the difficulties in the use of Long-Bite teeth, but the fact still remains that the case *requiring* this form of teeth is one which is so beset with difficulties, that **the profession cannot expect as high a percentage of success in their use as with the Short or Medium-Bite.**

Masticating Incisors

When a full upper denture is required for patients who have also lost all the lower teeth except the incisors and cuspids, peculiar features sometimes present, which make it difficult or impossible to supply the deficiency in the lower jaw.

Fig. 1 shows a lower jaw of this character:

In such a case the entire lack of the usual masticating teeth in the lower jaw makes it necessary that the incisors and cuspids shall take up the burden of mastication, in addition to their usual incising function. To accomplish this effectively their opponents of the artificial set must be provided with some masticating surface, as in-

dicated in Fig. 2. If the upper maxillary ridge is "thin" and the process has been absorbed, Gum Sectional Teeth can be used. This masticating surface is provided in Gum Sections, Nos. 96 and 97, page 174, by a shoulder on the lingual surfaces of the incisors and cuspids, beyond which the thin incising edges project. These two will not meet all cases, but they cover a wide range of needs, because of their agreement in size with the average teeth.

It is desirable in these cases that the teeth shall occlude as nearly as possible directly over the alveolar ridge, to prevent tilting of the plate in incising the food. Where neither No. 96 nor No. 97 meets the requirements, other sections of extremely short bite can be utilized, the masticating surface being provided by shaping the model so that the rubber in being molded shall form a shoulder on the lingual surfaces of the

FIG. 1

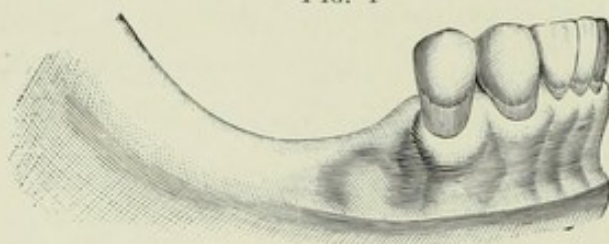
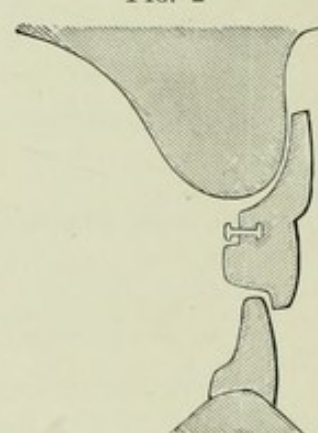


FIG. 2

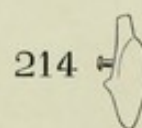
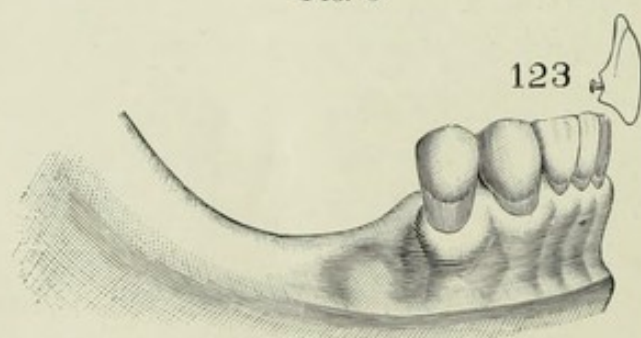


oral teeth. Nos. 20 and 34 are examples of such sections. In these the pins are placed in a recess on the lingual surface, thus affording a hold for the rubber which permits its being built into a shoulder as near to the incising edge as is necessary. Nos. 112, 115, 116, 118, 119, 133, 137, 139, 147, and 148 are also extremely short bite, and can readily be used with the vulcanite shoulder for masticating occlusion.

Nos. 102, 109, 113, 129, 130, and 212 are sections in which the bite is somewhat longer, which is sometimes desirable. These sections enlarge the opportunity for selection. See pages 161, 162.

If the upper maxillary ridge is full and the process only slightly absorbed, the use of Gum Teeth is not indicated. Plain Teeth are better. Fig. 3 shows the kind of

FIG. 3



No. 214, a Long-Bite Tooth
(The kind not to use)

short-bite (No. 123) Plain Teeth which should be used, and the kind (No. 214)—long-bite—which are not suited. (It is sometimes well to know what not to do.)

The various molds of Plain Teeth adapted for masticating incisors will be found among the Short-Bite Teeth shown on pages 103, 105, 106, particularly page 105.

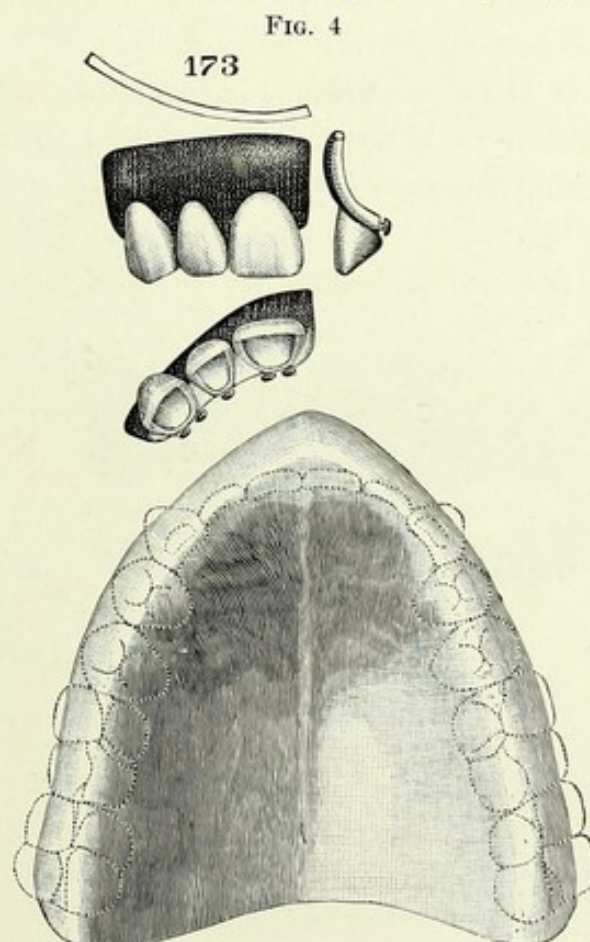
Protruding Jaws

Protrusion of the jaw, upper or lower, is not uncommon. In the upper jaw, for instance, there is the simple protruding gum, and the V-shaped protrusion, the latter sometimes modified by a decided enlargement downward of the gum toward the median line. In the lower jaw there is a quite common protrusion in which the teeth shut outside of those of the upper jaw. Teeth for such cases can be selected from our stock.

The Permanent Protruding Upper Jaw

In the form of protrusion where the upper jaw actually projects beyond the lower, the condition may be modified in its degree, according to the shut of the lower jaw, which moves toward the facial line as it closes. In some such cases it may be desirable to have a short shut of the jaws to get this extension, leaving a long overlap of the upper teeth, or a long bite. The accomplishment of this improvement will depend, in some degree, on the length of the upper lip,—the longer the lip the better the chance for the success of the effort. With a short lip, Gum Teeth will be necessary; if the lip is long, Plain Teeth may be utilized.

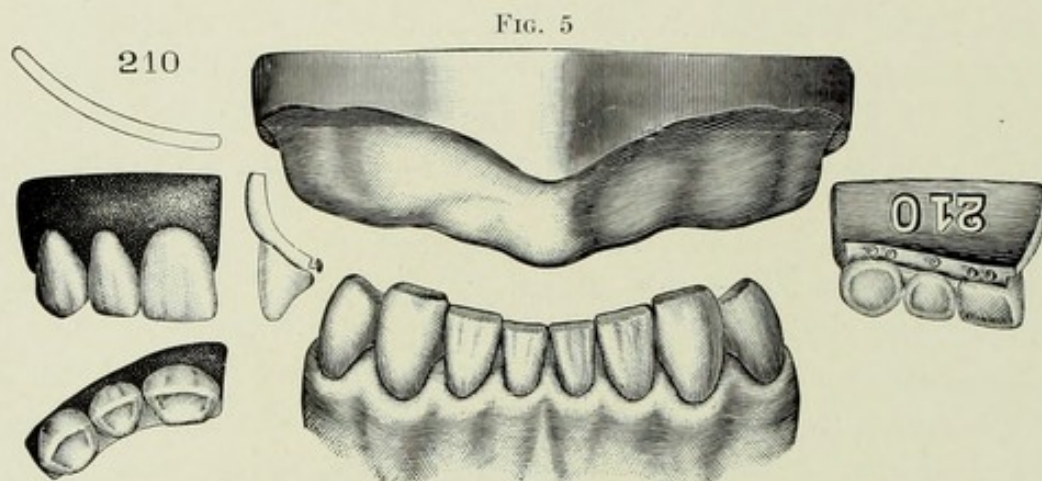
Fig. 4 shows an example of a form of protruding upper jaw, frequently produced



by thumb-sucking, and commonly known as V-shaped Protruding Upper Jaw. In a case of this kind the central incisors should be set directly upon the ridge, and the

cuspid, to make the proper fullness, will be placed outside of the arch. See page 172 for molds specially designed for these cases.

Fig. 5 is a variety of this form of protrusion in which the gum and process, toward the median line, are abnormally enlarged downward. The lower incisors are

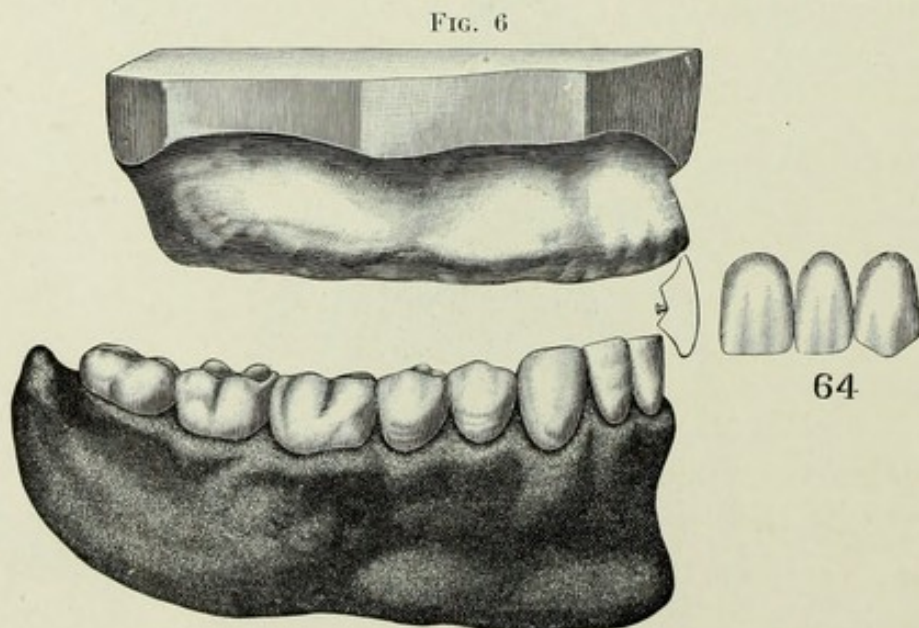


generally worn away to correspond with this conformation. Sections adapted to this condition have a short-bite central and a long-bite cuspid. Molds 209, 210, and 211 in Gum Sections were designed to meet these cases (page 172).

The Temporary Protruding Upper Jaw

The form of protruding upper jaw not infrequently found after extraction, in which, in a normal shut of the jaws, a bulging maxillary ridge produces the deformity, is usually only temporary in character. As soon as the exterior plate of the alveolar border has been absorbed, it will have passed away; but until that time it is a present difficulty, which must be met and overcome.

Fig. 6 shows an example of this temporary form of protrusion. It is clear that



the teeth cannot be permitted to extend up along the labial surface of the gum, as that would magnify the prominence of the upper lip. A better plan is to rest the necks

of the artificial incisors, and cuspids against the ridge, as indicated in the figure. In the majority of cases, the plate can be extended alongside of the gum opposite the bicuspids and molars, as shown in Fig. 7. Gum Sections can be used for the bicuspids and molars, with plain teeth for the incisors and cuspids. Short Ridge-Lap Plain Teeth

FIG. 7



shown on pages 102, 103, 104, 105, 107, are especially adapted to this use, and they afford a sufficient variety in the curve of the labial faces to meet the needs of the various protrusions of this form.

After the alveolar border is absorbed and the ridge assumes its normal position, Gum Teeth of a special form can be substituted, if desired, as indicated by the edge view of No. 103 in Fig. 7. A number of Sections adapted to this use are shown (page 171).

Protruding Lower Jaw

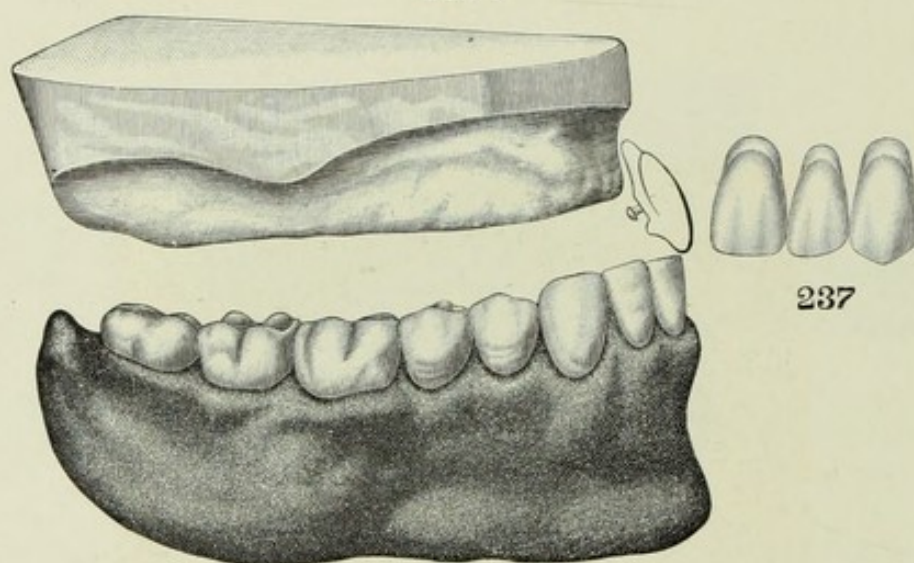
Protrusion of the lower jaw may vary from the simple inversion of the normal order of the bite, by the lapping of the lower front teeth over the upper, to the extreme protrusion, where the lower teeth close so far in front of the uppers as not to touch them. In every instance the best that can be done is to give the teeth an end-to-end occlusion. In extreme cases this is an absolute necessity, for if the upper teeth are allowed to overlap to any extent there would be a tendency to tip the denture in incising food.

Partial Absorption of the Gum

Where there is a fullness of the labial aspect, and especially when combined with a short shut of the jaws, Plain Teeth should be used. If the maxillary ridge is full, teeth having a short ridge-lap should be selected. But where considerable absorption has taken place, as is shown in Fig. 8, teeth with a longer ridge-lap are desirable. This is almost a necessity for patients who raise the upper lip considerably in speaking or laughing, as the long ridge-lap provides a greater length of tooth to be exposed.

Examples of this class are Nos. 122, 123, 124, 125, 126, 128, and 237 (see pages 103, 105, 106). Where there is extreme protrusion, teeth with a proportionately nar-

FIG. 8

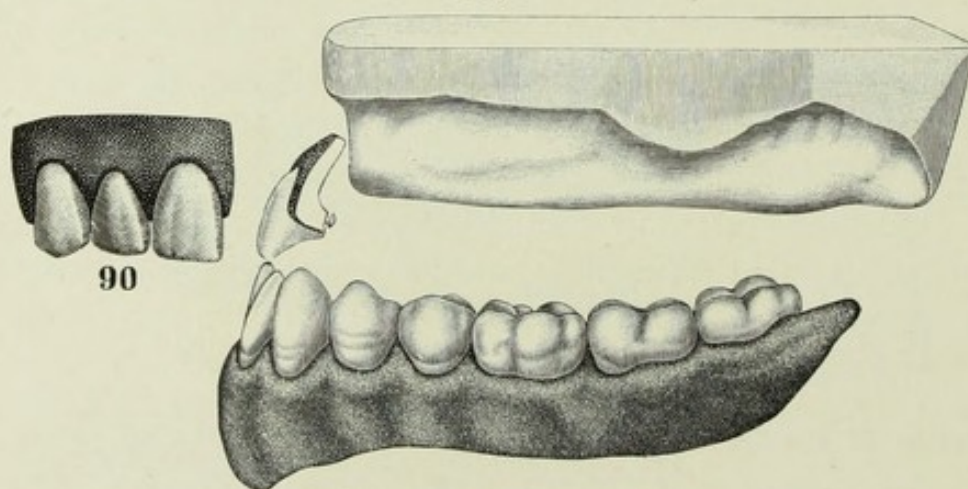


row neck are required, because the radius of the arch at the neck of the teeth is much smaller than that of the curve described by their incisal ends.

Complete Absorption

For cases in which complete absorption of the alveolus has taken place, Gum Sections are preferable to Plain Teeth, because they assist in the restoration of the features to their normal appearance. Fig. 9 illustrates a case of this kind. Mold No. 90 is particularly adapted to this condition. A decided labial curve (bow-face) is

FIG. 9

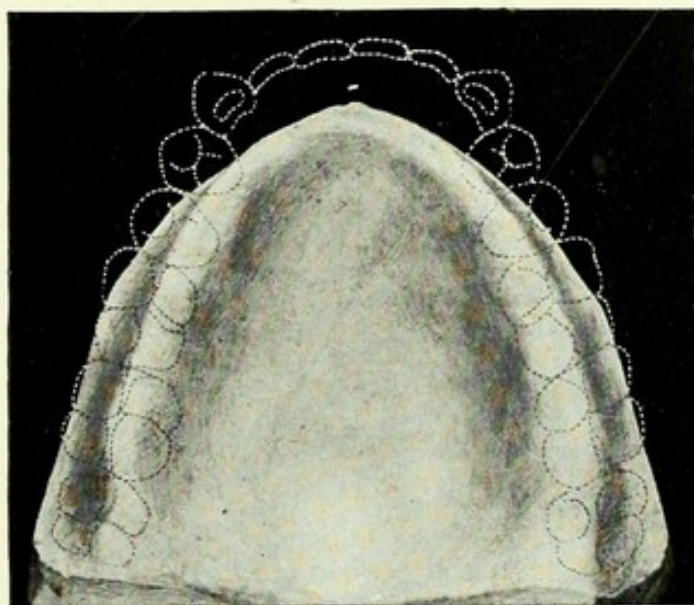


required to bring about occlusion with the lower teeth, as is well shown in the illustration. A flat-faced section could not be used, because, first, of the unpleasant appearance the teeth would present, and second, because it would be bad from the mechanical standpoint, as there could be no proper occlusion, and the force of mastication would tip the plate or force the sections away from it.

A Typical Case

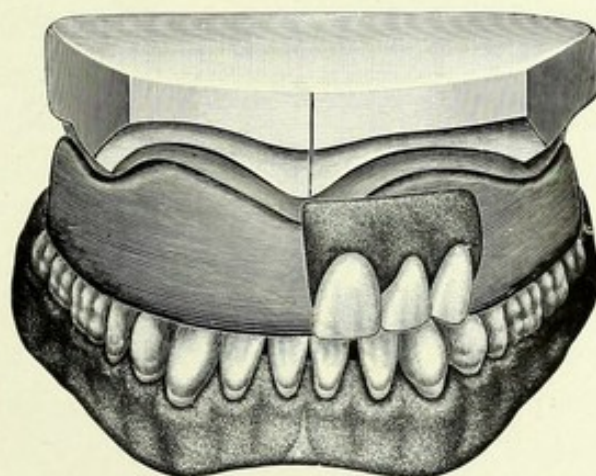
Fig. 10 is a diagrammatic representation of the extent of the protrusion of the incisal ends of the lower teeth beyond the gum ridge of the upper jaw, in a typical case, indicating the character of labial curve required in the section, from the central incisor and cuspid. The diagram shows that at the cuspid a considerable falling back and in

FIG. 10



of the curve is required, in order to bring about occlusion. This feature is especially provided for in Sections 90 and 92, and is well shown in Fig. 11, which shows the section for the left side of No. 90 in position on a waxed model preparatory to fitting. This illustration also shows the amount of the gum to be ground away to permit

FIG. 11



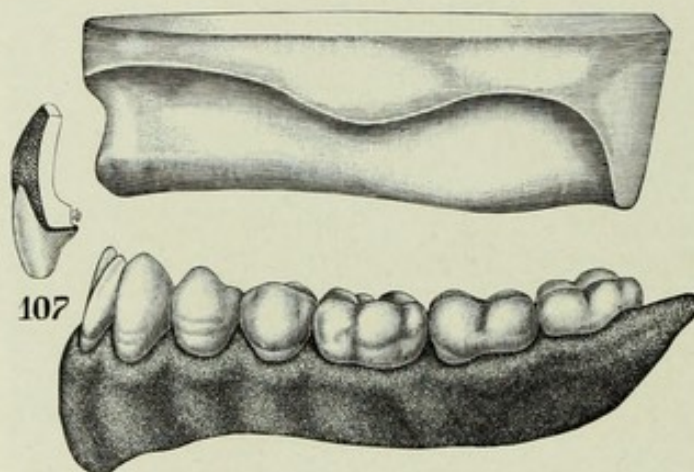
alignment at the median line, and the shortening and rounding of the gum over the central necessary to provide for the proper placing of the section.

From the forms shown at page 173 it will be easy to make a selection to suit almost any case.

Bulging Ridge

A condition frequently met with in mouths requiring artificial upper dentures is characterized by a protrusion of the gum as shown in Fig. 12, sometimes called "pouting" gum. To properly meet this condition the gum of the artificial section must have more or less curvature to fit the prominent ridge. A section with straight gum such

FIG. 12



as is found in ordinary sections, is not suitable. It would require much more rubber, increasing the danger of breakage; and would be likely to cause an undue prominence of the lip. A number of examples of this curved gum conformation are shown on page 175.

Temporary Dentures

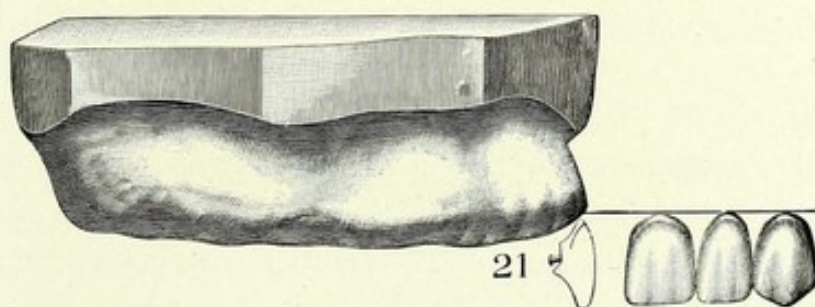
A great many temporary dentures are required. It is quite a common thing, as all dentists know, for people to neglect their teeth so long that when they do consult the dentist there is nothing to do but to extract the natural teeth and supply artificial dentures. It takes at least ten to twelve months after extraction for complete absorption of the alveolar process and the establishment of what will be thereafter the normal condition of the parts. Until this condition is established it is a waste of time and money to attempt to supply "permanent" artificial dentures. In the meantime, however, the unfortunate patient must have some means of mastication. So we have the "temporary" denture to bridge over this period.

The conditions governing in these circumstances differ from those which control the situation after absorption or resorption is completed, and a different procedure is necessary. The Porcelain Teeth used should, as a rule, have wide necks,—nearly as wide as the incising edge of the anterior teeth. If narrow-neck teeth are used, there is liability that the vulcanite plate will show in the interstices. Teeth rather longer than in ordinary cases will be found useful, as providing for the absorption of the alveolar ridge, and the occasional settling of the denture anteriorly, which is at times great enough to hide the incisors entirely behind the upper lip.

The necks of the incisors and sometimes of the first bicuspid also have to be placed so as to rest directly upon the natural gum, or even to imbed themselves in it slightly, to prevent undue lip fullness and distortion of the features. This may be helped by cutting away the plaster cast, say one-thirty-second to one-sixteenth of an inch, under the portion of the tooth which rests upon the gums. The neck ends of the teeth should be ground off slightly, flattening that end. This gives a closer fit to the natural gum and a broader base to be imbedded. The patient will have to wear the denture a day or two before the necks of the teeth become properly imbedded.

Fig. 13 shows the method of preparing the neck ends,—just the tip slightly ground off, this being the only part which rests directly upon the gum. The heel of the tooth

FIG. 13



is against the vulcanite which forms the plate, which is cut out between the necks of the teeth to prevent its showing. Fig. 7 (page 47) shows a full upper and lower temporary denture, in which the necks of the upper anterior teeth rest upon the natural gums.

Sometimes, to avoid the exposure of the vulcanite between the necks, it is advisable to use Gum Teeth. Sections Nos. 80 and 81 are for this purpose (page 174). In extraction it occasionally happens that the labial plate of the alveolus is broken away, causing a depression in the gum ridge after healing. Extra Short Gum Sections Nos. 178 and 179 were devised to meet the needs of such cases (page 175).

Short Ridge-Lap Plain Vulcanite teeth are well adapted to these cases (pages 102, 103, 104, 105, 107).

ARTISTIC DENTAL PROSTHESIS

Artificiality Too Often Apparent

The criticism most frequently passed upon artificial teeth is that they show so plainly that they are artificial. There is an incongruity between some or all of the characteristics of the denture and the features or general make-up of the wearer which proclaims to everyone the fact that the teeth are artificial. The difficulty may be in the shade, the size, the form, or the arrangement of the teeth in the arch, either individually or collectively. Thus, the shade selected may be one which has no relation to the temperament of the patient, oftentimes too white because the patient "likes that color." The size may be too small, the form long and narrow, when a larger, broader tooth would suit better. The alignment is frequently too regular, producing what is often called in derision the "picket-fence" style of teeth. Many of these offenses against good taste are committed in deference to the whim of the patient; many more because it is cheaper and easier to make all dentures alike than to give each one an individuality of its own.

A Higher Development

It may be said that the principal office of a set of artificial teeth is to restore to the patient the functions of mastication and speech. The dentist who does this may say that he has done all that is necessary. From the strictly utilitarian standpoint, this is true. The utilitarian is the first end to be accomplished. It is also the first stage of any undertaking, its infancy. Dentists have succeeded very well in this stage of the making of artificial dentures. Is it not time to advance to the other and scarcely less important phases of the work? Is it not time that the artistic be interwoven with the utilitarian and so produce the perfect result,—the advanced stage of the art? It is quite true that here and there have been men of high ideals who have always made the artistic an essential feature of their work. But they have been the exceptions. They have shown what can be done, and their success in the financial way should be a sufficient incentive to induce every man who makes artificial dentures to emulate their example.

What Artistic Means in Prosthetic Dentistry

What does the word artistic mean as applied to artificial dentures? We hear much of artistic dentistry, and sometimes the talk about it would lead one to think that the term meant something hidden, or mystic, or abstruse,—beyond the power of ken of the

average dentist. It means the harmonization of the teeth in size, in form, in shade, and in alignment with the physical characteristics of the wearer. That is what Nature does. When a person whose natural teeth are still in position opens the mouth there is no suspicion of inharmony. The faithful following of Nature's lead will inevitably produce the artistic denture. There can be no better guide for the dentist in the making of an artificial denture. In Nature's scheme of dentistry individuality is stamped upon every set of teeth. They are built in harmony with the personality of the individual. As no two persons are exactly alike, so no two natural dentures are exact counterparts.

The Teeth in Expression

A patient coming to a dentist for an artificial denture has a right to expect that not only shall the functions of mastication and speech be restored, but that, as nearly as may be, the natural expression of the face shall be maintained. Besides assisting in mastication and speech, the natural teeth perform other functions. They are the support of the lips and cheeks, and thus contribute not a little to the determination of the shape of the face. They serve also to illuminate the lower portion of the face, as the eyes light up the upper part, and very much in the same way, so far as the beholder is concerned. The eye, with its surrounding parts, and the mouth, including as the most important factor, the teeth, are the most expressive features of the face. So that the teeth bear a predominating part in the play of expression; their absence almost deprives the lower face of expressional qualities. It ought to be plain that a "misfit" artificial denture will distort the expression into a caricature of Nature's intention. The patient has a right to better service.

The Essentials

In order that the patient's rights shall be protected, these points are to be borne in mind in the construction of a denture.

1. The Porcelain Teeth selected should be of a type in size, shade, and shape suited to the temperamental requirements of the patient.
2. Their arrangement in the arch should also conform to the temperamental requirements; they should simulate the greater or less variations in alignment which are a part of Nature's way of expressing the predominance of one or the other of the temperaments.
3. They should bear a proper relation in form and shade to the age of the patient.

The indications of temperament in relation to the teeth and the characteristic teeth of the different temperaments and their combinations are considered elsewhere in this Catalog. The alignment of teeth in an artificial denture is of so much importance that we reproduce here some ideas upon the subject from advertisements in the *Dental Cosmos*.

Irregular Alignment

Irregular alignment is the common condition among natural teeth. A really regular natural denture is rare, and it is commonly the case that the fortunate possessor of the perfect set of natural teeth is accustomed to being accused of wearing "false teeth." Is this because so many of the artificial sets supplied to patients are made so regular?

Why it is that irregularity in some form or degree is the almost universal heritage, why there is apparently not room enough in the jaws for all the teeth to be perfectly aligned, is not entirely explained by the "crossing of type"; the placing of teeth in jaws too small to contain them. Part of it, and perhaps the most important part for the dentist to consider is unquestionably due to Nature's tendency to diversity, and to her infinite resources for producing it. To these quite likely are to be traced the slight irregularities of the teeth to be found in even the purest race strains.

Too Great Regularity an Evil

When we see irregularity the rule in Nature, why is it that the demand for even, regularly aligned artificial dentures, so preponderates over the call for those in which irregularity is made manifest? It cannot be from a desire to simulate Nature's work, for, as we have seen, the possessor of a perfect natural denture has to get used to hearing her (it is among the ladies that this sort of perfection is most observable) treasure denounced as artificial. If it springs from a desire to improve upon Nature, it is a wasted effort, for this is a case in which improvement, for obvious reasons, is not desirable, and where, consequently, the effort fails. The one certain result is to call attention to the artificiality.

Point of Departure

In assembling porcelain teeth in their proper positions in an artificial denture, obviously there must be a point of departure, a base of operations, as it were. The most convenient point for this purpose is in an upper denture, for instance, on the median line of the face, where it crosses the line of the arch. The line A, Fig. 1, corresponds to the median line. The central incisors are arranged at either side of the point of departure, turned so as to form the commencement of the curve of the arch, and labiolingually inclined or varied from the exact vertical as may be required by the occlusion of the lower jaw, etc. The facial line, in conjunction with the median line, determines the amount of this inclination. In normal cases a line from the gum-margin to the cutting-edge should be almost or exactly vertical.

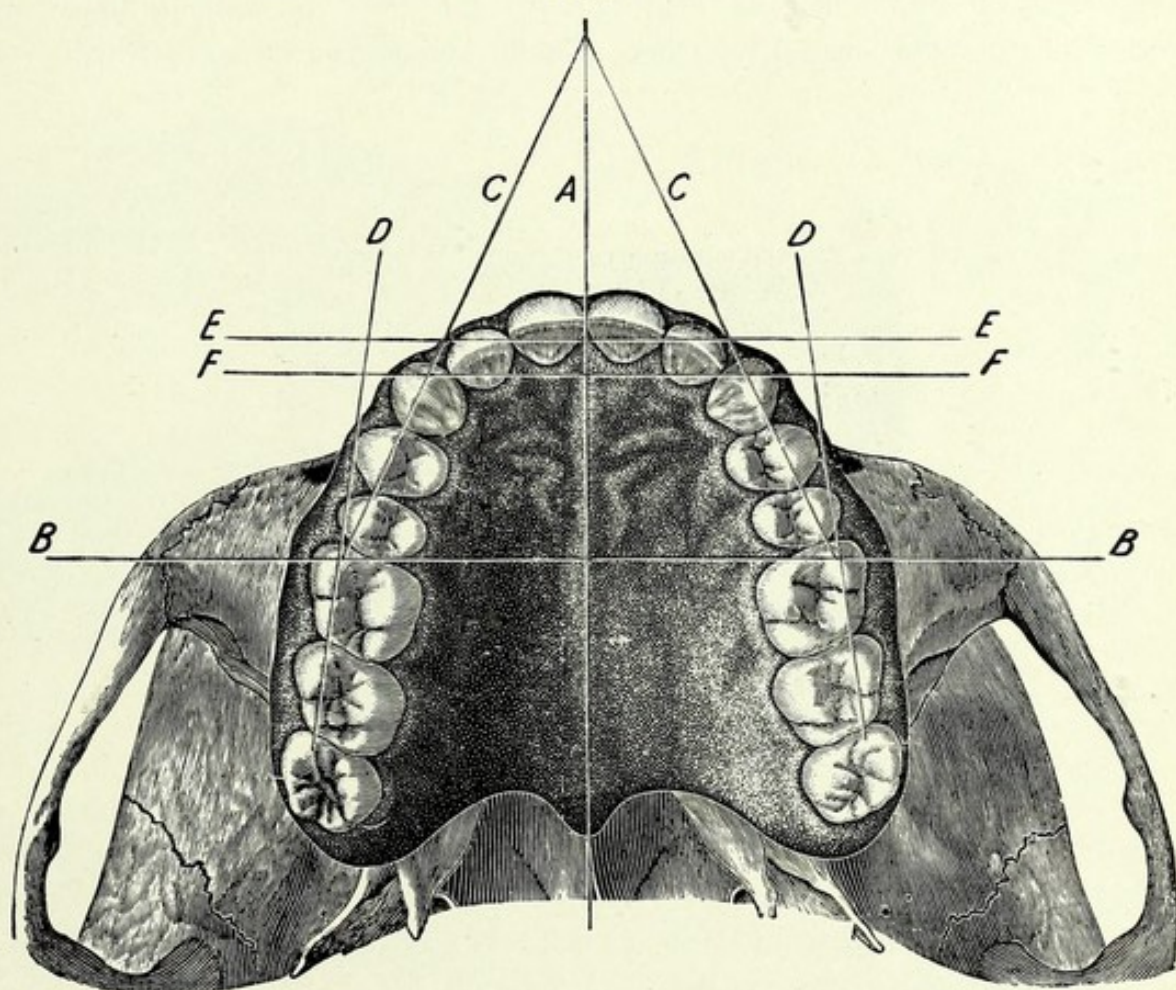
Fig. 1 is an engraving of an exceptionally fine natural set of teeth, made for the purpose of illustrating the proper alignment of the teeth in the arch.

Arranging the Teeth in the Arch

The centrals are slightly rotated to the right and left, the extent of the rotation being indicated by the line E, drawn at right angles to the central line A. The right

and left laterals are turned at a greater degree to play their part in forming the arch of the six anterior teeth, the amount of rotation being represented by the space between the lines E and F, which are parallel. This rotation may be modified to suit the taste of a prosthetic operator, or in imitation of an individual set; or it may be increased so that the laterals overlap the centrals. In most of the arches formed by Nature it is found that the position or the angle of rotation of the lateral teeth of the two sides varies. That of the left may be greater than that of the right, or *vice versa*. The cuspids are rotated enough to bring a line drawn centrally through the crown at an angle of nearly forty-five degrees to the line A. This arrangement, with the shape of their

FIG. 1



labial face, tends to conceal their width. The spear point of the cuspid and the buccal cusps of the first and second bicuspids are on the line C, C, while the anterior or buccal cusps of the first and second molar are on the line D, D.

Springs of the Arch

The cuspid tooth and the anterior buccal cusp of the first molar form respectively the primary and secondary springs of the superior arch; that is, each marks a decided change in its direction. The neck of the cuspid should be prominent, while the cusp or crown end should incline toward the palate. This prominence of the neck should be extended across the labial aspect, forming what is known as the cuspid prominence,



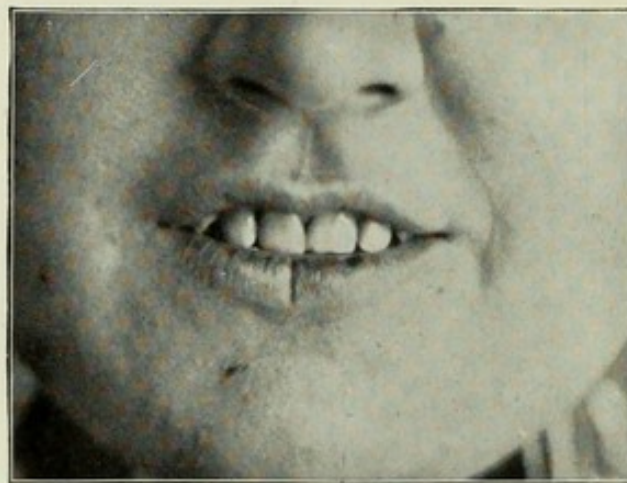
the juncture of the labial and buccal aspects of the denture. The prominence in the labial and buccal aspects, if properly placed, will greatly assist in restoring the expression of lost features caused by the alveolar absorption after extraction of the teeth.

The "natural" forms shown at page 109 and the "lapping" laterals shown at pages 108, 168, 169, are especially adapted to the production of variations in alignment.

Elongate Centrals

Besides the irregularity of alignment which is so commonly found in natural dentures, and the judicious reproduction of which plays so prominent a part in the construction of an artistic artificial denture, there is at least one more feature of natural teeth which demands special reference. That is the common variant in which the upper

FIG. 2



A photograph of a girl 20 years of age

central incisors are so much longer than the laterals that their free ends project below those of the laterals; in many cases to such an extent as to give the appearance of a step. For convenience, we call these elongate centrals.

This conformation has sometimes been designated "drooping centrals," but elongate expresses the condition better. It is quite often seen in young women, in some cases the incisal ends of the centrals being visible even when the lips are at rest. In talking or laughing in these cases the entire tooth is sometimes exposed. Fig. 2 represents a case showing some of the features of this conformation. The subject is a girl of twenty years. The incisors are exposed about two-thirds of their length, the projecting tips of the centrals just touching the lower lip, while the spear-like points of the cuspids are readily seen. This is a beautiful example of the slight irregularity with which nature varies and distinguishes her handiwork; the centrals are slightly pitched toward the median line.

Artificial Elongate Centrals

Fig. 3 shows an artificial denture with the elongate centrals. Mold No. 228, used in this construction, is one of the artistic sets, copied from nature. The wood engraving of the three front teeth gives a somewhat different impression from that of the mounted set, which shows the proper alignment. This was not made to imitate the natural set seen in Fig. 2, though it does reproduce some of the features, and might readily have been made a close copy.

Fig. 4 is a reproduction of another artificial denture, made from No. 224, also a

FIG. 3

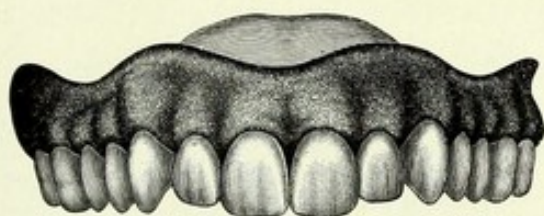


FIG. 4

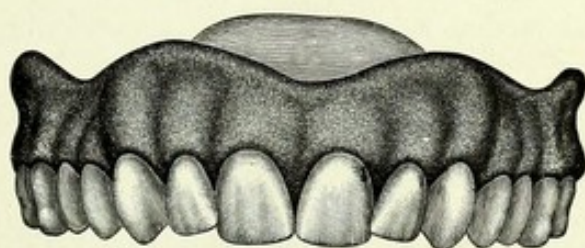


FIG. 5



“natural” mold. The centrals are wider and longer than those used in Fig. 3, and their cutting-edges are pitched toward the median line. The laterals are considerably rotated, and slightly overlap the centrals. The cuspids have an inward pitch, producing a considerable fullness of the gum over the neck. This last is sometimes necessary for the proper restoration of the features. Mold No. 213 (Fig. 5) is similar.

The “natural” forms shown at page 109 are excellently adapted to the production of “elongate” centrals in an artificial denture. In Gum Sections a line is shown on pages 169 and 170 in which this feature appears.



SOME PRACTICAL ADAPTATIONS OF ARTISTIC PROSTHESIS

Natural Forms

The advent of celluloid as a base for artificial dentures, with its close imitation of gum color, suggested to us the desirability of a still nearer approximation to natural forms of teeth than had before been attempted or thought possible. We aimed to make a line of molds reproducing natural forms and peculiarities so exactly that even the experts should be puzzled to decide that they were artificial when properly mounted and placed in the mouth. The result is seen in the molds 202 to 231, illustrated on page 109, which, from their origin, are commonly known as "celluloid" or "natural" forms. They are in reality for vulcanite work. The only reason why they have been called "celluloid" molds is because their production was suggested by the introduction of celluloid.

The strong points of these forms are their close imitation of the natural organs, and the resulting mobility of arrangement and alignment. Take, for example, one feature. They have a distinct neck, and this neck is of rounded form. Besides giving a stronger hold for the vulcanite, there is almost no limit to the variety of positions in which each tooth can be placed with relation to the arch, and without in any way appearing incongruous.

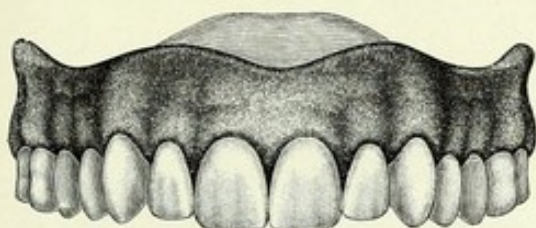
Adaptability

As illustrating the marvelous adaptability of these molds to artistic prosthetic dentistry, we reproduce illustrations of eight different dentures made from one mold, No. 213. We submit that these dentures differ in many cases so widely from one another that it does not seem possible that the same mold could be used for all. The idea is growing in prosthetic dentistry that the denture for each patient should harmonize with that patient's individuality, and differ from the denture made for any other patient. These teeth afford the means to that end.

The Aging of Artificial Teeth

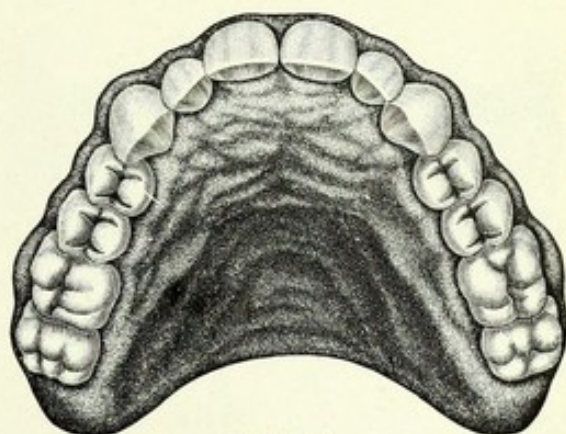
A statement which seems to voice a quite general impression on the part of dental practitioners is found in the "American System of Dentistry," Vol. II, page 975, as follows: "Manufacturers of Porcelain Teeth work on the principle that the teeth should

PLATE 1



MOLD 213

PLATE 1



MOLD 213

PLATE 2



MOLD 213

Plate 1 represents the sanguineous temperament, as to the shape, outline, and alignment of the teeth, and the general form, "well proportioned, abounding in curved or rounded outline; cusps rounding."

In Plate 2 there is a strong prominence of the central incisors, with the laterals inclined forward and standing behind the centrals. The arch is somewhat contracted from the cuspids forward.

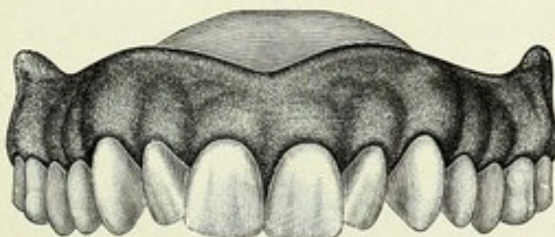
PLATE 3



MOLD 213

In Plate 3 there is less prominence of the centrals, the laterals pitched forward enough to overlap the centrals at the tip ends.

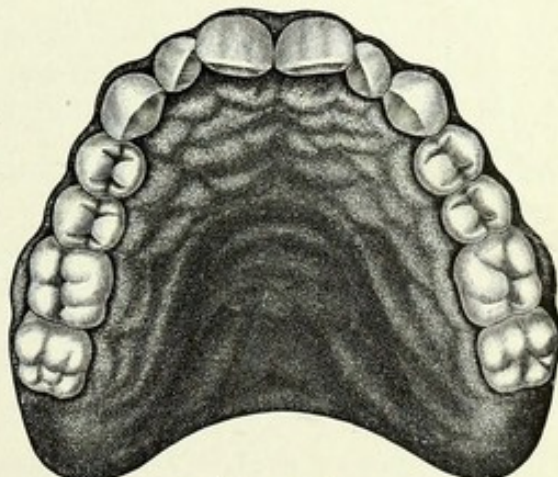
PLATE 4



MOLD 213

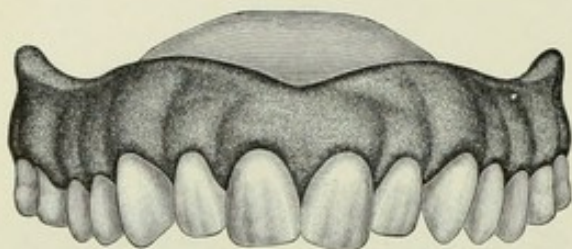
In Plate 4 the centrals are rotated toward the median line and depressed at the incisal ends; laterals rotated to expose their anterior approximal edges, with a pitch toward the centrals.

PLATE 4



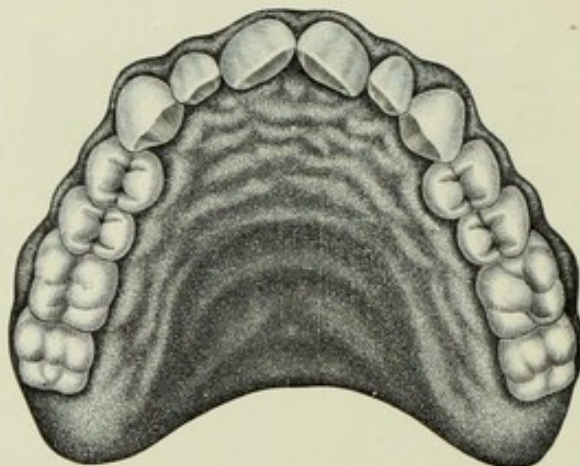
MOLD 213

PLATE 5



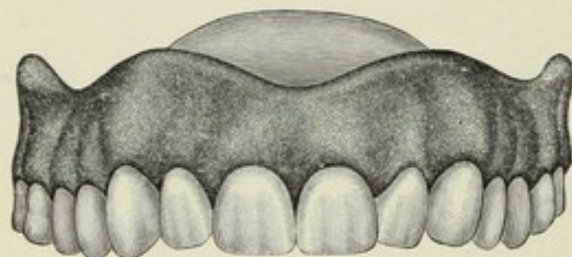
MOLD 213

PLATE 5



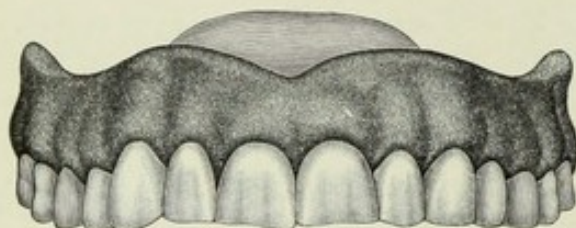
MOLD 213

PLATE 6



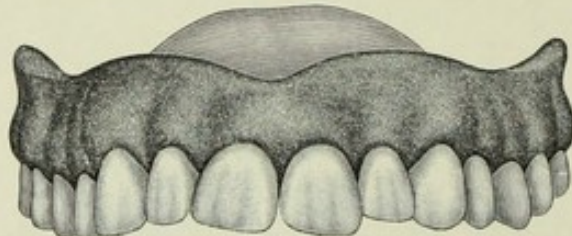
MOLD 213

PLATE 7



MOLD 213

PLATE 8



MOLD 213

Plate 5 shows a directly opposite condition from that seen in Plate 4. The centrals are rotated to form a V-shaped or pointed arch, and with the laterals pitching toward the facial line; the cuspids are so placed as to narrow the arch at the point of their insertion.

Plate 6 shows a common alignment of the incisors, the laterals pitched slightly toward the centrals. The occlusal ends of the teeth are ground a little to show slight wear, as at the age of twenty-five or thirty years.

Plate 7 is an example showing considerable wear, representing the condition of the teeth at, say, fifty years. The teeth are regular in alignment.

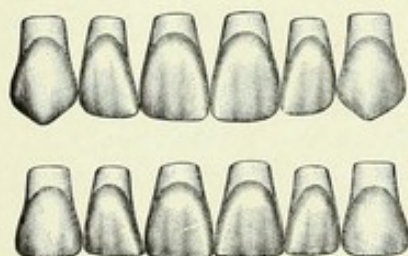
Plate 8 shows the incisors forced out of their proper alignment by the opposing teeth, a condition quite often found after forty. The teeth are worn by use, enough in the case of the bicuspids and molars to allow the lower incisors to wedge the uppers forward as shown. In this and the two previous examples the teeth are supposed to be ground by the dentist.

be made to look as youthful and beautiful as possible." This statement, while true in the lateral sense, is decidedly misleading when made, as it is in the place quoted from, without qualification. There is an irrefutable reason why Porcelain Teeth, as sold by the manufacturer, must "look as youthful and beautiful as possible." We know that most artificial dentures are required for patients of an age when more or less wear is found upon the natural teeth, say from twenty-five years up. On the other hand, teeth are not infrequently required for patients under this age, when naturally there would be so little wear as to be scarcely observable. We have to provide for all conditions. It is impossible for us to know exactly the degree of wear which should be shown in this or that denture. The striking of an average would be a manifest absurdity. The only practical way is to make the tooth as near like the unworn tooth as may be, so that it can be used for the youngest case; when used for one requiring the showing of wear from mastication, the practitioner, aided by the corundum wheel, can provide the proper "aging." Another reason which cannot be gainsaid is that if the Porcelain Teeth of the manufacturer did not have this youthful appearance they would remain in his possession; very few would buy them. The demands of the patients here, as in colors, too frequently dominate the judgment of the dentist.

Some Practical Examples

These "natural" forms are especially adapted to the imitation of natural conditions. An example is shown in the illustrations herewith. The number of the mold is 203. The two cases are described by Dr. W. W. Evans in the chapter on "Celluloid and Zylonite," contributed to Essig's "American Text-Book of Prosthetic Dentistry," page 567, as follows:

FIG. 690



"Fig. 690 represents two sets of six front teeth from the same mold, one as it leaves the mold and is found in stock; the other showing alterations by grinding to suit a different case. Figs. 691 and 694 represent two sets of mounted teeth, both from the same mold (shown in Fig. 690). Fig. 691 represents a younger mouth than is often found requiring a full set of artificial teeth, but in order to show the different characteristics of youth and age which may be produced from the same set of teeth, the model

of a denture of a young lady of about eighteen years of age was followed, reproducing the slight irregularities existing in her case. The artificial teeth illustrated in Fig. 690 were so well adapted to the case that very little grinding was necessary, even the cusps of the bicuspid and molars scarcely requiring to be touched by the corundum wheel, thus preserving the original form of the artificial teeth almost intact. The cutting-edges of the original set have the rounded appearance so generally found in harmony with

the general physique at this age, the serrations found at an earlier period having all disappeared.

"Fig. 694 shows a view of a set of teeth for a male fifty or sixty years of age. It is somewhat of the Celtic order, though not what would be considered a pure type. This case has a 'square bite' upon the cutting-edges, producing slight abrasions, and with just enough irregularity to produce a pleasing effect. The gums show slight recession from the necks of the superior teeth, more marked in the inferior incisors and cuspids, and

FIG. 691

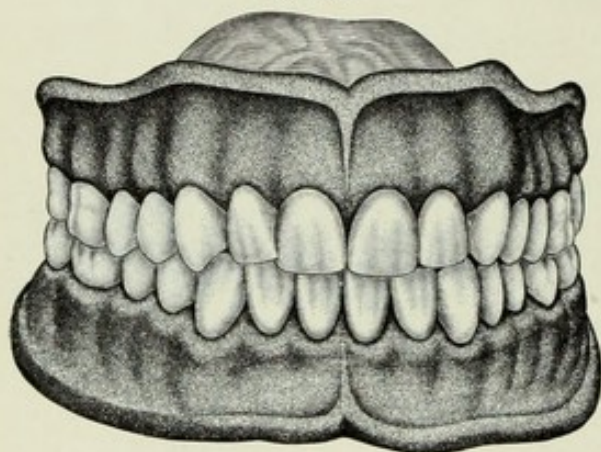
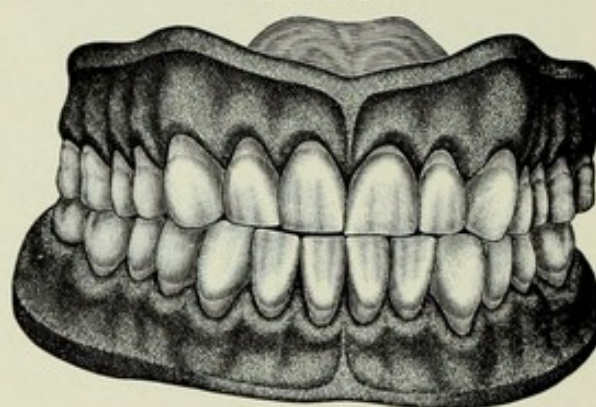


FIG. 694



accompanied in the latter with a congestion of the gums, making the festoons more prominent than normal. The prominence over the superior cuspids will strike some as being too great, but considering the inclination of the roots and the contraction of the arch back of these teeth, it is not too marked."

In addition to these natural molds on page 109, the Plain Vulcanite (page 108) and Gum Sectional molds (pages 168, 169, 170) designated as Lapping Laterals and Elongate Centrals are helps to artistic work.

SOME PROFESSIONAL AND COMMERCIAL THOUGHTS RELATIVE TO ARTIFICIAL TEETH

BY V. WALTER GILBERT, D.D.S.*

FREQUENTLY we read papers and listen to discussions upon the subject of "artistic dental prosthesis." The general trend of essayists is to deplore the state of the art and to plead for more attention to and the exercise of more skill in the making of artificial dentures. It is impossible to deny that improvement can be made in this branch of dentistry, but with all the effort made to bring about such improvement we continue to observe the youthful "picket-fence" denture in the mouths of the well-to-do, who can afford the best, as well as in the mouths of those who must think of the cost of the services they are to receive. There must be some good reason for this condition, and a consideration of the laws of supply and demand in this connection will aid in determining that reason.

Supplying artificial dentures to the public is in certain respects much the same as supplying it with any other needed commodity. Some people will demand a denture made from the best materials put together with the greatest artistic skill, others want good materials put together with reasonable skill, and still others will demand useful dentures without regard to esthetic requirements. The weight of the purse often has a great deal to do with the character of the demand; the demand for quality growing less as the purse grows lighter.

The Artistic Element

Art in any trade or profession cannot exist unless there be material encouragement for its support. Few dentists practice solely for the benefit of the art, but many practice for the benefit of the private bank account. There are men in the profession who cater to the wants of artistic patrons, and it pays them to do it simply because they have labored for and established a reputation for first-class work. The cheapening of the cost of an artificial denture does not necessarily involve a corresponding debasement of its artistic excellence, for there is ample room for the production of artistic results even in the use of inexpensive materials. The ignorance of the patient in those matters should therefore offer no excuse for the lack of artistic work upon the part of the dentist. The education of the public to a sense of appreciation for dental services must be brought about by the dental practitioner. In every community will be found people to appreciate good, bad, and indifferent work. At the present time indifferent

**Dental Cosmos*, Jan. 1903

results are accepted by the majority of people requiring artificial dentures because the majority of dentists use indifferent methods in their prosthetic work.

The opportunity to create a demand for practical artistic dentures was never better than at the present time. The world in general is clamoring for the best that the world can supply, and the demand for high-class dental work is no exception. Some of our old teachers and those in the high places may object to the comparison of trade methods with professional services, but, objection or no objection, the same principle is involved in both cases, and if our patrons are to appreciate the difference between good and bad services we must explain and show that difference.

Ignorance among our patients regarding the character of work required is painfully apparent, and it should be our duty to explain and demonstrate the importance of securing honest, intelligent service. The average person is gifted with intelligence, and when the importance of having an artificial denture intelligently and skilfully made is explained to him, his judgment can be appealed to. Placarding the walls and fences with the statement, or rather the lie, that a satisfactory denture can be made for \$2.98, is not an essential for financial success in the practice of prosthodontia. Placard advertising will always appeal to certain classes of people; the fact that such methods succeed clearly demonstrates that ignorance prevails, and incidentally shows a fertile field in which dental education would prove productive of much good.

Artistic prosthesis has appealed to the few, and will continue to appeal to the few just as long as this branch is neglected by the practitioner; there will never be a demand for skilled services until it is created by the practitioner himself.

The Commercial Factor

Catering to the public is an art which has at all times engaged the attention of commercial men. Commercial minds recognize an excellent field for the display of their talents in the practice of dentistry, and so we find these commercially inclined dentists serving all sorts and conditions of patrons. The question of "supply and demand" is the vital point upon which depends the production of anything which is offered for sale. It matters not whether we refer to professional services or to trade products, the demand in each case will influence the supply. Every city and town has its first, second, and third-class professional and commercial citizens, and the second or medium class will be in the majority, because the majority of the population will belong to the medium class of people.

The money-spending people of our population belong to the great middle class, and it is with this class that the average professional or business man conducts his calling. The observant man will certainly acknowledge that the average dentist does not cater to the *élite* or artistic members of society.

What does the public know about the "temperamental characteristics of teeth in relation to dental prosthesis"? What does it know about the importance of ridge-lap, bite, and occlusion? and how many dental practitioners take the time or trouble to explain these things to their patients? If Mrs. A wants a pearly set of teeth just like Mrs. B's, she can have them. What difference does it make to the money-maker that Mrs. A is a large, blonde lady while Mrs. B is a diminutive brunette?

The code of ethics, unfortunately, appeals to many practitioners only when a competence has been secured; the average man looks upon the code as a theory and upon his relation to the public as a condition, and so we find the great mass of dentists taking



a practical view of conditions and giving the public what the public thinks it wants, irrespective of what it ought to have.

In view of this state of affairs, let us see how it affects the manufacture and the demand for artificial teeth. It is frequently the subject of complaint by essayists and speakers who deal with this topic that the manufacturers are to blame for supplying teeth so poorly conceived and executed as to be impossible of artistic treatment by the dentist.

The Standpoint of the Manufacturer

It is well to start out with the understanding that the manufacturers of artificial teeth are commercial men; they are in business to supply teeth which will give the greatest satisfaction to the greatest number. They must make teeth which sell in quantities, and the particular forms which have the greatest sale are looked upon as the best of their production.

As far as supplying teeth is concerned, the manufacturer is just as willing to make "natural looking" specimens as he is to make "porcelain beans." What beneficial results can possibly accrue to a manufacturer who endeavors to force upon his customers something which they do not want? Commercial men are too shrewd to pursue any such policy, the necessities of the case require them to work upon an opposite plan and to endeavor to produce what they know their customers want. The manufacturer's indication of what is wanted is shown by his record of sales. If an ill-shaped, deformed, ugly-looking tooth sells better than an ideal, perfect, and beautiful-looking tooth, is it not common sense to presume that the former is the popular product?

Let us first examine and then analyze some of the specific complaints which we hear relative to the manufacturer's product:

"Why do the manufacturers give us teeth which are perfectly formed, each tooth in a set being symmetrical in form with its mate?"

"Why is it that the mass of dentists use bicuspid and molars that are out of all proportion to the fronts in a majority of sets?"

"Why are we compelled to take such poor combinations of upper and lower teeth?"

"Teeth found in the mouth are not uniform in color; why, then, should the manufacturer compel us to accept sets of teeth all of one color?"

"Back teeth of the natural denture are much darker than the front teeth, but in our artificial substitutes the shade is just the same."

"Makers should be made to see to it that a fair proportion of plain plate teeth should have the pins placed lengthwise."

Taking up the complaints as they have been stated, let us analyze each of them not only from the professional side of the dentist, but from the commercial side of the manufacturer.

The Question of Form and Arrangement

First. "Why do the manufacturers give us teeth which are perfectly formed, each tooth in a set being symmetrical with its mate?"

Like the Yankee, let us answer this question by asking another: Is there any sound professional reason for wishing the manufacturers to mismatch artificial teeth? I

think not. It is true that Nature never used a micrometer gage in making the human teeth. It is true that the left central is seldom exactly like the right central; there is always a difference in the form of laterals, and so on,—each tooth in the denture has its individuality. The ravages of Nature have their effect upon the individual tooth. Mastication, lack of occlusion, disease, etc., each does its part in wearing and shaping the teeth until there is little more than type existing between pairs of teeth which were at one time closely mated in form. At the time in life when artificial teeth become a necessity, the natural organs would have been mutilated to such an extent that symmetry is destroyed. Admitting all this, nevertheless it is maintained that the artificial set which is to act as a substitute should not be mismated by the manufacturer. It is as unreasonable as it is undesirable to expect any manufacturer to make teeth which would be in accordance with the innumerable stages of wear and discolorations found in the human mouth. Individual cases must always require individual effort; modifications of artificial teeth must be made to suit the particular case in hand. It is desirable that artificial teeth continue to be supplied in their present form. If a dentist can purchase a perfect tooth of a type desired, it is possible for him to age and mutilate, with dental appliances, that artificial tooth just as effectively as Nature with her methods ages and mutilates the natural organs. The question of artistic teeth for individual cases is a matter entirely removed from the dental supply house.

The commercial reply to the first question is a good and short one: "Mismated sets will not sell."

Second, "Why is it that the mass of dentists use bicuspid and molars that are out of all proportion to the fronts in a majority of sets?"

This question can only be answered by the individual dentist, but in general we should presume that they do not consider the bicuspid and molars "out of all proportion," but are satisfied with the combinations which the manufacturer provides. If the question is meant to imply that dentists are obliged to use the combinations of posterior with anterior teeth as now supplied by tooth-manufacturers, then there is no basis of fact to verify the statement. In order to standardize their product, manufacturers of artificial teeth must necessarily have some rule for combining the "backs" with the "fronts," and these combinations are made according to the best judgment of practical men who have such work in charge. The men who are responsible for the manufacturer's combinations of posterior with anterior teeth never expected that their idea would meet with the approval of every dentist. Their idea was to make combinations which would meet with the approval of the greatest number. The fact that the mass of dentists persist in using the sets clearly demonstrates that the judgment of such men was good. If the bicuspid and molars are, in the judgment of an individual, "out of all proportion to the front sets," is there any law or any objection to prevent that individual from going to a supply house, making his own selection of anterior teeth from "sets of six," his posterior teeth from "sets of eight," and combining the two selections to make his upper or lower set of fourteen?

It is possible for any dentist to make his own combinations if he does not like the combinations made for him.

Third. The next question, "Why are we compelled to take such poor combinations of upper and lower teeth?" is similar in nature to question number two. We are not compelled to take the combinations of upper and lower teeth which the manufacturers supply. It is within the province of the individual to make his own sets from selections as before stated.



The Question of Color

Fourth. "Teeth found in the mouth are not uniform in color; why, then, should the manufacturer compel us to accept sets of teeth all of one color?"

Of course the teeth found in the human mouth are not uniform in shade any more than they are uniform in shape. Observant dentists discovered many years ago that there was a decided difference in shade existing between the different teeth in a denture, and for years past some artistic men have been making artificial dentures in which the shades of the porcelain teeth have been varied. The writer can well remember seeing Dr. W. G. A. Bonwill sitting at a tooth-counter picking out individual shades and forms of teeth to make his partial or complete sets. Dr. Bonwill recognized the fact that uniformity in shade was objectionable; he said that each case required him to make an individual selection, and he spent many an hour selecting "odd" teeth.

Dr. E. A. Royce some time ago read a paper before the Chicago Dental Society* in which he called attention to the variation in shading existing between individual teeth in the same denture. Dr. Royce made the first effort to standardize this variation by making the upper central incisors the basal or zero unit of his scale, and numbering the other teeth according to their divergence from this unit.

An examination of the table prepared by Dr. Royce is instructive and will prove of assistance to the artistic dentist when making a selection of porcelain teeth for a denture. All such observations of natural conditions are essential to the dentist who expects to disguise his artificial restorations, and should clearly demonstrate to the prosthodontist that he should make his own selection of individual teeth.

It is rather difficult for the writer to understand how a dentist who really wants to make an artistic piece of work can expect to find in the stock of a manufacturer a set of teeth entirely suited for a case in hand. Since we recognize the fact that the individual teeth composing a denture are of various forms and shades, we should observe still further that such variations are not uniform in the natural dentures of any two individuals. If manufacturers were to attempt to mismatch shades in their artificial sets, such matchings would not meet with the approval of artistic patrons and the mass of dentists would not think of purchasing such sets. Is it not possible under present methods for any practitioner to make sets of teeth according to his own ideas? Artificial teeth can be purchased as odd teeth, in pairs, sets of four, six, eight, sixteen, fourteen, or twenty-eight. With the privilege of making purchases as he desires them, what is there to prevent a dentist from making his dentures from single odd teeth? It certainly seems that the manufacturer has taken all things into consideration and given the profession every chance to make use of its artistic talents of selection.

Arrangement of the Pins

Fifth. We come to the last question or rather statement in the list: "Makers should be made to see to it that a fair proportion of plain plate teeth should have the pins placed lengthwise."

The best way for the profession to have the "makers see to it" is for the profession to make the demand for plain plate teeth "having the pins set lengthwise." For the purpose of determining whether there is any justice in the above statement, the catalog

* *Dental Review*, April 1901.

of a leading manufacturer was consulted, and it was determined that out of 195 forms of plain teeth for Metal Plate, Crown, Bridge, and Vulcanite work, 139 could be secured having the "pins set lengthwise." The question of supply and demand is plainly demonstrated in this instance, and shows that "cross pin" teeth are in evidence in the manufacturer's stock simply because of the demand for them.

A Matter of Education

The development of "artistic prosthesis" is in the hands of the dental profession, and its advancement is largely dependent upon the ability of the profession to educate its patrons up to an appreciation of its requirements. If the dental profession does not demand what a few idealists think it should demand, the reason lies with the profession. Make it sufficiently conclusive to commercial men that there is a paying demand for anatomical artificial teeth and the teeth will soon be in evidence.

The plea for more attention and the exercise of more skill in the construction of dentures has been made by able men, yet few have responded to the call. The reason is undoubtedly due to the commercial conditions in dental practice which have been cited. It is believed, however, that a course of procedure can be definitely outlined which will enable the artistic dentist to create a demand for his services. Without touching upon the important factors of adaptation, articulation, and enunciation, the suggestions will be confined to selection and arrangement of the teeth.

Before attempting to specialize in this branch of dentistry, the practitioner should make himself familiar with the various temperaments and the physical characteristics which distinguish one temperament from another. Carefully prepared charts on temperament have been devised by observant men and published in the "American Text-book of Prosthetic Dentistry." (See also page 24 of this catalog.) These temperament charts have classified not only the physical characteristics which denote the temperament of an individual, but have also classified and described the shape, color, texture, arrangement, and articulation of the teeth which a given temperament requires. By making use of a temperament chart, the artistic dentist can begin the construction of a denture by carefully studying the physical characteristics of the patient, deciding upon the temperament and consulting the chart to ascertain the character of artificial teeth required.

For example: A patient who would answer description No. 12 (nervo-lymphatic) would require teeth according to description No. 12 (nervo-lymphatic). Having such a guide to aid in the selection is invaluable and assists greatly in establishing a base upon which to work out the individual requirements for a case in hand. While the temperament chart is a valuable aid to the beginner in this class of work, a close study of each subject is recommended so that the practitioner can depend upon his own judgment and ability to recognize the elements which will enable him to attain harmonious results. In addition to becoming familiar with the various temperaments and their requirements the dentist should make himself familiar with the product of the manufacturer. The catalogs and stocks of the leading manufacturers have been intelligently and systematically arranged in such a manner as to facilitate intelligent and quick selection. Much time and energy which are now wasted can be conserved at the counter and in the laboratory if the subject of selection be properly studied.



Some Suggestions

After the artificial teeth have been selected and "set up" in wax, every case should be tried in the mouth. An effort should be made to have the patient laugh, smile, show anger, sorrow, etc., so that if need be an individual tooth can be twisted, ground, or lengthened to harmonize with the facial features.

One of the greatest obstacles encountered by the dentist who desires to practice artistic prosthesis is the lack of appreciation of artistic conditions on the part of a patient. The patient should not be permitted to exercise a wrong influence in the arrangement, color, or form of the teeth during this process of the work. A difference is generally found to exist in the minds of patients regarding artistic arrangement. In many cases this difference exists to such an extent that the dentist feels obliged to make a change which he feels to be wrong. Patients are seldom qualified to pass judgment upon the character or the arrangement of artificial teeth, notwithstanding the fact that they think themselves eminently qualified. Women are especially inclined to insist upon having dentures in which the teeth are light in shade, regular in form and alignment,—and there are things easier to accomplish than convincing a woman against her will. The ability of a dentist to demonstrate his talent and appeal to the judgment of the patient marks the difference between the purely mechanical and the artistic practitioner.

S. S. WHITE PORCELAIN TEETH IN SOLDERING AND CASTING OPERATIONS

How to Avoid Accidents

ALTHOUGH it is customary to blame many of the accidents in soldering operations upon the teeth, as a matter of fact, such accidents, when occurring with S. S. White Porcelain Teeth, are almost invariably chargeable to some other cause.

One of the most important claims for our teeth, a claim which has been maintained persistently for more than forty years, is "Resistance to changes of temperature, as ascertained by the process of soldering, in the manufacture of new dentures, or in the repair of old ones." This means that our teeth, because of the high temperature required to fuse them, are immune to changes in texture or color from the soldering operations; their fusing temperature is so far beyond that of even pure gold that the heat required in soldering backings, etc., cannot affect them. It follows, then, that changes occurring during soldering are not properly attributable to the teeth, but are due to other causes which as we shall show are readily avoidable.

Discoloration

Much of the so-called discoloration of porcelain teeth is no discoloration. It arises from the fact that the porcelain being translucent, the color of the backing is reflected through it, causing an apparent change of shade. The matter is easily tested. Take say five central incisor facings, back four of them respectively with platinum, 24-k. gold, 18-k. gold, and platinoid or Victoria metal, leaving the fifth unbacked. If now the five be placed on a wax card it will seem that the shade of each varies from all the others. To avoid this apparent change of color, the effect of the backing should be discounted in the selection of the tooth, bearing these facts in mind:

Any backing will apparently darken the tooth; platinum will cause a bluish reflection; pure gold, a yellowish reflection; while the reflection from Victoria metal, platinoid, or German silver, will be of a grayish tint.

Breaking of Platinum Pins or Posts

Platinum Pins made as ours are are always tough. Their breaking during laboratory operations, is evidence of their having been exposed to some influence which transforms the tough, fibrous metal into a brittle, crystalline substance. Platinum is not oxidized in the air at any temperature, nor is it attacked by any single acid; yet many substances attack and combine with it at comparatively low temperatures.

The caustic alkalies, alkaline earths, nitrates, and cyanides, and especially the hydrates of barium and lithium, attack platinum at a red heat, although the alkaline carbonates have no effect at the highest temperatures. Sulfur, in the absence of alkalies, has no effect, but phosphorus and arsenic attack platinum when heated with it.

Direct contact of platinum with burning charcoal should be avoided; the silicon reduced from the charcoal ash unites with the platinum, making it brittle and liable to fracture. Contact with easily reducible metals, is especially dangerous at high temperatures, as alloys with platinum having a low fusing point are readily formed.

The breaking of platinum pins or posts is usually due to some of the influences here noted. Base-metals as iron, antimony, tin, bismuth, lead, zinc, or cadmium, are found in some of the investment materials and solders in use. Under the heat of the blowpipe, they alloy with the platinum, making it brittle or "rotten." Gold solder which contains an excess of zinc or cadmium will produce the same effect; as will carbon from unburned wax or from the gas of the flame. Some waxes contain resinous particles or other impurities which under the flame are transformed into carbon; the remedy is to melt out the wax with boiling water. When a gas flame is used for soldering, make sure of a good supply of air in order that there shall be perfect combustion, and do not permit the inner cone to come into contact with the metal. If after soldering the teeth are boiled out or pickled in acid, they should be reboiled in water or washed in alcohol to remove every trace of the acid.

Some cements contain substances in composition which under high heats combine with platinum making it brittle. For this reason we do not recommend cements for setting up teeth for soldering.

Breaking and Checking of Teeth

Failure to guard against the effect of the differing heat expansibility and conductivity of the various materials concerned is probably the most frequent cause of the breaking and checking of the porcelain in soldering teeth. The materials are commonly the porcelain of the tooth, the platinum of the pins, the platinum or gold of the backing, the solder, and the flux, usually borax. Porcelain is the lowest of all in both respects, and being of a brittle nature is the one most likely to suffer when the greater expansibility and contractility of the metal is exerted against it.

This action may occur from various causes. For example, borax flowing under the backing, will check or, in extreme cases, break the porcelain, as will solder under the same circumstances; if in making the backing it be extended over the incisal edge and the heel of the tooth in such wise as to "box in" the porcelain, the latter is likely to be broken, unless extreme care is taken in heating up and cooling down; the pins if heated quickly may split the porcelain by their expansion.

The rules given on the following page carefully followed out will prevent accidents from such causes:

Keep the teeth wet while grinding to prevent the generation of heat.

Clean off all wax from the teeth before placing the backing.

Make the backing fit the facing closely.

Invest so that the porcelain and the edge of the backing shall be absolutely covered.

Dry out the investment slowly and thoroughly; then heat up very slowly, scrupulously keeping the flame away from the backing until the case is heated sufficiently to melt the solder; then apply a "brush" flame only.

Cool the case down very slowly,—too sudden cooling will cause checking, or in case the porcelain is "boxed in," actual splitting. As a precaution, cover the soldered case so no draught of air can strike it until cool enough to handle.

Sometimes teeth are split in forcing the backing on the pins. To avoid this make sure that the pin-holes are of the correct size and at the proper distance apart.

Care also must be exercised in the way the backing is fixed to the tooth. There are various methods of doing this: sometimes the pins are bent over and pressed down upon the backing; again, they are cut off close to the backing and riveted down, or split with a knife blade and forced down; still others are bent over with pliers, a method which is likely to bring a heavy leverage against the porcelain. All of these, unless done with care, are liable to cause checking which escapes notice until after the case is made up.

In conclusion, it may be observed that the construction of gold-plate artificial dentures and bridge-work, requiring the backing and soldering of porcelain teeth, involves the use of two high-priced metals, gold and platinum. It would be the part of wisdom to employ care in their manipulation, and to guard them against contamination. It is mistaken economy to use inferior materials, whether plates, solders, wax, or investment materials, because they cost less. Such a course can end only in disaster. We make and supply all the articles needed,—the porcelain teeth, the platinum plate, the gold plates and solders, the waxes, and the investment material, of the highest grade known to dentistry, and which have the approval of the great majority of skilful practitioners throughout the world. Properly manipulated, they will not fail to bring success.

Casting Against Porcelain Teeth

A very attractive phase of the gold casting process which has developed within the past two or three years, involves casting the gold directly against the porcelain teeth used. This process necessarily subjects the porcelain to a severe ordeal. While S. S. White teeth will unquestionably stand the test as well as or better than others, we cannot be responsible for accidents or failures resulting from such operations. We strongly advise against this branch of the casting process until the operator is thoroughly experienced and familiar with the fundamental principles and the technique of this new department of prosthetic work. Our booklet, "How to use the S. S. White Dental Swager," discusses the subject and teaches means for avoiding accidents.



A TOUR THROUGH THE TOOTH FACTORY OF THE S. S. WHITE DENTAL MFG. CO.

IT was Porcelain Teeth with which the late Dr. Samuel S. White began his business career in 1844. Porcelain Teeth through all the intervening sixty-seven years has been our most important product.

Starting in a small way, our tooth factory soon achieved pre-eminence through the high quality of its product, and today stands as the greatest in its line and as one of the leading industries in the world's work.

Its product is distributed wherever dentistry is known and is everywhere recognized for its excellence, which has won for it the name, "**The World's Premium Porcelain Teeth.**"

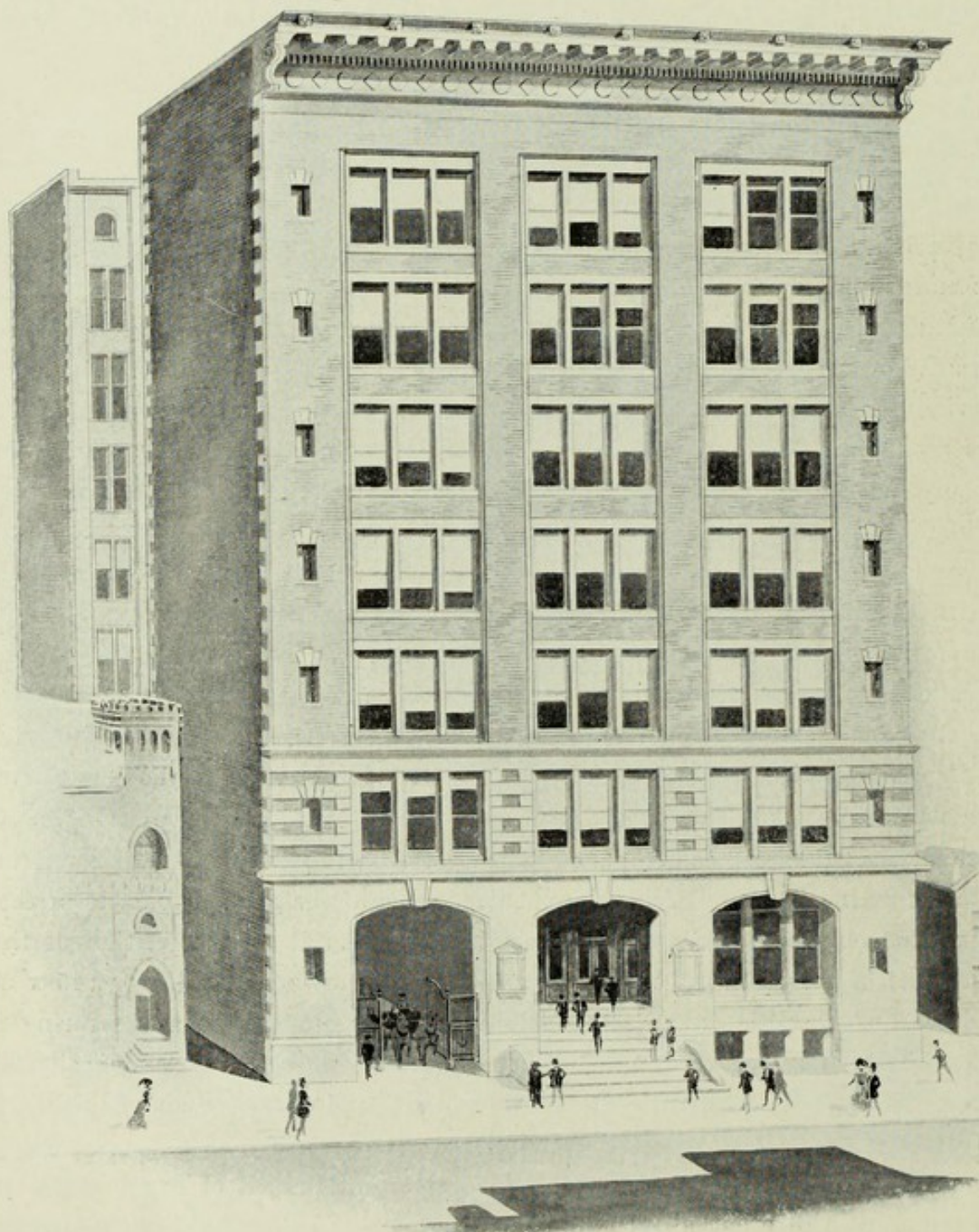
Many dentists have been conducted through the factory and have expressed their delight with the efficient system and high standard of manufacture maintained. Manifestly it is impossible for all our patrons to enjoy such a tour. These pages will present some of the salient features of the factory, with illustrations of the different departments, showing the first and subsequent operations in the making of porcelain teeth, and will prove interesting as well as profitable reading to those of our friends who have never been through the factory itself.

Before beginning the contemplated tour of the factory it would be as well to spend a few moments in a comprehensive statement of some of the general features of the building. In 1868 our tooth factory was amply housed when it took possession of the third floor and part of the basement of our present office and salesroom building (45 x 229 ft.) at Chestnut and Twelfth Streets, Philadelphia. Today our teeth manufacturing is done in what we term the Twelfth Street Factory, a building 80 x 127 ft., practically nine stories when the basement and attic are considered, and the major portion of this large structure is devoted to the making of Porcelain Teeth.

The steady and continuous growth of this important branch of our business strongly indicates that we will eventually be obliged to devote the entire building to the manufacture of Teeth.

This building, which is located within 200 yards of our main offices, was designed and constructed in accord with our idea that to secure the best manufacturing results you must afford the best manufacturing conditions. It is of the modern steel-frame type, as nearly fireproof as science can make it, and supplied with the latest electrically operated machinery and appliances.

The average height of the ceilings is 15 ft. Every work-room is perfectly lighted, heated, and ventilated, every employe works under conditions which encourage his or her best efforts, and our patrons reap the benefit in better-quality product. There are ample stairs and elevators, lavatories, retiring rooms, etc. Dust and fumes, wherever arising from



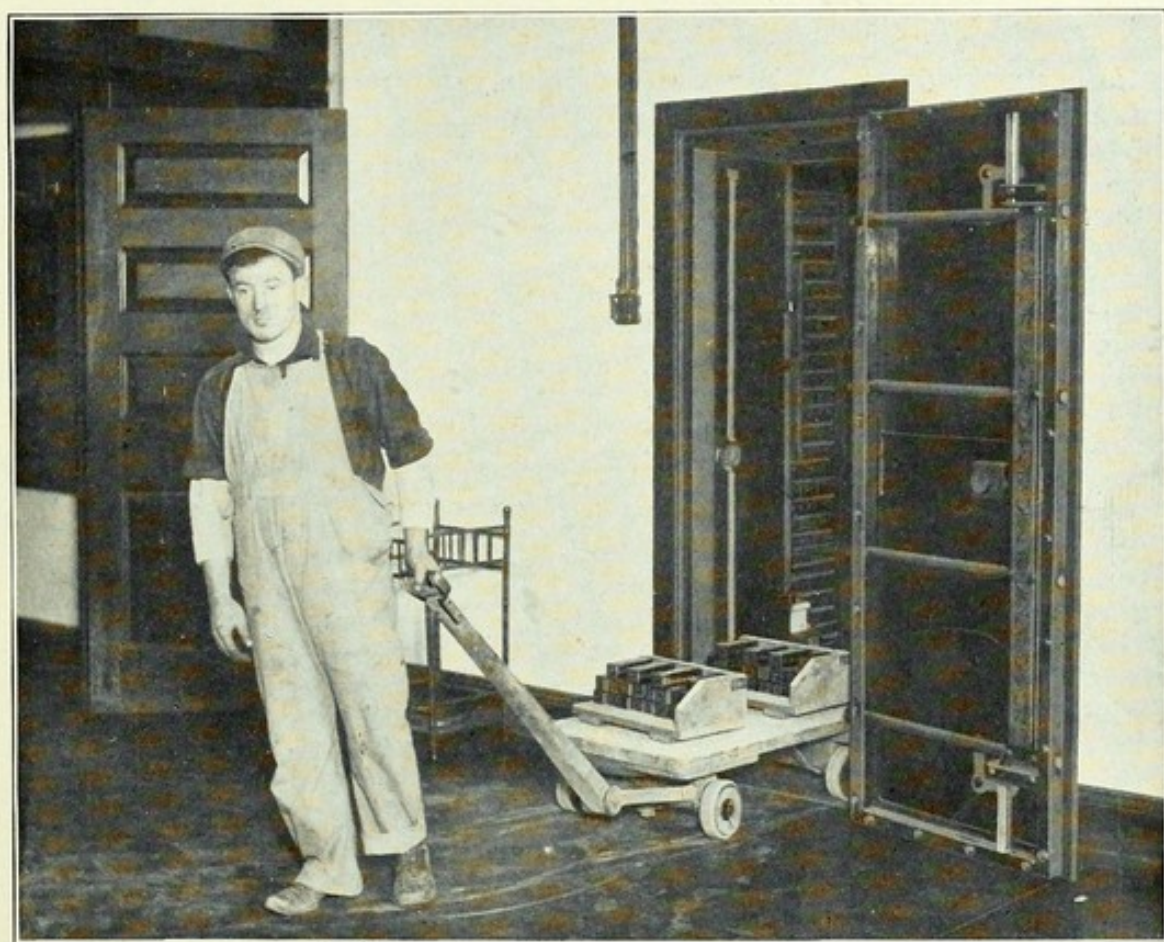
THE S. S. WHITE DENTAL MFG. CO.'S TOOTH FACTORY
Nos. 211 to 217 South 12th Street, Philadelphia

any operation, are carried off by adequate exhaust systems. Compressed air is available wherever needed.

The fire-protection system is elaborate. There are high- and low-pressure steamer con-

nections, with three vertical standpipes extending from basement to roof, each provided with fire hose and nozzle at every floor level. Steam up ready from year's end to year's end to operate, the fire pumps. An auxiliary fire-alarm system is in direct electrical connection with the city fire department, and the building is well supplied with fire extinguishers and fire buckets, always ready for immediate use. Last of all, a smoke-proof fire tower protects an ample stairway for the employes in case of need.

The building is lighted by its own electric plant, which also supplies power for the machinery. This electric plant is in duplicate,—boilers, engines, dynamos,—so that in case of disablement of the one in service, the other is ready to be "hooked up."



THE VAULT IN WHICH THE MASTER MOLDS ARE KEPT

It is in all respects a model factory, one from which you would expect a product of the character of its principal output,—the World's Premium Porcelain Teeth.

The Foundation of S. S. White Tooth Manufacturing

We shall begin our tour through the tooth factory, with a look at the vault which contains what we regard as the foundation of excellence in tooth-making,—the pattern or "master" molds. Were we conducting you personally through the factory, we should enter the vault, and you could see the molds themselves, tier after tier of them. As it is, the picture gives you a glimpse of the interior, affording you an idea of what the entire room would show.

THE FIRST STEP in the production of high-quality porcelain teeth is to equip your plant with a sufficient stock of master or pattern molds. These bear the same relation to the tooth factory as do the "shop patterns" of the tool system to the modern machine shop; they are the foundation of good work.

These master molds in our factory are used only to take an occasional clay impression for duplicating purposes. Being made of bronze metal they sustain no wear but remain unchanged, assuring our customers of the accurate reproduction of forms and sizes once fixed.

They are kept in a fireproof vault, whence they are only taken, as in the illustration, for a casting operation, the making of duplicate or service molds as it is called. They are classified and arranged accordingly. Molds for incisors and cuspids are made in two parts, the front and back half; while bicuspid and molars require in addition two crown-bars, which form the occlusal surfaces, and a key which holds them in place, thus making a five-part mold; and so on. To produce a full upper and lower set of Plain Teeth brings into service four molds, one each for the upper and lower fronts, one each for the upper and lower backs.

Here in these master molds, which do not enter into the actual production of teeth, serving only to assure uniformity of size and shape, an enormous capital is locked up. Some single master molds cost as much as three hundred dollars.

We thus at the very threshold of our plant establish a standard regardless of cost. Not how cheap but how good, is the keynote of all our manufacturing operations, and has been from the beginning.

Making the Molds

We now follow the lot of master molds which we have seen taken from their vault, to the mold-making department, to witness the next step, which is the provision of duplicates for the actual making of porcelain teeth. For this purpose clay impressions of the master molds are taken, and of these impressions castings are made in phosphor bronze. This metal is used because of its great toughness and durability. The duplicates are known as working or service molds. The castings in the rough are close approximations to the originals, and when finished the differences are measured in thousandths, our unit of measurement being .001 of an inch.

The finishing is done by skilled engravers, whose delicate touch is assisted in certain parts, where it will expedite the work, by die-sinker's machinery. Each master mold is provided with a metal standard for each tooth it contains, and to these standards a plaster cast from the duplicates must conform in every dimension.

Of course, these service molds wear. If not checked, this wear would result in time in a noticeable shrinkage in the size of the teeth made from any one of them. This is guarded against by constant inspection and "repairs," as the re-engraving to standard size, is called in which work a large force of skilled engravers is constantly engaged.

This system makes possible indefinite reproductions from the master mold, with the certainty that the reproductions will be kept close to the standard.

As evidence, witness the uniformity in size and shape of the product of any mold as shown in our stock.

The preservation of this uniformity is a powerful testimony to the care with which our service molds are made and kept up to standard, year by year, when you consider the great number of them required. Of the more popular molds, 25 to 50



A CORNER OF THE MOLD-MAKING DEPARTMENT

duplicates are put into service to fill orders promptly, and the total runs into the thousands. A pile of molds may signify much or little. Every one of ours represents a form which is accepted by the dental profession as a useful tooth and one which can be "set up" with little labor and time.

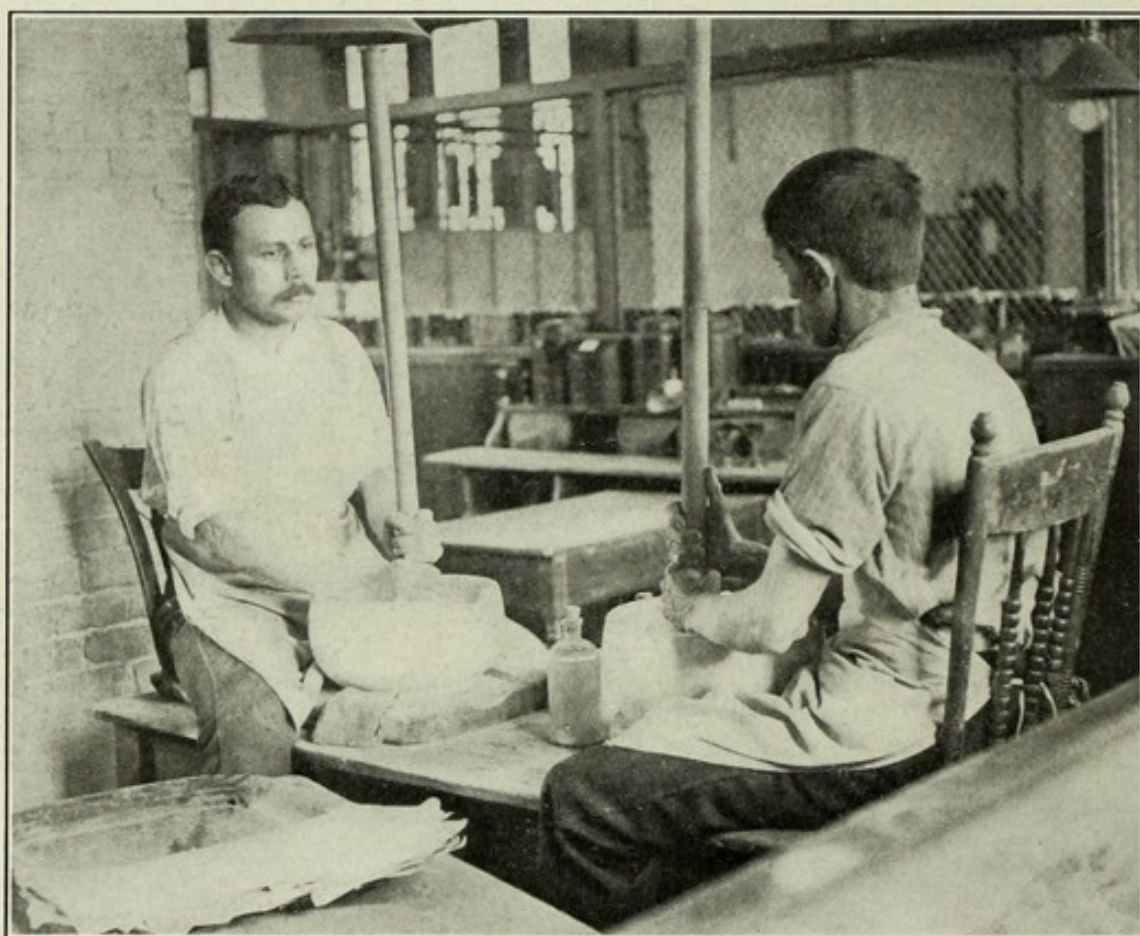
The Materials

which form the basis of the "body" porcelain used in artificial teeth are Feldspar, Silica, and Kaolin, to which are added various metallic oxids for coloring purposes. All three of these basic ingredients are widely distributed, and found in many forms and combinations, but many specimens are unfit for use in the S. S. White dental porcelain, for which only certain varieties, free from impurities, are suited.

To select these materials judiciously, so as to assure uniformity of product, requires experience; consequently, all supplies have to be passed upon by experts; and even then, after the processes of selection, picking, washing, crushing, grinding, sieving, etc., they are subjected to practical tests before being placed in the storage bins ready for use.

Mixing

the ingredients includes the incorporation of the feldspar, the silica, the kaolin, and the coloring materials in a homogeneous mass, ready for the molder.



MIXING THE MATERIALS

On their proper proportioning depends in large measure the character of the porcelain. Feldspar, which forms the bulk of the "body," is the source of translucency. It also confers fusibility on the compound, both silica and kaolin being practically infusible. Kaolin, which gives the mass its plasticity for working purposes, shrinks greatly under heat and becomes quite porous. The silica corrects the shrinkage to a considerable extent, and adds density and strength, while both feldspar and silica diminish the porosity. The materials for enamel differ from those which form the "body." Feldspar is still the predominating element, combined with flux compounded of silica, glass of borax and sal tartar, and coloring matter.



To make a "mix," the requisite quantities of each of the ingredients are accurately weighed according to the formula and then carefully combined in a mortar with water and a binding material. When taken out of the mortar and passed to the molders the mass looks like a lump of putty, which it also much resembles in its working characteristics. The somewhat antagonistic elements have been correctly balanced to form the compound which has been largely responsible for the leading position S. S. White teeth have for so long maintained. One of our claims for them is that weight and bulk considered they are the strongest Porcelain Teeth known.



PART OF THE MOLDERS' DEPARTMENT

We have now shown you the tools with which we work in making S. S. White Porcelain Teeth, and have given you an idea of the care taken to give these tools the highest efficiency. We shall next show you the actual processes by which the teeth are produced. Our teeth, let it not be forgotten, are of the highest quality known to dentistry. They are not confined to one class of work; we do not ask our patrons whether they intend to use our teeth for vulcanite or for metal work, for crowns, or for bridges. They are ready as sold to stand the severest tests to which porcelain ought to be subjected, in any or every class of work. You might well call them general purpose teeth.

Molding

is a step in the making of Porcelain Teeth which, in the method which we follow, requires considerable skill.

The molder is supplied with a lump each of body and enamel material, mixed to the consistence of putty. First with a delicate spatula he places a small portion of the enamel mix, filling the part of the mold which is to form the incisal edge or cusps of the tooth. On the labial or buccal surface the material is carried about two-thirds the length of the tooth, being spread thinner as it passes toward the neck, until it ends in a feather edge.

The back half of the mold is then filled with the body mix, after which it is pressed and set in a gas oven to dry out the moisture, when the molded teeth are sent to the trimmers. You can see that much depends upon the skilful placing of the two materials to secure the gradual transition of color from the pearly translucency of the enamel edge to the yellow of the neck. Properly done, a very lifelike effect is produced in the fired tooth, the colors blending gradually, giving the texture a natural appearance.

Each molder has his individuality; consequently we have variations in shade and blending which help to make the great range of selection which our stocks afford.

Eternal vigilance is the watchword. The men are alert to do their work well, the foreman to see that the minimum of defectives is produced, to learn the cause when they are produced, and to apply the proper correctives promptly. In this department, as everywhere else throughout our manufacturing operations, there is unceasing effort to produce the best, assuring the well-known qualities which have made our Porcelain Teeth popular the world over.

Trimming

This is the next operation in the production of a porcelain tooth, after the molding. Skilled operatives go carefully over each tooth to remove any surplus material. With small, fine files they smooth off the little "fins" around the edges where the parts of the mold come together, taking extreme care to preserve the rounded contour, and cutting away with sharp-pointed blades any little bits of the material from around the pins or in the interspaces of gum sections.

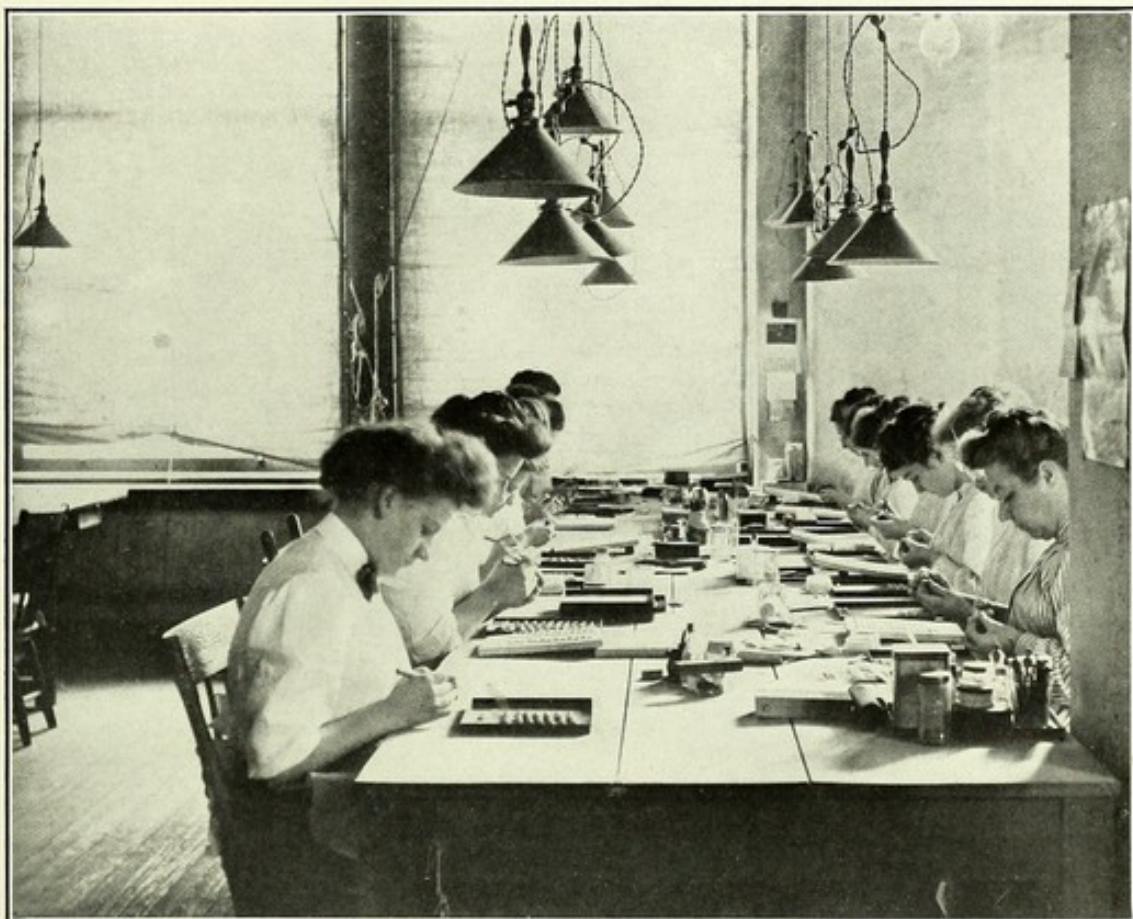
The material is very friable at this stage, and a very slight excess of stress on the tool will split the tooth; a trifle too deep cut will nullify all the careful, accurate work put upon the mold, and the tooth will have to be thrown away. All the time defects in molding are closely watched for. As a consequence the eye and the hand of the operatives in this department become wondrously skilled, their touch light and swift and sure, and they do their work deftly and accurately.

But the care does not end with the trimming. Rigid inspection of their work assures the detection of any defectives which pass the eyes of the trimmers.

The trimming completed, the teeth are placed upon a bed of coarse silex in infusible slides and delivered to the burners to be fired. This placing in the slides is a matter of considerable skill and judgment and varies with different styles of teeth. A method of placing which would be just right for one style would result in heavy

losses in the firing with another. In placing them, also, care is taken that sets are not separated. That is, for example, a set of 28 requires four molds, as heretofore stated. All four molds are filled from the same mix and the molded teeth from all four are "emptied" together and kept together from that time until they are finally carded for sale. They thus go through the fire together assuring uniformity of color.

Thus does the trimming department do its part in the production of what we aim at in manufacturing porcelain teeth,—100 per cent. of first quality.



TRIMMING THE TEETH

Firing

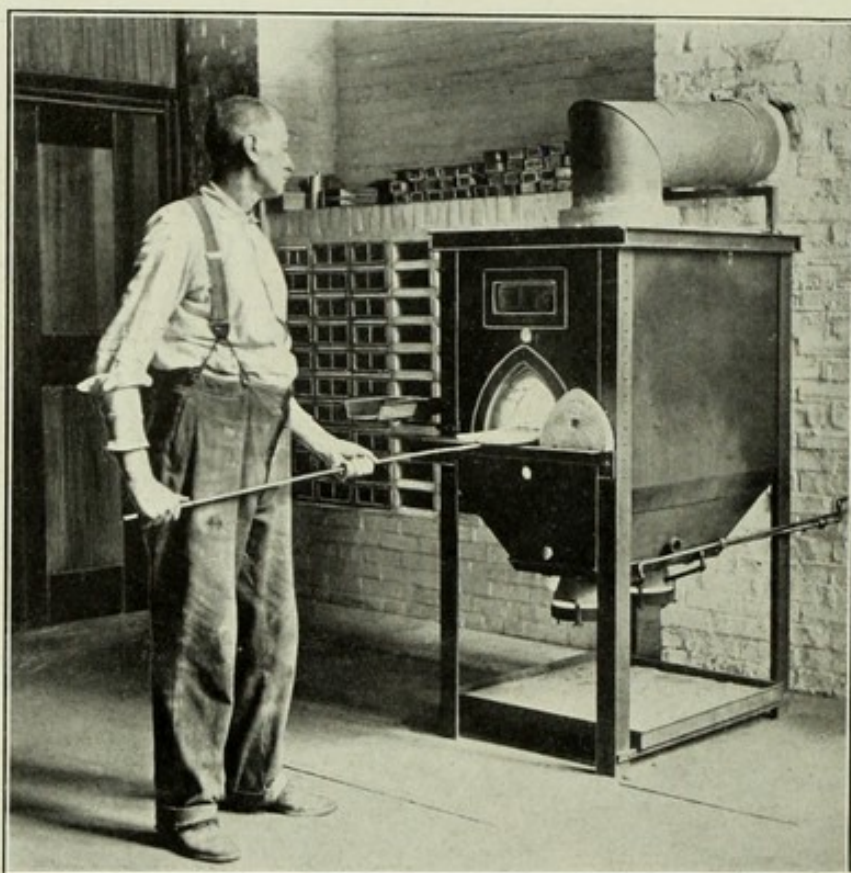
Since the *renaissance* of individual porcelain work thousands of dentists have been confronted by the problems of fusing porcelain, and they can appreciate as they could not before, the difficulties encountered by the manufacturer in the firing of teeth.

All porcelain shrinks considerably in firing, that of which our teeth are made, —when properly fused,—about one-sixth. If over-fired, the shrinkage is greater, and the color is burned out, just as many practitioners have observed when they have subjected inlays or crowns to too high a temperature, or left them in the heat too long.

To allow for the shrinkage, the matrices of the molds are made correspondingly large, the teeth as they come from them being about one-sixth larger in every dimen-

sion than they will be when carded for sale. To assure the shade, nothing has so far been discovered to take the place of the eye of the experienced "burner." Unceasing vigilance is a part of his daily life. The temperature at which S. S. White teeth are fused is very high; some porcelain teeth subjected to it would be transformed into a shapeless "button," bleached white. A little inattention on the part of the burner, causing an over-firing, may ruin the color of hundreds of teeth.

The teeth come from the trimmers' department on fire-clay slides. Our furnaces, of which we have twelve, have muffles with two compartments, one above the other



THE FIRING OF THE TEETH

The upper compartment is heated moderately for drying out and heating up the teeth, for if set at once in the white heat of the fusing compartment they would crack or burst. A slide remains in the heating-up compartment for eight or ten minutes, by which time it is prepared to receive the intense heat of the fusing furnace without damage. There is no rule as to the time they remain here; the practiced eye of the burner alone determines when the firing is completed. If taken out too soon, the surface will be rough and the shade and form will be undeveloped; if a little over-fired, the surface will be too glassy, there will be loss of color and form, and the body will not be strong.

On the completion of the firing, the slides are placed in annealing ovens, and kept there gradually cooling until they can be handled without gloves. From here they go

to the carding and inspecting department, where they are carefully examined to cull out defects brought out or caused by the firing process.

Necessarily the firing can never be an exact procedure. Taking advantage of its uncertainty enables us to cover the entire color scheme of porcelain teeth with the twenty-five formulas of our standard shades, one merging into the other by almost imperceptible gradations.

Carding and Inspecting

For convenience in handling, the teeth after firing are mounted on wax card, which also is made on the premises, by dipping rather thin blotting paper in melted beeswax, and cutting it to proper sizes. Sets of fourteen and twenty-eight are carded singly; of partial sets a number are carded together, all of course of the same mold.



A CORNER OF THE CARDING ROOM

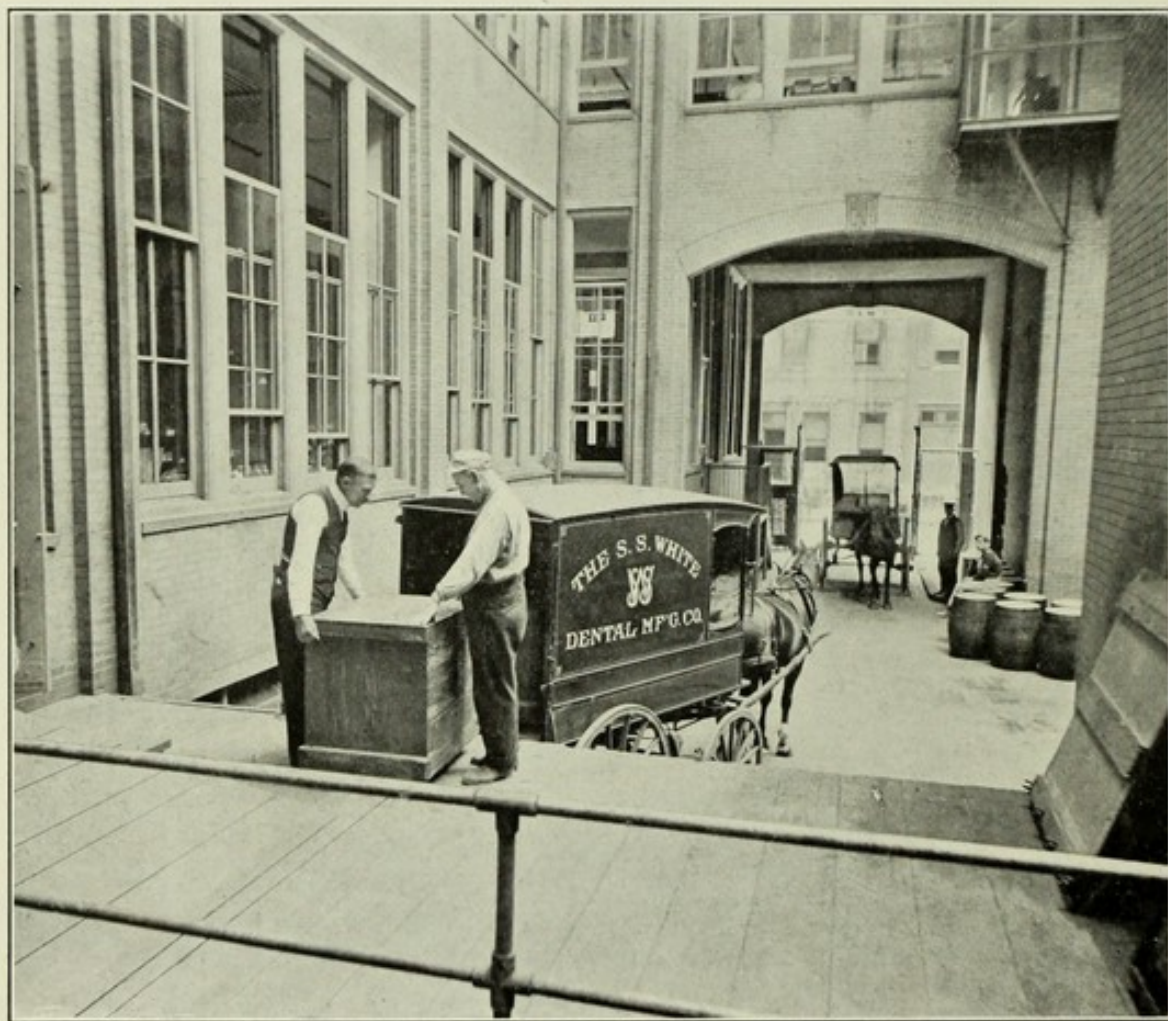
So far nothing has been said of faulty teeth. Naturally they occur in a product the making of which is so intricate, and in spite of the guards which we throw around the work there are considerable losses through defectives, adding very appreciably to the manufacturing cost. When the teeth reach the carding and inspecting department, they are at the point where the defectives are culled out.

First, the head of the department examines them for firing. All under-fired teeth are at once rejected. The other defects which may be found and which condemn a tooth in our factory are specks, blisters, cracks, white spots, faulty position of pins, and over-firing.

The carder keeps an eye out for the defects, and whenever one is found the tooth is reversed on the card to call the attention of the inspectors, to whom they now go.

The inspectors examine each tooth minutely, and every defective, including those found by the carders, is thrown out. It is readily seen that this is a rather expensive department, as all product thrown out is a dead loss.

When a set from which a tooth or two has been discarded comes to the matchers they go over their stock to see if the vacancy can be filled. If it cannot, this set goes to swell the matchers' stock, there to wait its chance to be used in filling up others similarly depleted. In time, despite our best efforts, stock for matching becomes so



DELIVERING THE TEETH

large as to be unwieldy, and unless the store has a demand for them as partials the surplus is sent to be broken up, the only salvage being the platinum pins.

Expensive as this inspection is, it assures the practical perfection of our sales stock. We have no "seconds," for which many of the teeth which we condemn to the scrap heap could be readily sold. Dentists who are being conducted through our factory are shown these defective teeth, and they frequently offer to buy them, because they can see nothing wrong with them. The answer invariably is that teeth which are to be known as S. S. White's must pass *our* scrutiny. We aim at 100 per cent. of

efficiency, and careful records for years back show that of the many millions of porcelain teeth we have sold, less than one and one-half thousandths of one per cent. have been found defective.

Delivering

the product of the tooth factory to our salesroom is as carefully carried out, day after day, as the manufacturing operations we have described.

The teeth after being carded and inspected are carefully counted, checked and rechecked, and the number of sets of each mold and shade delivered are recorded. The records are made out in duplicate, one going to the sales department with the teeth, the other being retained to be copied into the factory record books, which must tally with those kept in the salesroom.



TOOTH SALES DEPARTMENT (Second Floor, Philadelphia House)
Space occupied, 42 x 44 feet. 3384 Tooth Drawers, carrying about 40 per cent. of the combined working stock

The illustration shows the receiving and delivery platform of the factory when getting ready for the daily delivery of teeth.

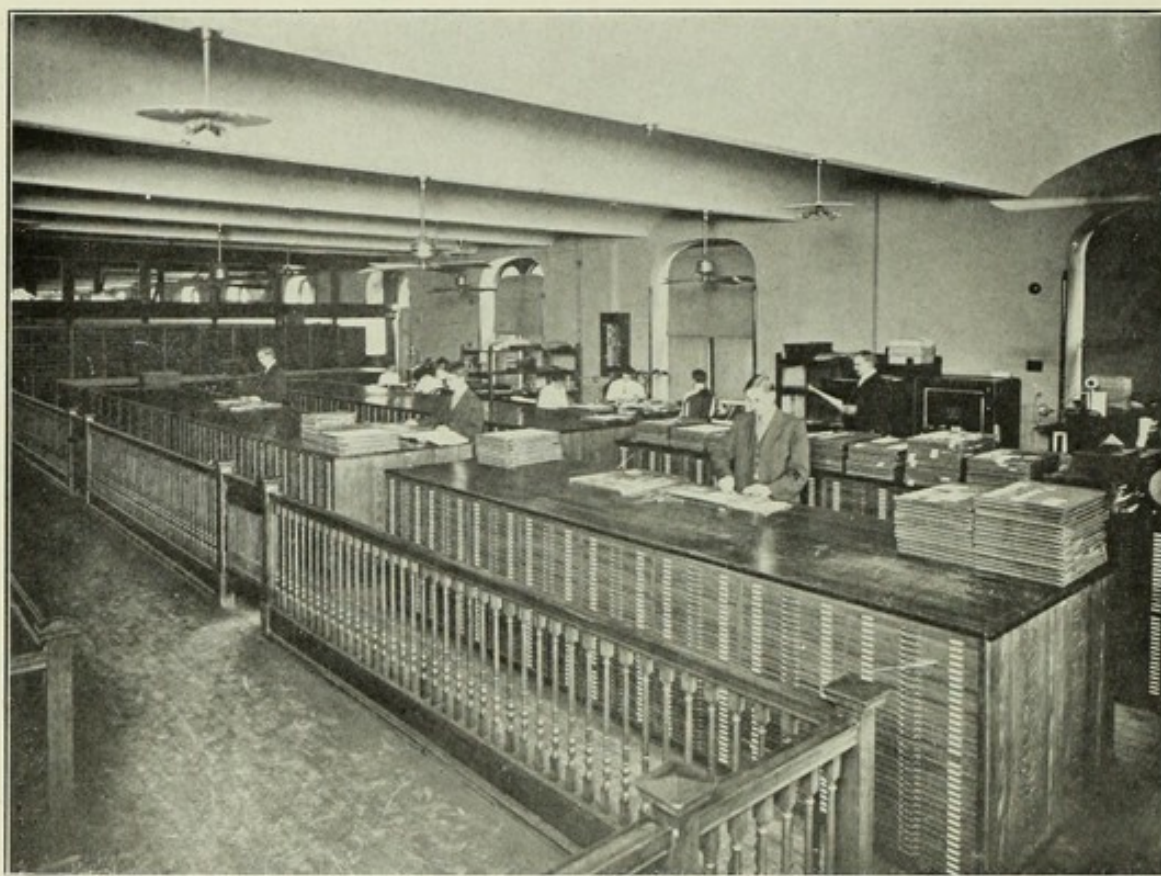
Marketing a World Product

As a fitting sequel to "A Factory Tour," in which our readers were shown the making of Porcelain Teeth, we shall now take a glance at that department of our business through which the product of the Tooth Factory reaches the dental profession.

Our Tooth Sales Department long ago outgrew the available space on the store floor, necessitating the provision of additional room on the fourth floor.

Our Stock of Porcelain Teeth

embraces probably two to three times as great a variety of molds as its closest competitor. At the Philadelphia House, which, as headquarters, endeavors to carry sufficient stock to fill all quantity orders from all our Branch Houses and the dealers in the United States and abroad, the most complete line of these molds and shades is to be found. Our stock of Porcelain Teeth at Philadelphia usually approximates $7\frac{1}{2}$ millions, comprising the greatest variety of forms and shades in the world. The next best assortments are to be found at our largest Branch Houses. The smaller Branches necessarily confine their stock to the needs of the local demands. It is our wish to



TOOTH SALES DEPARTMENT (Fourth Floor)

Space occupied, 63 x 44 feet. 5508 Tooth Drawers and Trays, carrying about 60 per cent. of the combined working stock. The portion of the room not seen (at the left) contains the stock of Plain-Long-Pin (Flat Back) Teeth.

place these stocks of Porcelain Teeth at the service of all dentists, irrespective of their location.

Arrangement

Such a stock would be practically useless unless systematically arranged for easy access. To "house" the stock of Philadelphia House requires 8892 drawers and trays, occupying with the necessary room for convenient handling nearly 4700 square feet of floor space. In these drawers and trays the stock is arranged not only according to molds but according to the shade of each mold, except "miscellaneous" teeth, which are arranged by shade only. Every part of it is thus instantly available, making quick handling easy.



System of Records

An elaborate bookkeeping system records the actual movement of every set of teeth received from the factory. Modern appliances of the most approved sort, as adding machines, assist in the keeping of these records. The figures thus compiled are the basis of factory orders, and they assure that our stock shall be "live" throughout, by indicating for elimination the teeth which are inactive.

Human Equipment

To care for the stock, keep the necessary records, and fill orders requires a large force of clerks, each of whom has special duties to perform, developing as a natural consequence the highest efficiency, of which our patrons reap the benefit. The fact that all of this large corps of employes devote their entire time to the tooth business of the company emphasizes its vastness.

Mail Orders

One of the most important branches of the work is the Mail Order Department. Mail orders have the right of way, and are rushed through in the shortest possible time consistent with proper execution. The clerks here become so skilled that their judgment in the filling of orders is not to be excelled by that of the dentist himself. Mistakes by them are rare.

For patrons who prefer to do their own selecting, we have a complete set of samples of all our molds always at hand.

There is, in fact, no detail which could increase the efficiency of our Tooth Sales Department, that we have not adopted. Our faith in the worth and excellence of our Porcelain Teeth is evidenced, not alone in the amount of capital invested in the working stock of teeth which we carry, but in the care with which we provide for its fitting accommodation and prompt handling.

ESSENTIAL CHARACTERISTICS OF S. S. WHITE PORCELAIN TEETH

TO this the largest and most important product of our business we invite special attention and critical examination—by comparison with natural teeth, in reference to Shape, Color, Texture, Translucency, and Vital Appearance; and by contrast with teeth of other manufacturers in reference to Strength, Lightness, Adaptability, Capability of Resisting Changes of Temperature, polishing after grinding, and proper means for attachment.

What is included in these terms is briefly as follows:

Shape. The preservation of the distinctive characteristics of the different teeth of the upper and lower jaws, and of the right and left sides of the mouth; their relations to each other, to those which they antagonize, and when properly adjusted, to the dental arch.

Color. The imitation in this respect of the colors of the natural teeth, as shown by placing them alongside of teeth in the mouth,—the nice blending of the brown or yellow base or body of the tooth with the clearer enamel of the cutting-edge.

Texture. The absence of the appearance of vitrification; the soft, waxy, enamel-like and natural surface which they present.

Translucency. The word indicates the close imitation of that semi-transparency of natural teeth which contrasts so strongly with the opacity frequently found in artificial teeth.

Vital Appearance. Made up by the combination of color, texture, translucency, absence of the appearance of vitrification, and the blending of the colors of the body and enamel in proper relations,—especially manifest when exposed *in the mouth to an artificial light*.

Strength. As tested by their practical application by dentists and their legitimate use by the wearer.

Lightness. In any test of strength, the weight and thickness must be taken into account, the object being to secure the greatest strength with the least weight and bulk.

Adaptability. In the ease with which they can be adapted to various conformations of the maxilla and the mandible, with slight labor on the part of the dentist in grinding and fitting.

Resistance to Variations of Temperature. As ascertained by the processes of vulcanizing and soldering, in the manufacture of new dentures and the repair of old ones, and of firing as required in porcelain crown and bridge-work.

Polish. The close approximation of the vitrified glaze which can be restored after grinding.



The Pins are proportionate in size, and made of *Platinum*, the only metal which is known to give entirely satisfactory results in the various laboratory operations and which will not corrode in the mouth. (See also page 137.)

In the *combination* of these essential characteristics we claim a marked superiority for our Teeth.

Our facilities for supplying variety of shape, size, and shade in PORCELAIN TEETH are unequaled by any other establishment in the world.

THE WORLD'S PREMIUM PORCELAIN TEETH

THAT our Porcelain Teeth, in the combination of the essential characteristics, do excel all others made in the world is shown, first by their having received the

Highest Award Every Time

they have been exhibited in competition with other makes from 1848 to the present time. Second, and more convincingly, by their constantly increasing use. When a manufactured article, before the public for more than half a century, continues to grow in sales long after it has outstripped all competitors, most of which have continuously sold at lower prices, you have indisputable evidence of intrinsic superiority. It was the possession of this superiority which long ago gave our product the proud title of

"The World's Premium Teeth"

The growth in the demand for our Porcelain Teeth has kept pace with every increase in our facilities for manufacturing. October 1, 1897, we moved into a large factory which we had built and equipped specially for the manufacture of Porcelain Teeth. The great capacity of this factory has enabled us to keep a sales stock unapproached elsewhere in its extent and variety of forms.

We call attention especially to a few of the elements which enter into the make-up of the superiority of our Porcelain Teeth. Our Teeth are made of a high-fusing porcelain, are fired at a heat which many other makes would not stand without the loss of vital qualities. Then the **Platinum** pins are larger and heavier, in proportion with the tooth, and have better heads than other makes. The matter of setting the pins has been the subject of much study, and they are placed with mechanical accuracy, so as to give the porcelain ample hold upon them and so that they project a uniform distance outside. This distance is sufficient to let the rubber assure its hold by getting in between the heads and the porcelain, yet not so great as to permit the head to interfere with the finishing of the plate.

Our factory has in constant use at least

Double the Number of Molds

employed in any other. We are continually making new molds. Our forms include not only the everyday cases, but many of the variations from strict normality of alignment, the re-

production of which in an artificial denture goes so far to disarm suspicion of artificiality. These include not only teeth for full dentures, but for many special partial cases.

While we have been steadily making new molds, we have also kept records of the demand for individual forms, and we have discarded some which these records showed were so seldom called for that it was a waste of time and money to keep them in stock.

We have also gone deeply into the matter of improving our

"Pattern" and "Duplicate" Molds

so as to assure even greater uniformity of size. Let us explain that when a new mold is made it is called a "pattern" or "original" mold. It is never used to mold teeth in, but is carefully preserved as a standard. For the actual molding of the teeth "duplicate" molds are made, preserving as exactly as possible every little characteristic of the original. For some of the popular forms we have as many as thirty duplicate molds in continuous service. Now, these duplicate molds wear, and the curious part of it is that they wear smaller. Tooth-molds are made in parts, separating at the largest diameter of the tooth. The attrition of the faces wears them down, with the result that the dies for the teeth are reduced in every dimension. This necessitates their return to the mold-makers to be repaired. Along this line of assuring uniformity in duplicates and providing against the contingency of wear a large number of men are continuously engaged.

We are out for the

Business of the Dental World

in Porcelain Teeth; for that of the dentist in Europe, in Asia, in Africa, in Australia, as well as in America. Our stock is cosmopolitan. We ask for the patronage of prosthetic dentists everywhere, because of our never-ceasing efforts to provide Porcelain Teeth which they cannot hope to equal elsewhere; because we offer a greater variety to select from than they can find elsewhere; a range in shapes and sizes which will enable the dentist, no matter where he is located, to individualize every denture he makes so that it shall conform to the needs, artistic as well as mechanical, of the patient; in a word, because it is to the interest of every dentist to use our Porcelain Teeth.



CLASSIFICATION—MEASUREMENT

HOW TO GET THE BEST SERVICE FROM THIS CATALOG

Classification as to Size and Form

To simplify and shorten the work of selection of Porcelain Teeth we have arranged the illustrations of all the larger classes in groups, characterized by certain common and prominent features. Thus in Plain teeth for Vulcanite Work all the molds which can properly be described as "small sizes with short ridge-lap and medium bite" are set off in one group, "small sizes with short ridge-lap and long bite" in another, and so on, the entire line being classified for easy reference. The Gum Sections are similarly sub-divided for the same purpose, as "short bite with short gum," "short bite, medium gum," etc.

A Help in Selection

The expectation is that this classification, by bringing all the closely related molds before the eye at a single glance, will be a considerable help to the dentist. Thus, having determined the general type of tooth wanted, he has only to turn to the group illustrating the characteristics of this type, when a moment or two of examination will show the particular mold which best suits the case. Of course there are no sharply defined lines of demarkation between these groups. One naturally and almost insensibly in many cases glides into the next, in the matter of size especially, which again is an advantage, in that it limits the search to at most, two or three groups.

The Object of a Catalog

The principal object in illustrating our entire line of Porcelain Teeth is to supply to dentists located at a distance from the stocks of teeth of our various houses the best available substitute for personal selection. We make the best Porcelain Teeth, we keep the best selection and the largest stock, and we want every dentist to know it. The forms of illustrations adopted were developed through an exhaustive study, as giving the fullest information as to the distinctive characteristics of the various molds possible to convey by pictures.

Appearance and Exactness

One serious difficulty was met with in all our experiments along this line. That was the reconciling of appearance to exactness. If you draw a picture of a rounded object upon a flat surface, even though you preserve the linear dimensions exactly, the picture will invariably look larger than the object. For this reason the picture of an object of this character which is intended to *look* natural in size must be made smaller than the object itself. The difficulty is inherent, due to the loss of perspective in projecting the representation on the flat surface. Teeth have a more or less rounded surface. To make them *look* of natural size they would have to be minified in the drawings. This would have defeated our object, which was to provide a reliable guide for the man who needed it. So the *appearance* of naturalness in size was sacrificed.

Measurements

This, then, is to be borne in mind, that the illustrations of Porcelain Teeth in the pages of this catalog necessarily *look* larger than the teeth they represent. It is quite possible that in some cases there are slight differences in some of the duplicate molds from which the teeth are actually made (see page 91); firing may also cause slight changes. The sizes of all single teeth are shown in the illustrations. In Gum Sections, which have a curved outline, manifestly it is impossible to show the exact size of more than one tooth on the block. Thus in sections of incisors and cuspids the central only is actual size, the lateral and cuspid being more or less foreshortened, according to the character of the curve. In sections showing both centrals, and in blocks of bicuspids and molars, all of the teeth are actual size.

It is our confident belief that with the aid of these illustrations the dentist will be enabled to determine the number of the mold adapted to the case in hand with reasonable certainty; in short, that he can order teeth with about as full assurance of getting what he wants as though the teeth themselves were before him. The better way in every case, however, is to send the model, with full directions.

THE S. S. WHITE DENTAL MFG. CO.'S DETACHABLE TOOTH-SHADE GUIDE

Patented July 10, 1906. D. R. G. M. No. 271,943

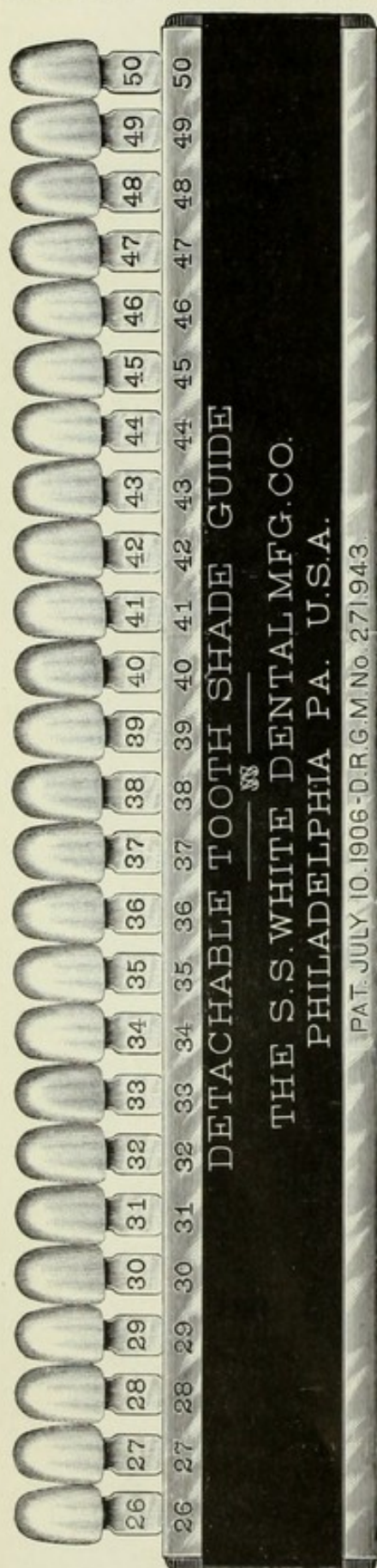
Extreme Variations

The shades of Porcelain Teeth as called for by the dental profession of the world include a variety which ranges from dead white to jet black. The manufacturer is required to supply not only the actual needs as found in the shades of natural teeth, but also to meet established customs or fancies; for there are localities where certain styles prevail, regardless of natural conditions. There is a considerable demand for the extremely light shades, bordering on the dead white, to meet the false notions of patients who insist that their ideas of beauty shall be satisfied. Then we are called on to meet the still existing custom in some of the far Eastern lands of staining the teeth.

Distinct Types

The teeth in the mouth vary in color as they do in size and character; but as there are standard types in the latter, so there are in the former, including the grays of the nervous temperament, the light yellows of the sanguineous, the dark yellows of the bilious, and muddy or opaque colorings of the lymphatic.

To meet the demands of general practice our Porcelain Teeth are made in twenty-five basal or typical shades, and to facilitate making selections we supply a key to these shades in the form of a Detachable Tooth-Shade Guide containing 25 teeth. Each tooth on this guide represents a typical shade made according to definite formulas and definite methods of blending corresponding with the blendings found in the natural organs. This shade guide as well as the Standard Shade Guide which preceded it may be relied upon to **approximately represent the shades of teeth** found in any stock of our manufacture. Owing to the conditions under which artificial teeth must be manufactured, it is impossible for us or any



other tooth manufacturer to continuously make teeth which will **absolutely** match the standard typical shades. Slight modifications of the typical shades will always be apparent, and this condition is greatly to be desired by the practicing dentist, owing to the variety of shades which is thus placed at his command. Every dentist has experienced the fact that natural teeth of patients cannot always be absolutely matched with a typical shade found on the shade guide, but generally speaking a close approximation of the desired shade can be found, and from the variations of this selected shade he can find a good "match." For example, when taking the shade of natural teeth with the typical shade teeth on the guide, shade No. 39 may lack a yellow color at the neck; on the other hand, it may have too much yellow at the neck. A good match for 39 or either of the variations referred to can be found. A simple statement of the fact that you want No. 39 shade **may not always result in the delivery of the 39 which will match your particular guide**, but if an actual shade sample accompany the order, with specific instructions calling attention to the variations required, better results are obtained.

The S. S. White Shade Guide

far surpasses all others in practical usefulness, convenience, and beauty of design, workmanship, and finish.

The Holder

is a single piece containing our full line of twenty-five shades numbered 26 to 50, all of which can thus be seen at a glance and handled as a whole.

The Carriers

for the teeth are detachable from the holder, thus permitting individual handling for comparison in the mouth and for mailing to the dental depot for accurate selection, which as explained above is the surest way to obtain accurate results.



The Teeth

being small, can be used in narrow spaces in the mouth, and each tooth being pivoted to its carrier, can be rotated to facilitate matching the various teeth in the mouth. The novel mounting of the tooth to the carrier least interferes with or modifies the shade of the porcelain, thus permitting more correct matching, and its permanent attachment to the carrier, prevents the mixing of the shades.

“SPECIAL ORDER” TEETH

BY “Special Order” Teeth we mean Porcelain Teeth differing from our regular stock in form and color. Usually a special order is accompanied by a sample tooth, often from some other manufacturer’s stock, and we are directed to “match the sample exactly in form, size, and shade.”

As a rule there is no great difficulty in complying with the directions as to form and size. Our line of molds is so comprehensive that there are few sizes or forms made by anyone which we cannot closely approximate.

But when it comes to duplicating a shade the case is far otherwise. It is a difficult task to match a shade in porcelain *absolutely*. The same “mix,” as it is called, of the color-producing materials, manipulated in exactly the same manner so far as human skill can assure exactness, will vary in the finished shade from day to day. As has been said, a few degrees variation in the temperature of the furnace, a few seconds difference in the time of exposure to the heat, a greater or less thickness of a tooth, a variation in its form or size, whether flat or rounded, short or long, will produce a lighter or a darker shade. So far, as is well known to all porcelain workers, no sure remedy for this has been found. Necessarily the shade which a given mix of color for a particular form of porcelain tooth will produce is conjectural, and to an extent a matter of experiment.

Experts can tell at a glance what mix ought to produce a given shade, but they cannot absolutely assure in advance a perfect match. As a rule several burnings are necessary to absolutely match a shade. The result is that in almost every instance when we fill orders for special teeth we have several sets or partial sets left over, the expense of the production of which we have paid, and for which we have no use, inasmuch as they do not agree with our color scheme.

For many years we bore the burden of these experimental burnings, as we may call them, and as a rule charged only the regular price for the “Special Order” teeth delivered to the customer. But “Special Orders” gradually grew to a point where it was necessary to take measures for our own protection.

We therefore announce that hereafter charges for “Special Order” teeth will be based on the cost of making them, according to the character of the order, and that the teeth will not be returnable. It must be borne in mind that the prices of our stock Porcelain Teeth are based on their production in large quantities. These “Special Orders” involve special work, and the product must bear a price somewhat in proportion to the cost.

We believe that the vast majority of these special orders could be filled satisfactorily



from our regular stock. Our line of shades, as shown by the Shade Guide, affords a choice which practically covers every need.

For the reasons before mentioned, these shades as found in our teeth vary slightly, and it is this variation which makes our color scheme of twenty-five shades practically universal in its application. For the same reasons it is an impossibility to produce, say, ten thousand Porcelain Teeth of *exactly* the same shade, even although they are all put through in one order.*

Those who contemplate making a "Special Order" will do well to compare the shade they want with those of our Shade Guide, and the form and size with the illustrations in this catalog. We are convinced that they will find in almost every case so close an approximation in our regular stock as to obviate the necessity of a special order, and so save time and money for themselves.

The demand for the following class of teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on order only at the prices quoted on page 215. Teeth so made will not be returnable.

We refer to Countersunk, Smoker's, Black, Hand-stained, Plain Plate Short Pin, Single Gum Vulcanite, Gum Plate Short Pin, and Continuous-Gum Teeth.

MAIL AND TELEPHONE ORDERS FOR PORCELAIN TEETH

"A Condition, Not a Theory"

STOCKS of Porcelain Teeth are available for the personal selection of the dentist at only a comparatively few widely separated points. In the nature of things, most dentists are therefore compelled to order by mail the Teeth they require. Even the dentist who buys Teeth in quantity lots finds it necessary to resort to the larger stock of the dental depot for occasional needs. Our facilities for filling mail orders are unequaled anywhere.

Stocks

Our stock of Porcelain Teeth embraces probably two to three times as great a variety of molds as its closest competitor. At the Philadelphia House, which, as headquarters, endeavors to carry sufficient stock to fill all quantity orders from all our Branch Houses and the dealers in the United States and abroad, the most complete line of these molds and shades is to be found. Our stock of Porcelain Teeth at Philadelphia usually approximates $7\frac{1}{2}$ millions, comprising the greatest variety of forms and shades in the world. The next best assortments are to be found at our larger Branch Houses. The smaller Branches necessarily confine their stock to the needs of the local demands. It is our wish to place these stocks of Porcelain Teeth at the service of all dentists, irrespective of their location.

Trained Men

To this end, at each of our houses we have trained men whose sole business is to select teeth for out-of-town patrons. Long experience makes these men very skilful. Constant familiarity with all our molds enables them to turn almost intuitively to the form required for a given case. In most instances, perhaps, they will select more wisely than the average dentist could. Indeed, it is a common occurrence for dentists to bring their models and ask our men to select for them.

The main object in the publication of this catalog is to help the dentist at a distance from our stocks to give the clerk who is to select the teeth for him a clear understanding of what is wanted. With this clear understanding established, there need be no fear that the order will not be filled satisfactorily.



Instructions for Ordering

It is important to state clearly, *first*, the character or class of teeth desired, as designated by us in this catalog, *i.e.*, whether Plain or Gum; for Metal Plate, Vulcanite (Rubber), Crown- or Bridge-Work.

Where only one or two teeth are ordered by sample sent, the order should specify, in addition, whether for Right or Left, Upper or Lower, Central, Lateral, Cuspid, Bicuspids (first or second), Molar (first or second).

The words "to mate," "to match," "to correspond with," etc., are very indefinite, and likely to be misunderstood.

Second, to give the mold numbers and the page from which they were selected.

Third, to give the date of the catalog used, as we issue a new edition at frequent intervals.

If a Shade Guide is used to designate size of tooth desired, always state whose Guide, and if the S. S. White, whether the Standard or Detachable as the teeth are of different sizes.

Send a Model

In ordering by mail it should be understood that a model of the case is the safest guide; that where it is convenient a tooth of the shade desired should be sent with the model. We prefer that the shade should be designated by our Standard or Detachable Shade Guide, both representing the shades, Nos. 26 to 50, which are approximated in our Porcelain Teeth.

Other Manufacturers' Shades

We frequently receive orders to match the shade teeth of other manufacturers. While it sometimes is possible for us to fill such orders, we accept them without a guarantee that they can always be filled satisfactorily.

It should be thoroughly understood that each manufacturer of porcelain teeth uses characteristic color formulas suitable for producing the shades in his particular tooth products. In addition to the fact that each manufacturer uses characteristic basal colors it must be borne in mind that the porcelains of the different manufacturers are by no means alike. The differences in texture, translucency, glazing point and physical appearance make it impossible for this company or any other company or individual to do any more than approximate outside shades. For the above reasons we prefer to make selections of teeth from our own Shade Guide.

Packing Models

In forwarding models to be fitted with Porcelain Teeth, be careful to pack them so that they will not be damaged in transit. We frequently receive articulated models with the faces of the opposing teeth broken or chipped so as to be utterly valueless as

a guide for selection. Sometimes the models are broken into pieces so small that they cannot be put together. The best way to pack an articulated model is to separate the two halves. In any event, they must be protected from violence by packing in cotton-wool, or with several thicknesses of soft paper,—it being understood that it is the articulating surfaces of the teeth which most require protection. They at least should be guarded by a thick pad of cotton-wool or soft paper.

Packing Samples

Teeth mailed to us by patrons to serve as guides in the selection of sets or parts of sets frequently reach us so badly broken as to afford no clue to their original size, shape, or color.

It should be known that the machinery used in many post-offices for the cancellation of stamps on mail packages is powerful enough to crush a porcelain tooth not well protected.

The safest plan is to pack samples of teeth or other small articles securely in a small pasteboard box, which may or may not be inclosed in the envelope with the letter of instructions. To send them without adequate safeguards against loss or destruction is to invite vexatious delays. *Never fail to put your name and address on the package.*

Telephone Orders

To dentists who live in or near cities where our Houses are situated, the telephone affords a means of conveying orders at a great saving of time and trouble. Our salesrooms are fully equipped with telephones, and telephone orders for teeth or other goods will receive prompt and careful attention.

Drilling Cavities

We are frequently called on to drill cavities in teeth of other manufacture and also in teeth mounted on dentures. There is always more or less risk of fracture during drilling and to protect ourselves we have made the following ruling:

We assume no responsibility when drilling cavities in teeth mounted on dentures nor in unmounted teeth not of our manufacture.

By following these suggestions, dentists at the remotest points can be served about as satisfactorily as those located in cities where we have branches. There are few points in the United States between the Atlantic and the Rocky Mountains which are not within twenty-four hours' communication by mail of some one of our houses. Within these limits especially our unequalled stock of Porcelain Teeth is readily accessible to all dentists. In Europe we have a branch in Berlin, where the same facilities are to be found for filling mail orders for Porcelain Teeth. Our Branches in Toronto and Montreal offer the same service to the dentists of Canada.



PLAIN TEETH FOR VULCANITE WORK

The Original Form

Upon the introduction of rubber as a base for artificial dentures, a considerable improvement in the character of Porcelain Teeth suggested itself. Up to that time a flat back, to which a piece of gold or platinum could be readily fitted, was necessary; and equally necessary were headless* pins for riveting the tooth to the backing preparatory to attachment by soldering to the plate.

The method of attaching the new base, by flowing the rubber, as it were, while in a plastic state around the pins so that they should be firmly imbedded in the substance of the plate, when the vulcanization was completed and the piece cooled, eliminated the backing and soldering. The headless pins at first were merely lengthened and bent around into hooks to form a better hold in the vulcanite.

Improvements—Shoulders and Headed Pins

Two improvements were promptly brought out. The back of the tooth at or near the gum line was shaped into a shoulder commonly called the pin guard, and immediately behind this shoulder headed pins were inserted. This pin guard serves a four-fold purpose. It strengthens the tooth, protects the pins, facilitates the waxing up of the teeth and affords a smooth, even, feather-edge finish between the vulcanite and the porcelain, grateful to the tongue and clean because it gives little opportunity for the accumulation of debris.

Thus were formed the Plain Teeth for Vulcanite (Rubber) Work substantially as made and used today.

Advantages Gained

These changes afforded considerable advantages in adapting the teeth more closely to the needs of the work. The greater body of porcelain at the shoulder gave added strength at a point where the greatest strength was needed,—viz, at the place where the pins were inserted. The heads on the pins gave the needed grip for the vulcanite, and more certainly and securely than the bent headless pins. These latter, it was found, under severe strain would sometimes straighten and pull out of the vulcanite. This was impossible with the headed pins.

Plain Teeth afford every opportunity for artistic or individualized arrangement. Each tooth, being separate, can be placed in such a position as the requirements of the case or the taste of the dentist may direct.

* By "headless" pins is meant pins which are without heads on the exposed ends. "Headed" pins refers to the exposed ends. All of our tooth pins have heads on the ends imbedded in the porcelain.

PLAIN TEETH FOR VULCANITE WORK

Upper, Incisors and Cuspid

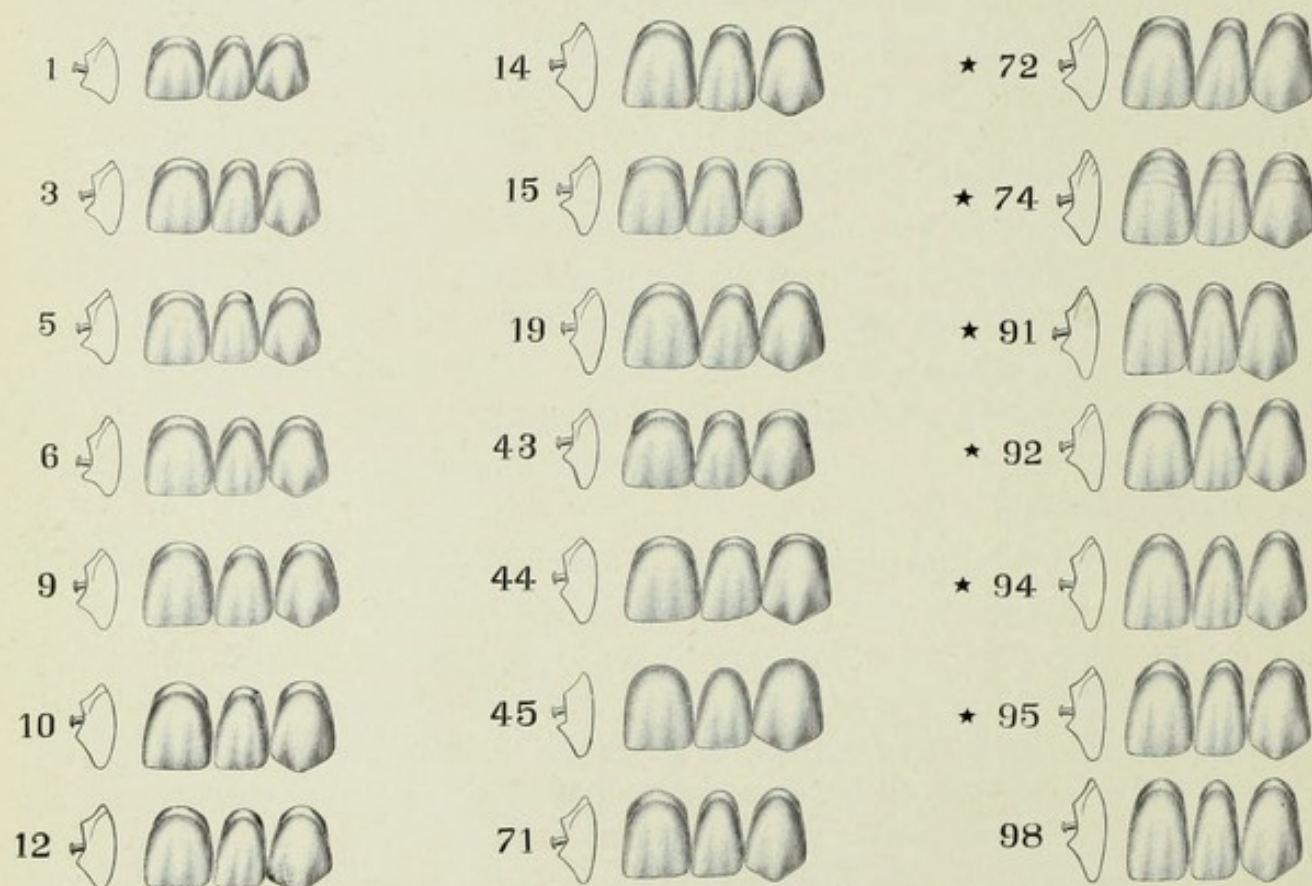
The illustrations of sets of incisors and cuspids show the labial faces of the teeth for the left side; an outline view of the central incisor from the median approximal face, indicating the thickness of the tooth, the length of the bite and ridge-lap, and the curve of the labial face.

They are classified as to size of tooth, and length of ridge-lap and bite. From this general classification the molds with lapping laterals (irregularities) and those known as "natural" forms are excepted and placed by themselves.

Sold as single teeth, and in sets of 2 (centrals, laterals, or cuspids), 4 (incisors), 6 (incisors and cuspids), 10 (incisors, cuspids, and bicuspid), 14 (full sets upper), and 28 (full sets, upper and lower matched).

SMALL SIZES.—Short Ridge-Lap, Medium Bite

Short Ridge-Lap Teeth are useful in cases of protruding jaws (see page 45); for temporary dentures (see page 50).



SMALL SIZES.—Short Ridge-Lap, Long Bite

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42 and 43)



For Long-Bite Gum Sections, see page 168

* The asterisk indicates that the molds so marked are used with Diatoric Bicuspid and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

PLAIN TEETH FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

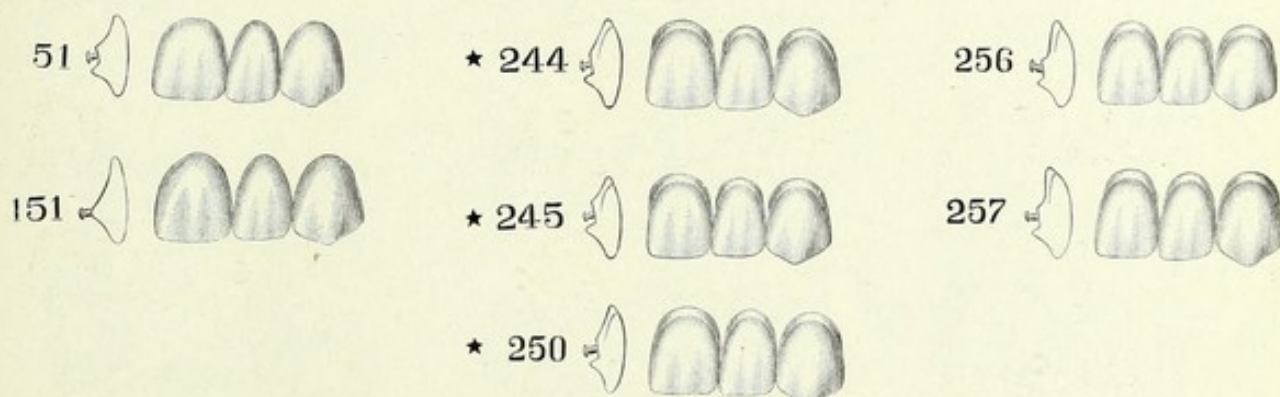
SMALL SIZES.—Long Ridge-Lap, Short Bite

Long Ridge-Lap Teeth are particularly useful in cases of protruding lower jaw (see page 47)

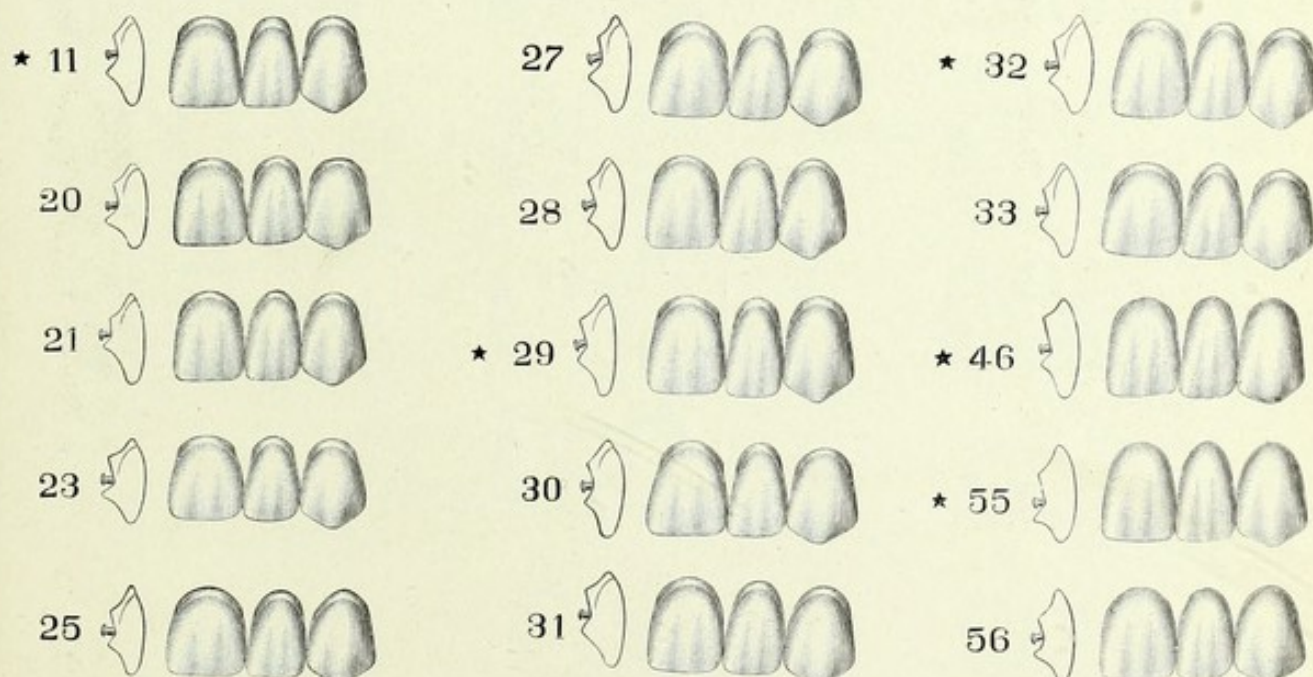


For Short-Bite Gum Sections, see pages 161, 162, 174

SMALL SIZES.—Long Ridge-Lap, Medium Bite



MEDIUM SIZES.—Short Ridge-Lap, Medium Bite

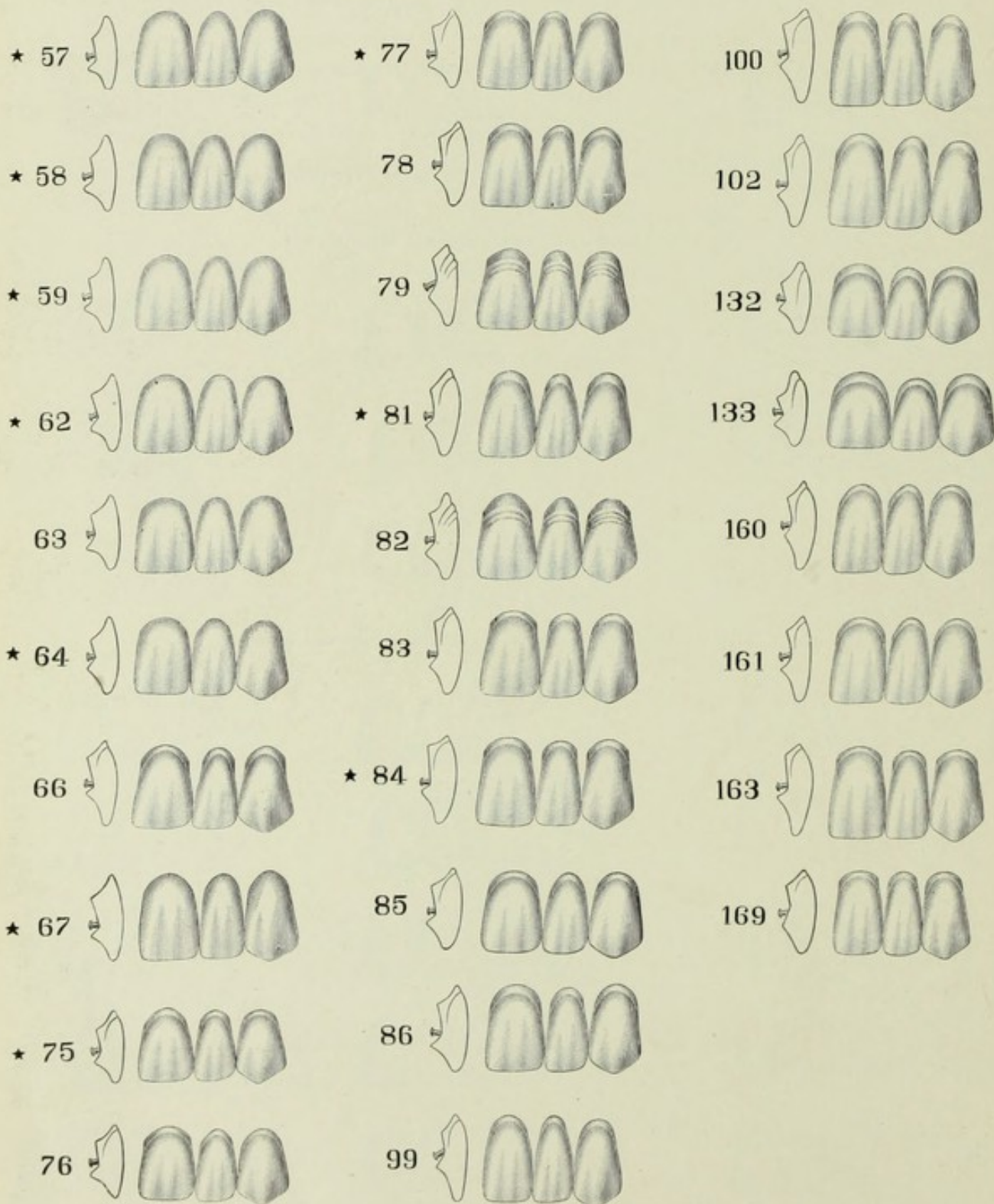


* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

PLAIN TEETH FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

MEDIUM SIZES.—Short Ridge-Lap Medium Bite—(Continued)



* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.



PLAIN TEETH FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

MEDIUM SIZES.—Short Ridge-Lap, Long Bite

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42 and 43)



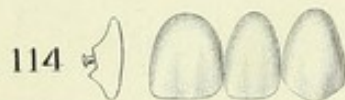
For Long-Bite Gum Sections, see page 168

MEDIUM SIZES.—Long Ridge-Lap, Short Bite



For Short-Bite Gum Sections, see pages 161, 162, 174

MEDIUM SIZES.—Long Ridge-Lap, Medium Bite

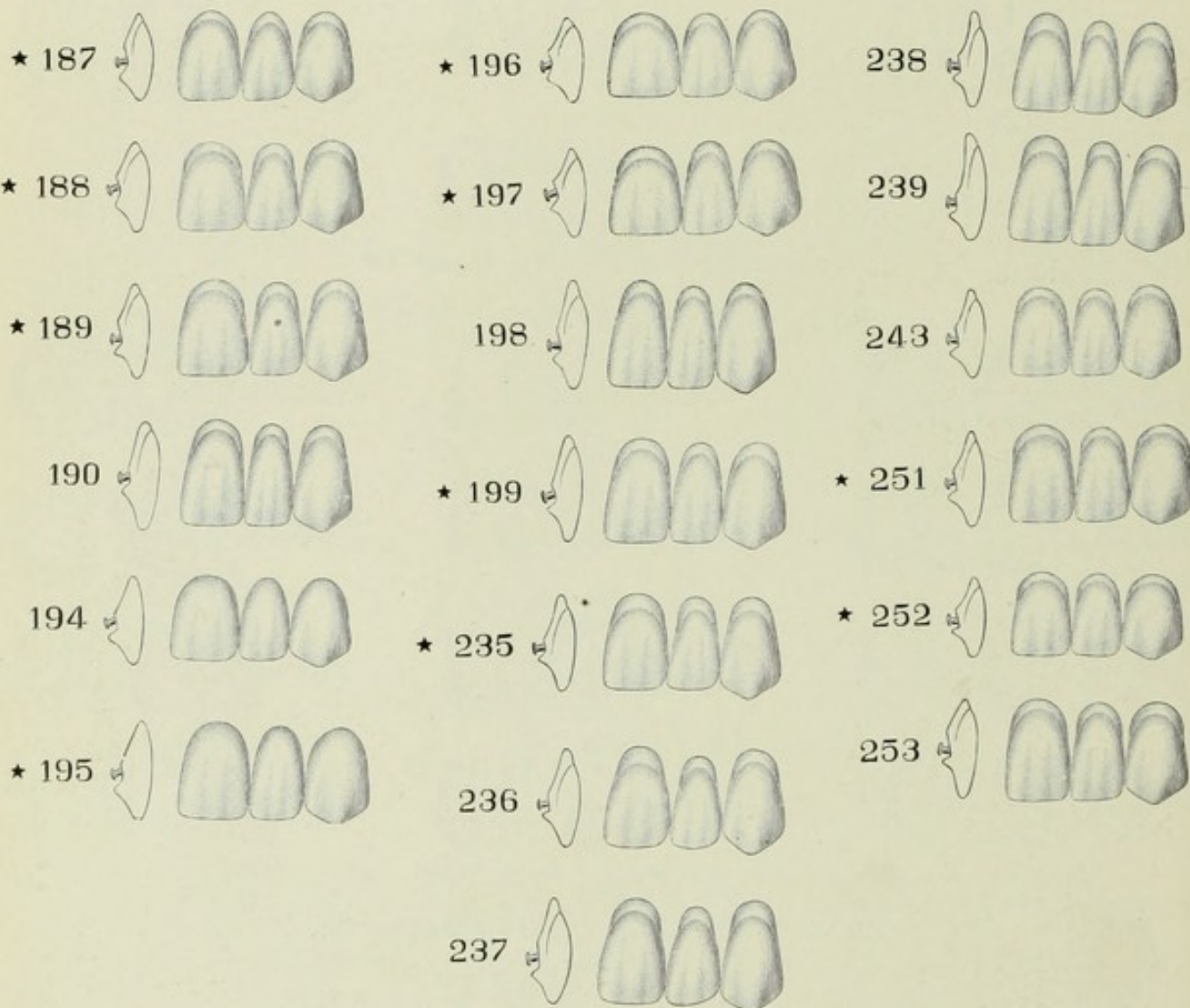


* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

PLAIN TEETH FOR VULCANITE WORK

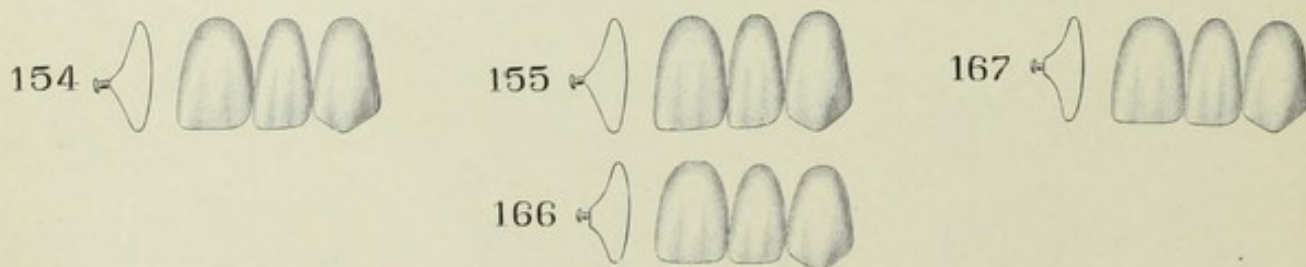
Upper, Incisors and Cuspid—(Continued)

MEDIUM SIZES.—Long Ridge-Lap, Medium Bite



MEDIUM SIZES.—Long Ridge-Lap, Long Bite

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42 and 43)



For Long-Bite Gum Sections, see page 168.

* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

PLAIN TEETH FOR VULCANITE WORK

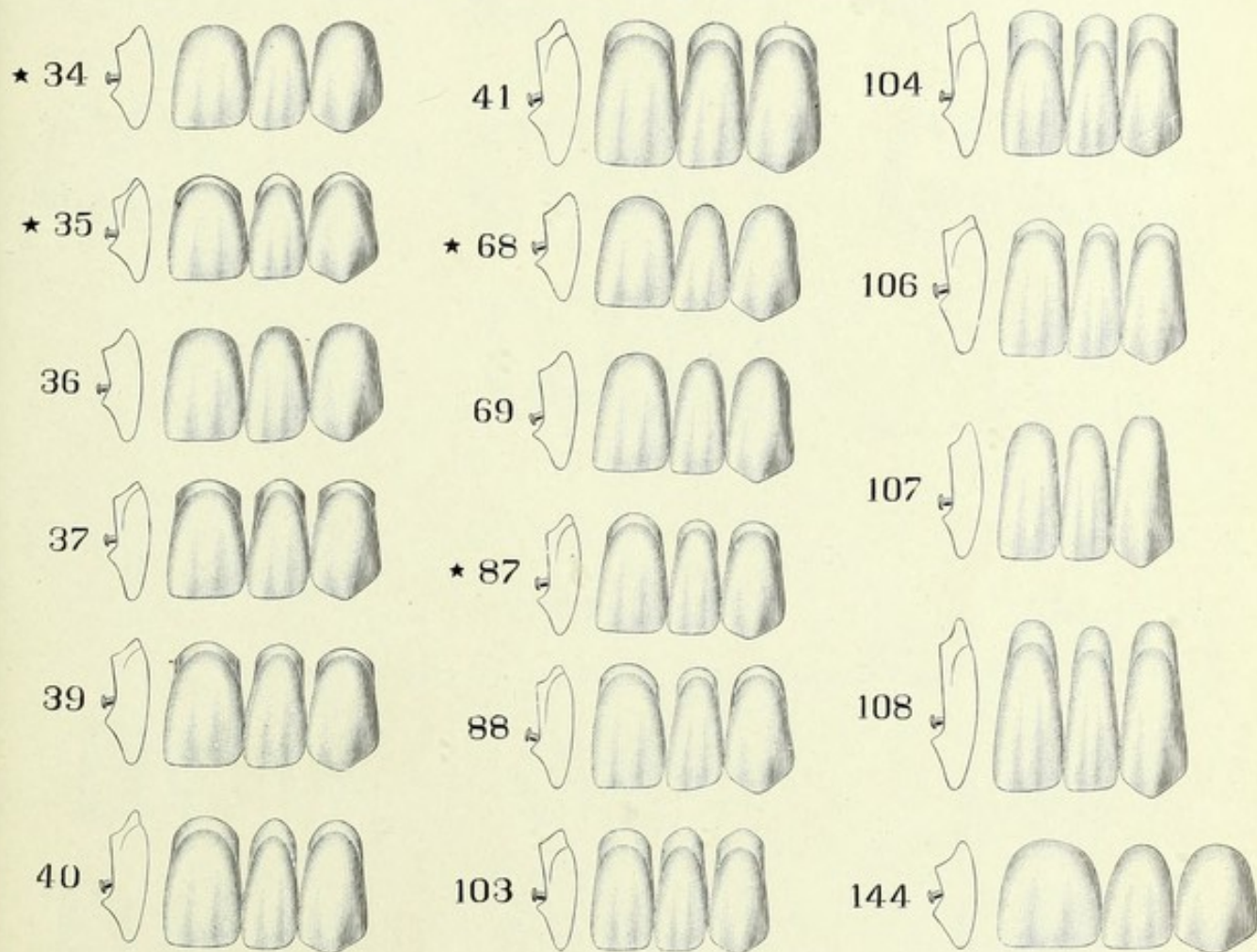
Upper, Incisors and Cuspid—(Continued)

LARGE SIZES.—Short Ridge-Lap, Short Bite



For Short-Bite Gum Sections, see pages 161, 162, 174

LARGE SIZES.—Short Ridge-Lap, Medium Bite



LARGE SIZES.—Short Ridge-Lap, Long Bite

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42 and 43)



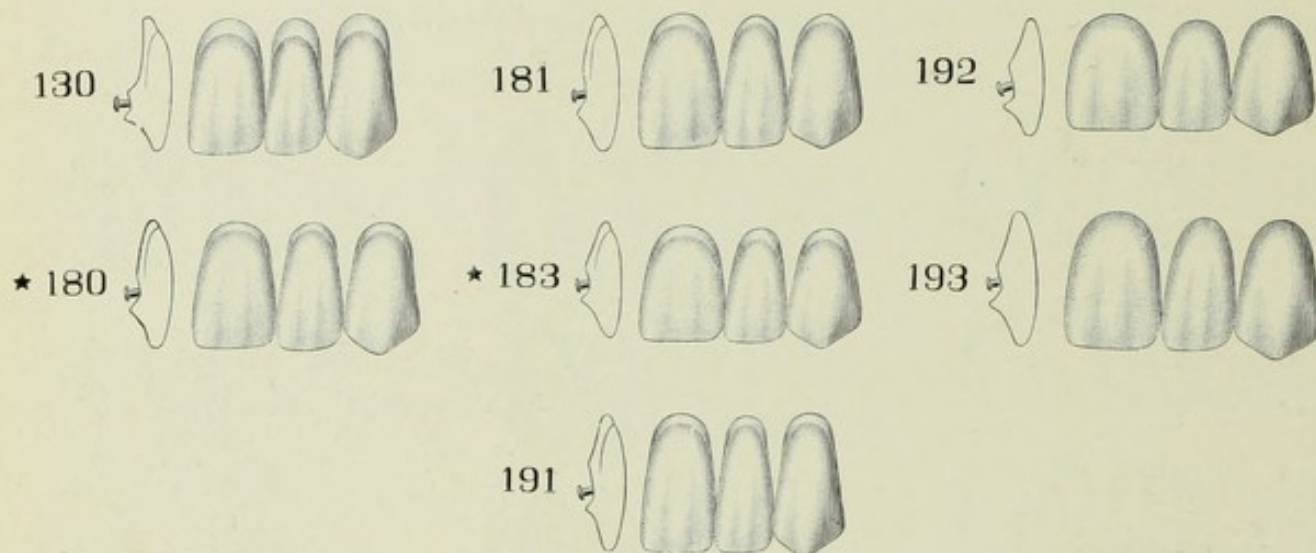
For Long-Bite Gum Sections, see page 168

* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

PLAIN TEETH FOR VULCANITE WORK

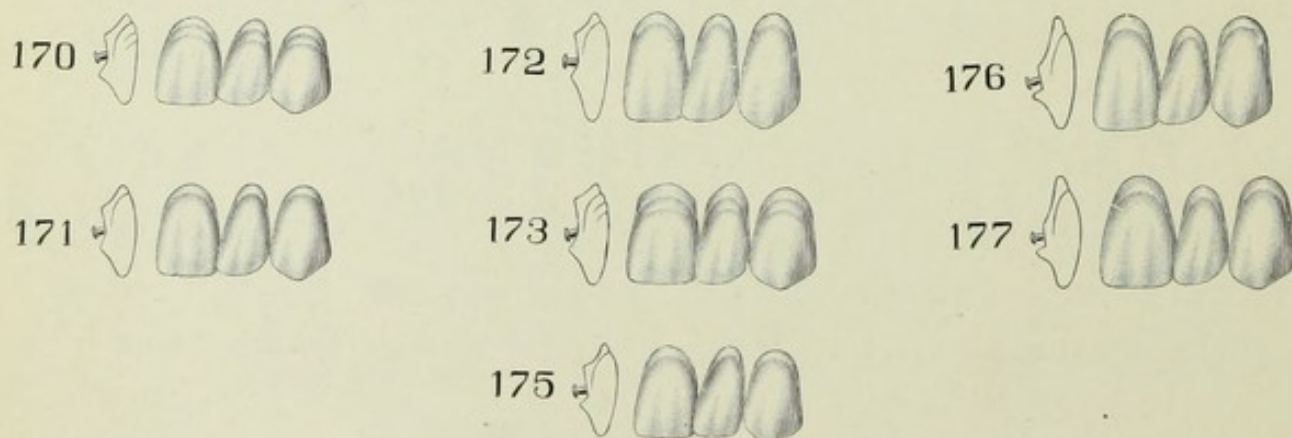
Upper, Incisors and Cuspid—(Continued)

LARGE SIZES.—Long Ridge-Lap, Medium Bite



LAPPING LATERALS

(For suggestions as to the uses of Lapping Laterals, see page 54)



For additional Lapping Laterals in Plain Teeth, see page 109; for Gum Sections with Lapping Laterals, see pages 168, 169, 170.

* The asterisk indicates that the molds so marked are used with Diatoric Bicuspids and Molars to form Combination Sets, as regularly carried in stock. Other combinations can be made from Partial Sets as ordered.

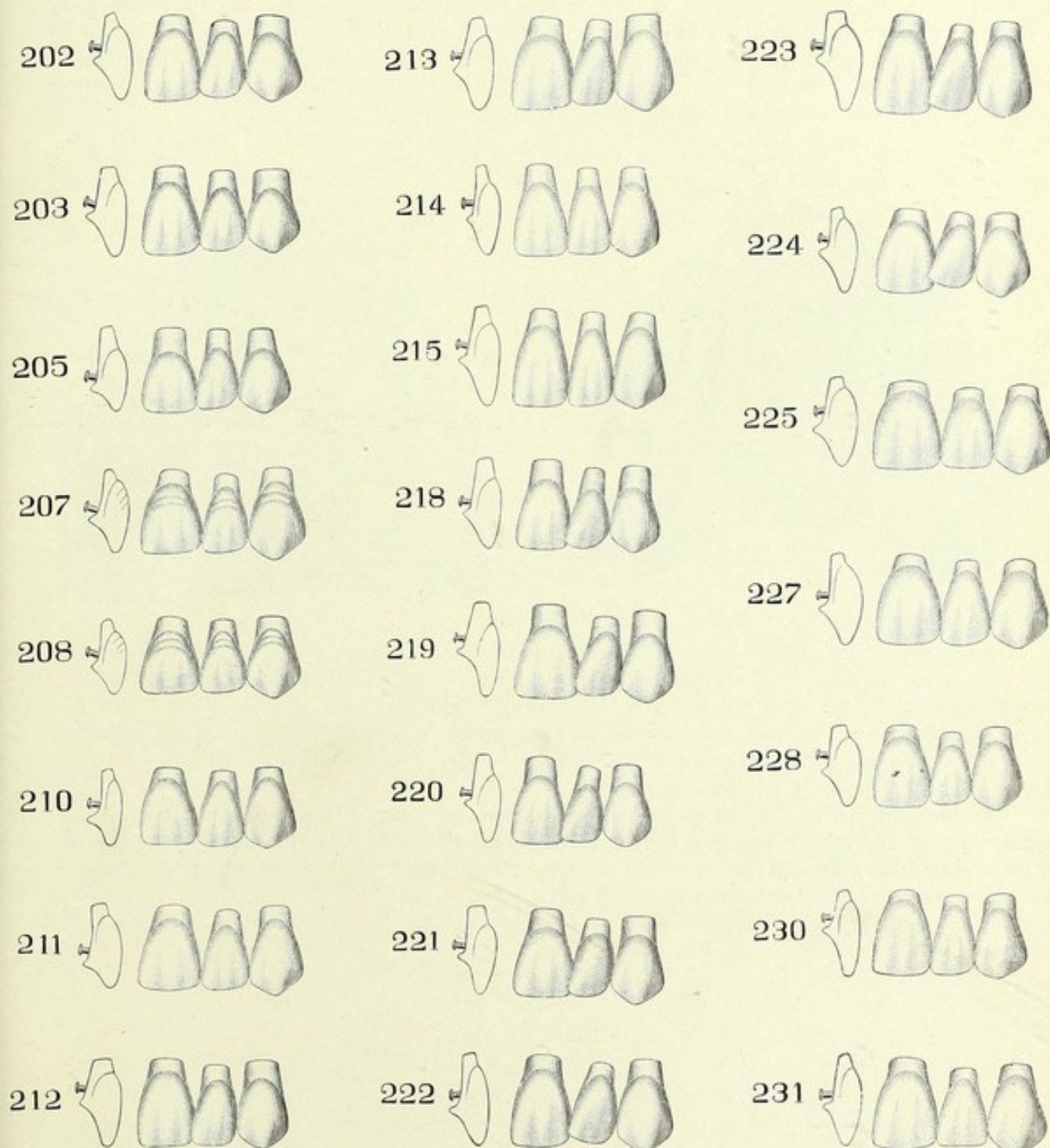
PLAIN TEETH FOR ARTISTIC VULCANITE WORK

"Natural" Forms. Upper, Incisors and Cuspid

(For suggestions as to the use of "Natural Forms," see page 58)

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42 and 43)

The upper bicuspid and molars, and lower incisors, cuspids, bicuspid, and molars are shown on pages 111 to 125 inclusive.



For additional Plain Teeth adapted to artistic prosthetic work, see page 108; for Gum Sections of similar character, see pages 168, 169, 170.

PLAIN TEETH FOR VULCANITE WORK

"Natural" Forms, Hand-stained

The effect of mastication upon the teeth is to wear them down at their incisal and occlusal surfaces, so that the sharp incisal edges and well-defined cusps seen in the newly erupted teeth gradually disappear until in some instances mere stumps are left in the mouth. Under this progressive wear the enamel is ground away from the teeth at the points of contact, exposing the dentin, which being less dense than enamel, becomes discolored. This is particularly true of the anterior teeth. In addition to this discoloration due to the exposure of the dentin, there is also in the posterior teeth a discoloration in the fissures which is caused by deposits. Most persons who have arrived at the age of forty to fifty years show these conditions. It would be manifestly absurd to insert in the mouth of such a one teeth presenting a youthful appearance. To meet these cases we have for many years adapted the "natural" forms of Plain Teeth for Vulcanite Work by grinding and hand-staining to imitate the wear and consequent discoloration of natural teeth.

FIG. 1

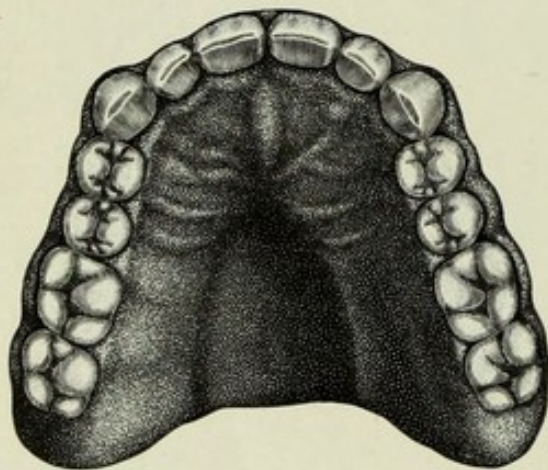
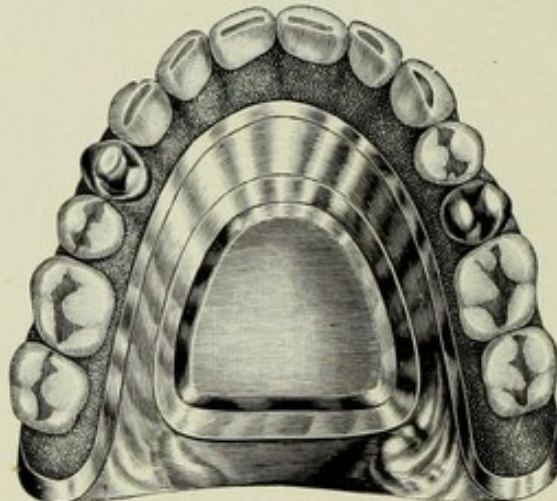


FIG. 2



Finding it impracticable to carry a stock simulating every stage of wear, we provided hand-stained teeth which as sold represented the earlier stages, but which could be ground away considerably without eliminating the stain when a greater degree of wear was to be shown.

We illustrate a set of these hand-stained teeth mounted on a wax form showing the appearance of the occlusal surfaces of the teeth as sold (see Fig. 1). They can be ground to show as great a degree of wear as is seen in Fig. 2, or even more.

The demand for this class of Teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on ORDER ONLY at the prices quoted on page 215. Teeth so made will not be returnable.

The "Natural" forms illustrated on page 109 have usually been employed in this class of work. Any mold, however, can be treated in this manner.

Mineral Stains

The introduction of S. S. White "Mineral Stains" has made it possible for the dentist to do even better work than that afforded by the use of Hand-Stained teeth, provided by the manufacturer. With the aid of the dental engine or lathe, an abrasive wheel, and a box of S. S. White Mineral Stains, the dentist can readily reproduce the various conditions found in individual cases presented to him. These stains are easily fired in either an electric or gasoline furnace. A descriptive pamphlet will be sent on application.

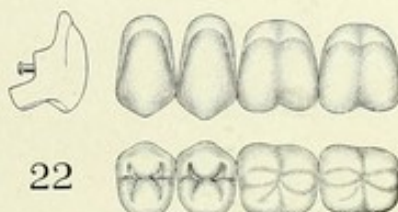
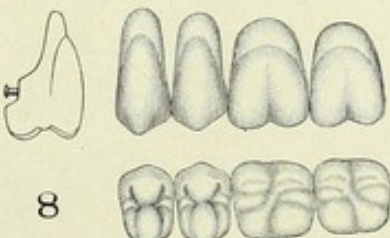
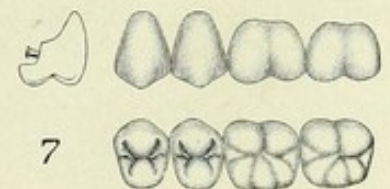
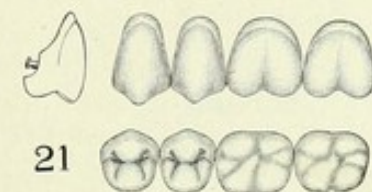
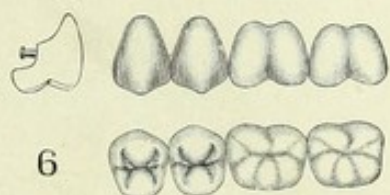
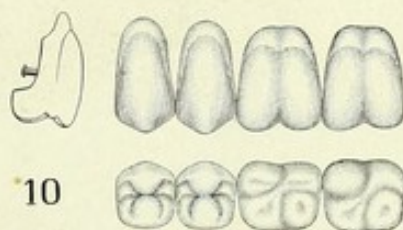
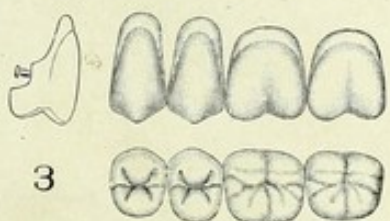
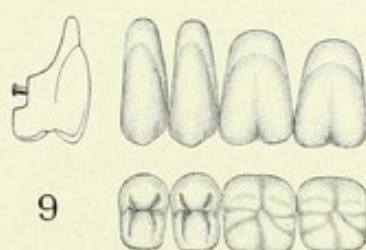
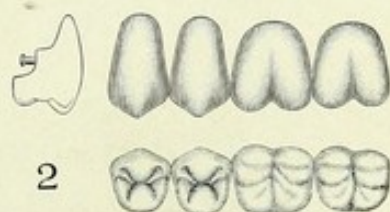


PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars

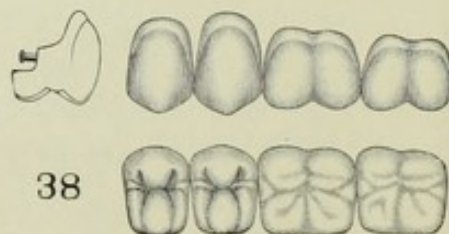
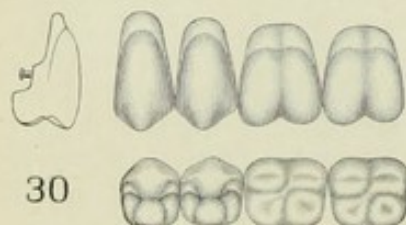
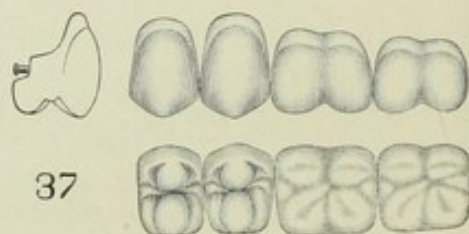
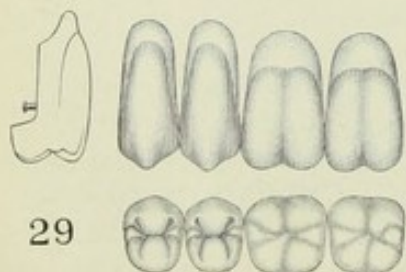
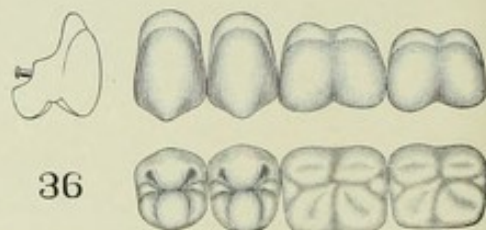
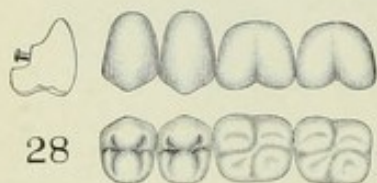
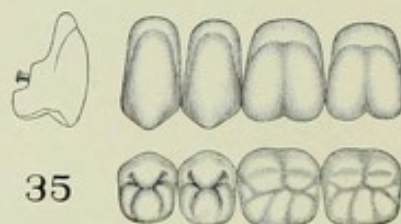
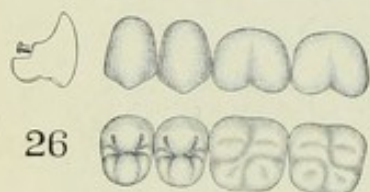
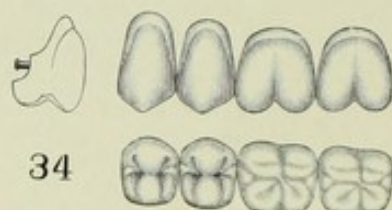
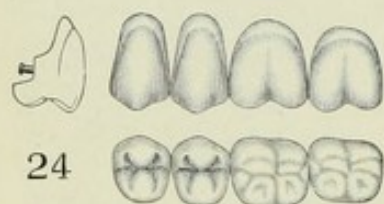
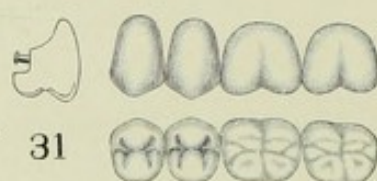
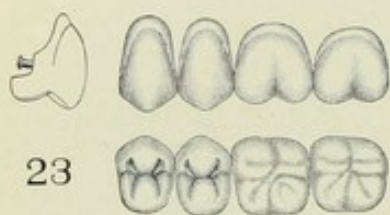
The illustrations of sets of upper bicuspid and molars show the buccal faces of the teeth for the left side; an outline view of the first bicuspid from the anterior approximal face, indicating the thickness of the tooth, the length of ridge-lap, and curve of the buccal face; also, a view of the occlusal surfaces. Molds 100 to 106 are "natural" forms, used to match with the incisors and cuspids shown on page 109.

Sold as single teeth, and in sets of 4 (bicuspids or molars), 8 (bicuspids and molars, as shown), 16 (bicuspids and molars assembled with lowers to suit except Nos. 36, 37, 38, 39, 47, 48, 49, 65, 66, 82, 84, 87, 89, 90, which have no lowers to correspond), 14 (in full upper sets), and 28 (full sets, upper and lower matched).



PLAIN TEETH FOR VULCANITE WORK

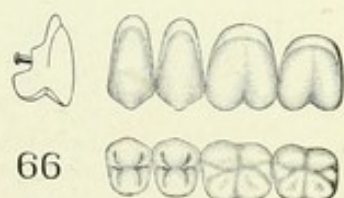
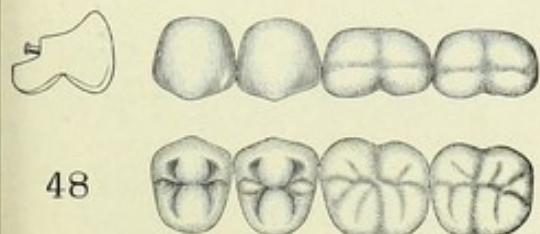
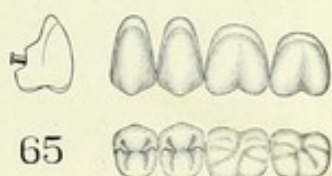
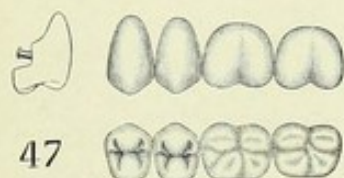
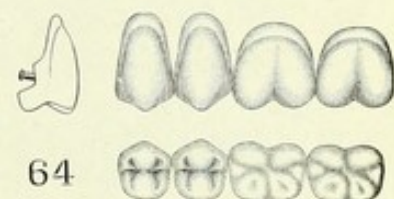
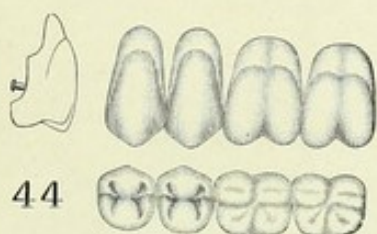
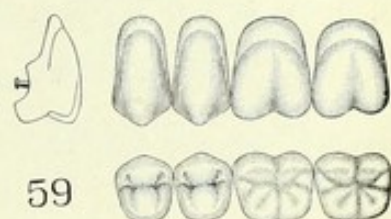
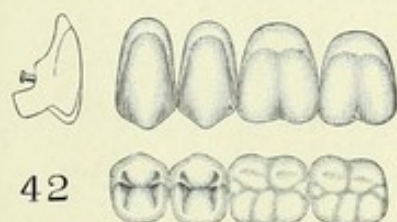
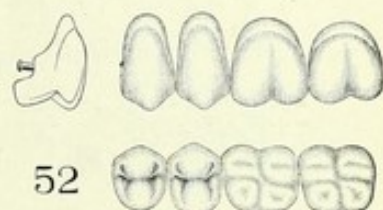
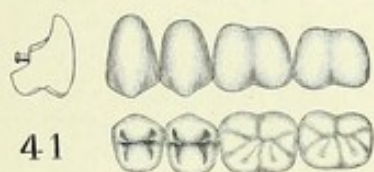
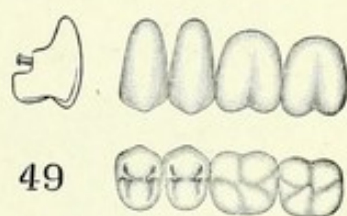
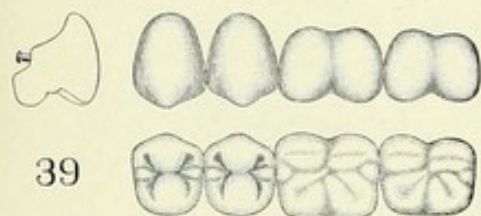
Upper, Bicuspid and Molars—(Continued)





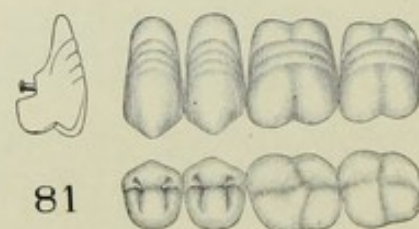
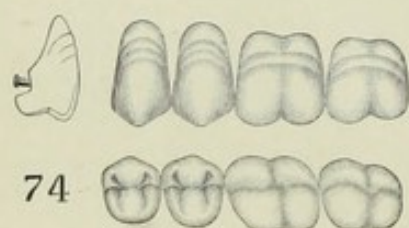
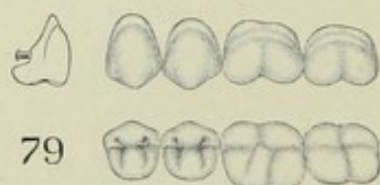
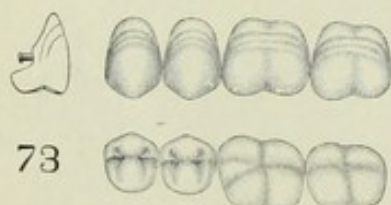
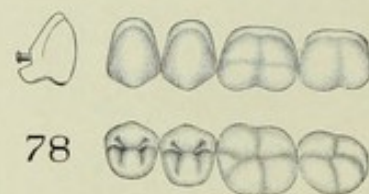
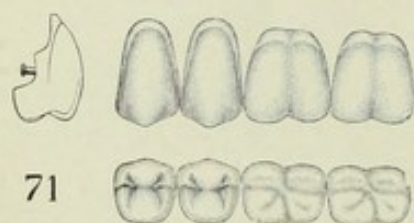
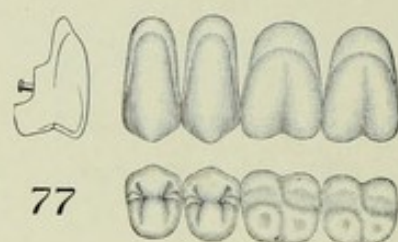
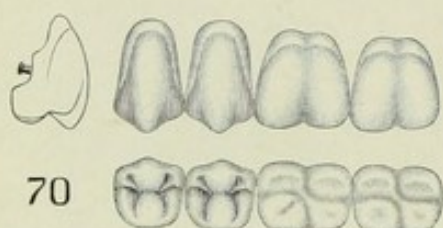
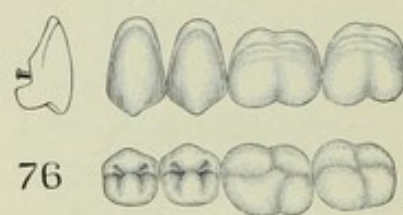
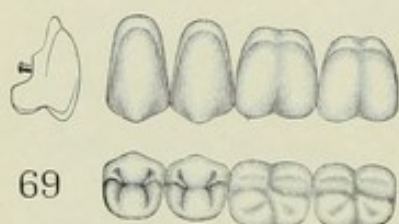
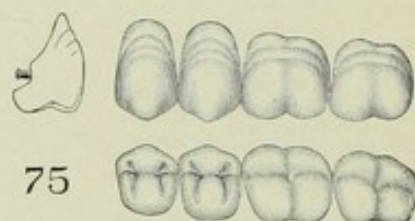
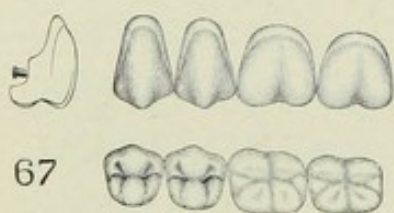
PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars—(Continued)



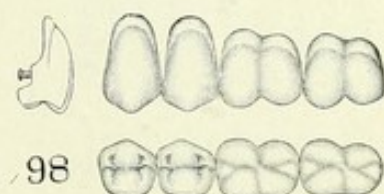
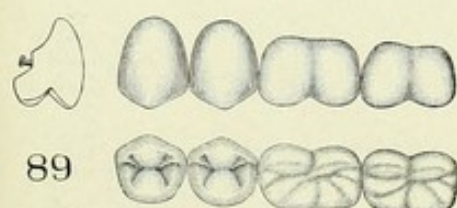
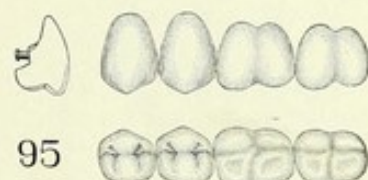
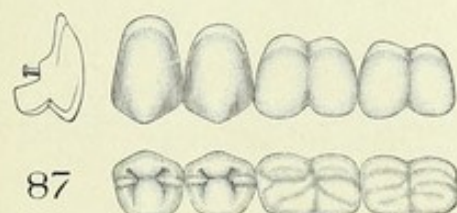
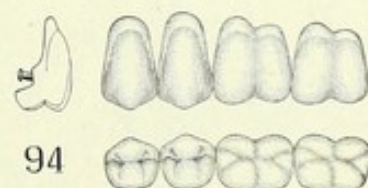
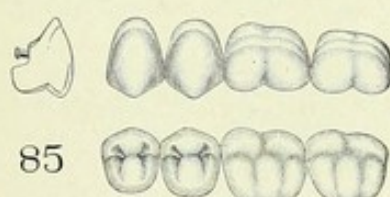
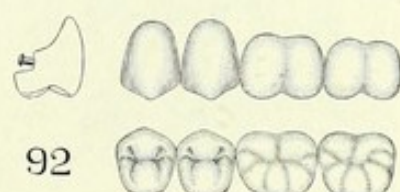
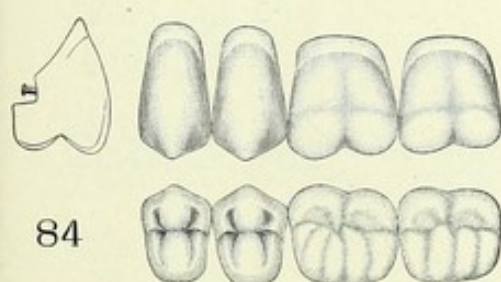
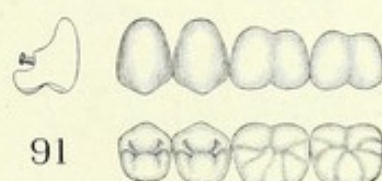
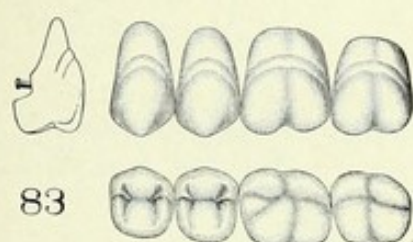
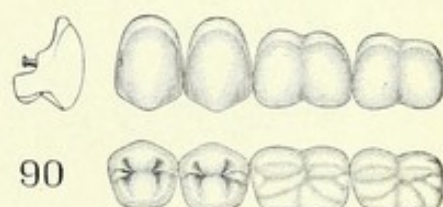
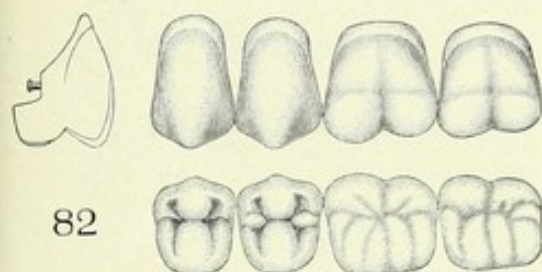
PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars—(Continued)



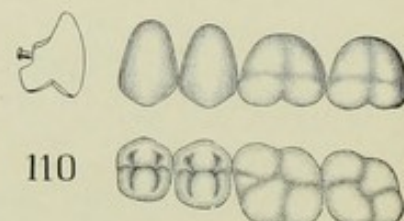
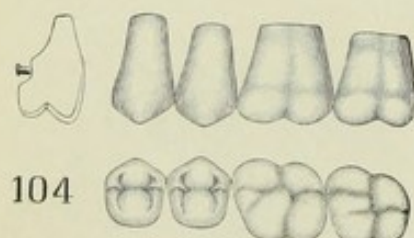
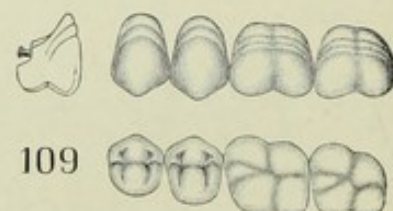
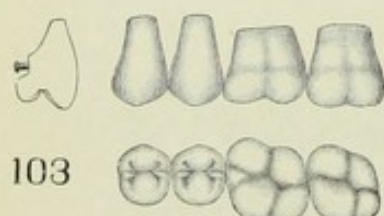
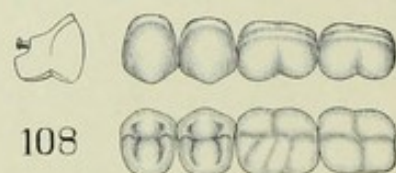
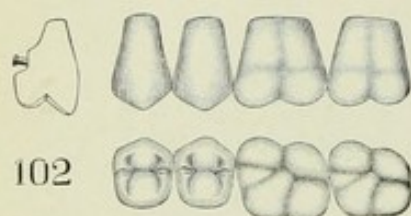
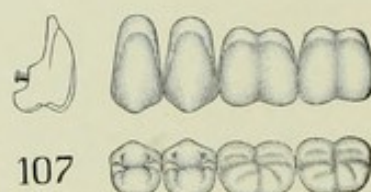
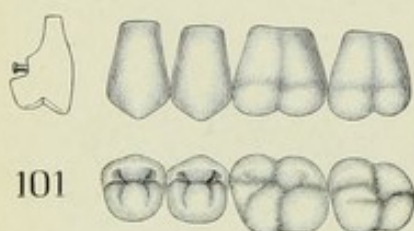
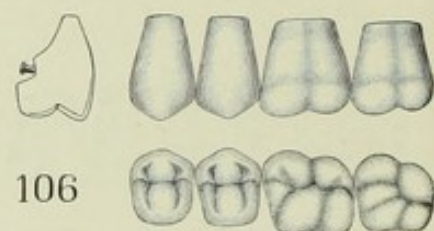
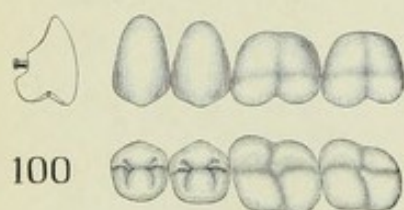
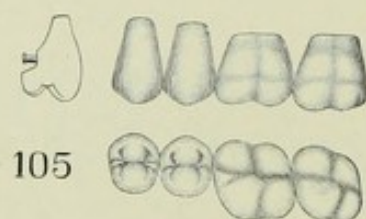
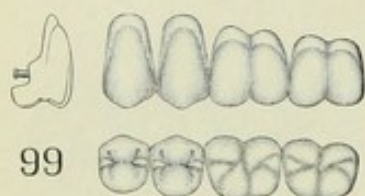
PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars—(Continued)



PLAIN TEETH FOR VULCANITE WORK

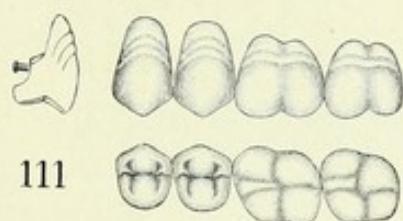
Upper, Bicuspids and Molars—(Continued)



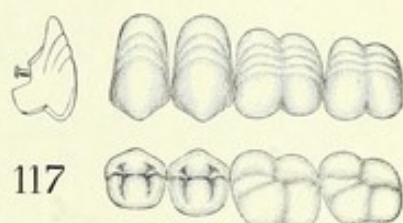


PLAIN TEETH FOR VULCANITE WORK

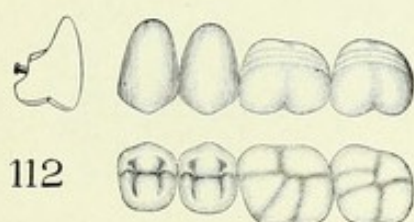
Upper, Bicuspid and Molars—(Continued)



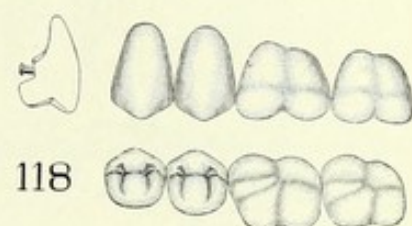
111



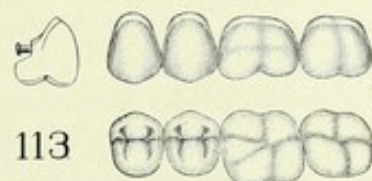
117



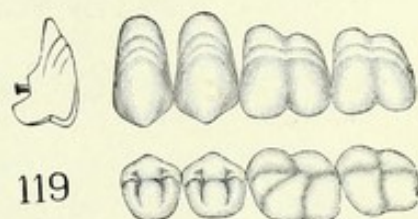
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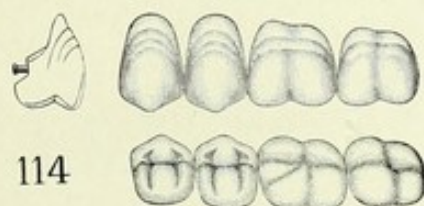
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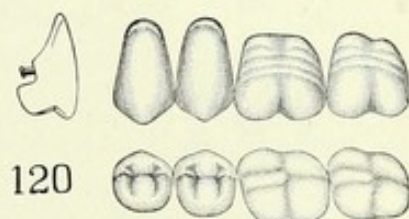
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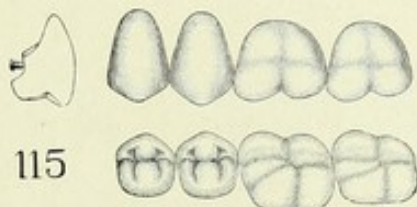
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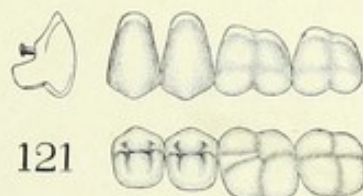
114



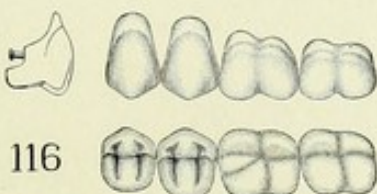
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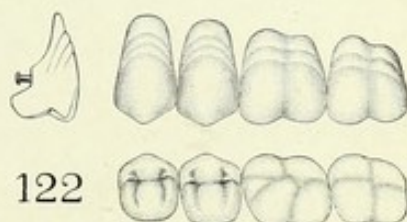
115



121



116

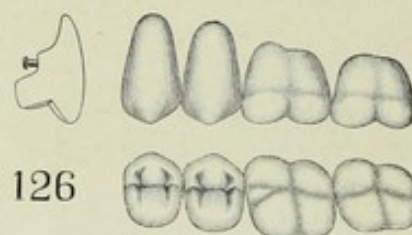
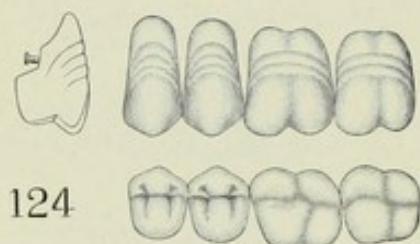
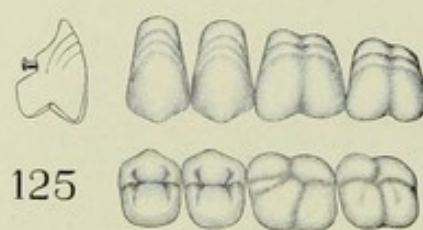
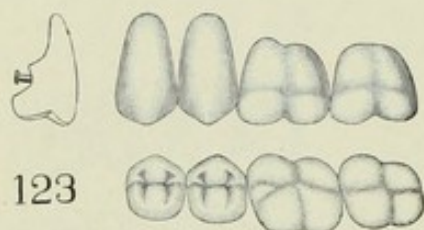


122



PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspids and Molars—(Continued)

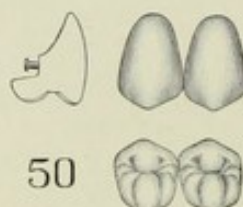
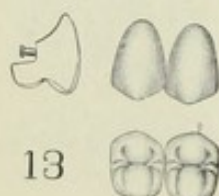
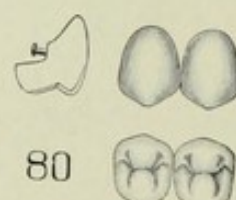
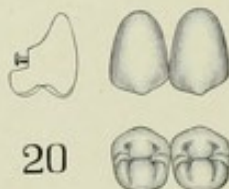
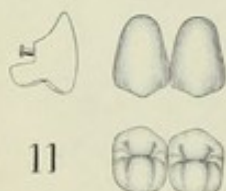
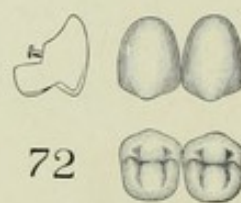
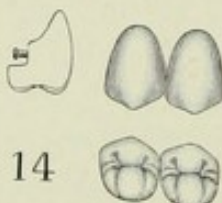
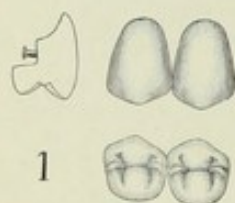


PLAIN TEETH FOR VULCANITE WORK

Upper, Bicuspids, Special

The illustrations of upper bicuspids show the buccal faces of the teeth for the left side; an outline view of the first bicuspid from the anterior approximal surface, indicating the thickness of the tooth, the length of ridge-lap, and the curve of the buccal face; also, a view of the occlusal surfaces.

Sold as single teeth, and in sets of 4.



PLAIN TEETH FOR VULCANITE WORK

Upper, Semi-bicuspids and Molars

FIG. 1

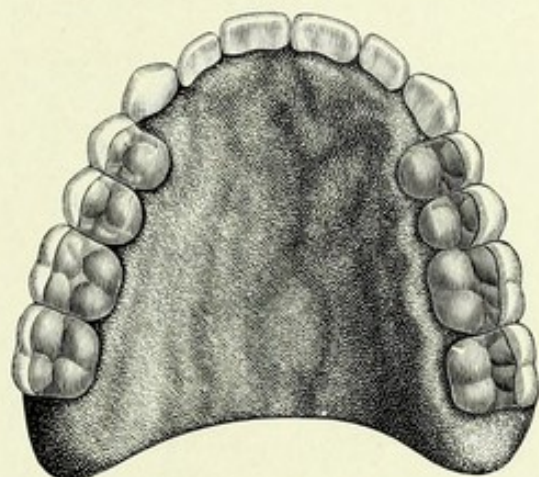
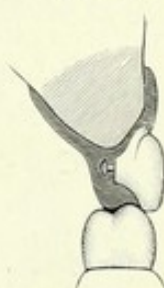


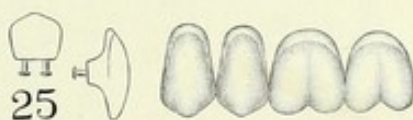
FIG. 2



Semi-bicuspids and molars are largely used for vulcanite work in Europe in cases where full bicuspids and molars would be objectionable on account of the noise caused by the "clicking" of the teeth in occlusion. The palatal cusps are formed of the rubber of the base-plate in vulcanizing. A full denture with the palatal cusps of the bicuspids and molars so formed is shown in Fig. 1. Fig. 2 shows the occlusion of upper and lower bicuspids in this style of denture, the buccal cusp of the lower tooth striking against the vulcanite palatal cusp of the upper. This form of teeth is also useful in the classes of cases described at page 190, where the closure of the jaws is of a character to prevent the use of bicuspids or molars with palatal cusps. Veneers or Facings, illustrated at pages 154, 155 and the plain cuspids, at pages 150, 151, are also largely used in these cases.

The illustrations of bicuspids and molars show the buccal faces of the teeth for the left side; an outline view of the first bicuspid from the anterior approximal surface, indicating the thickness of the tooth, the length of the bite and of the ridge-lap, and the curve of the buccal face; and an end view in outline.

Sold as single teeth, and in sets of 4 (bicuspids or molars) and sets of 8 (bicuspids and molars).



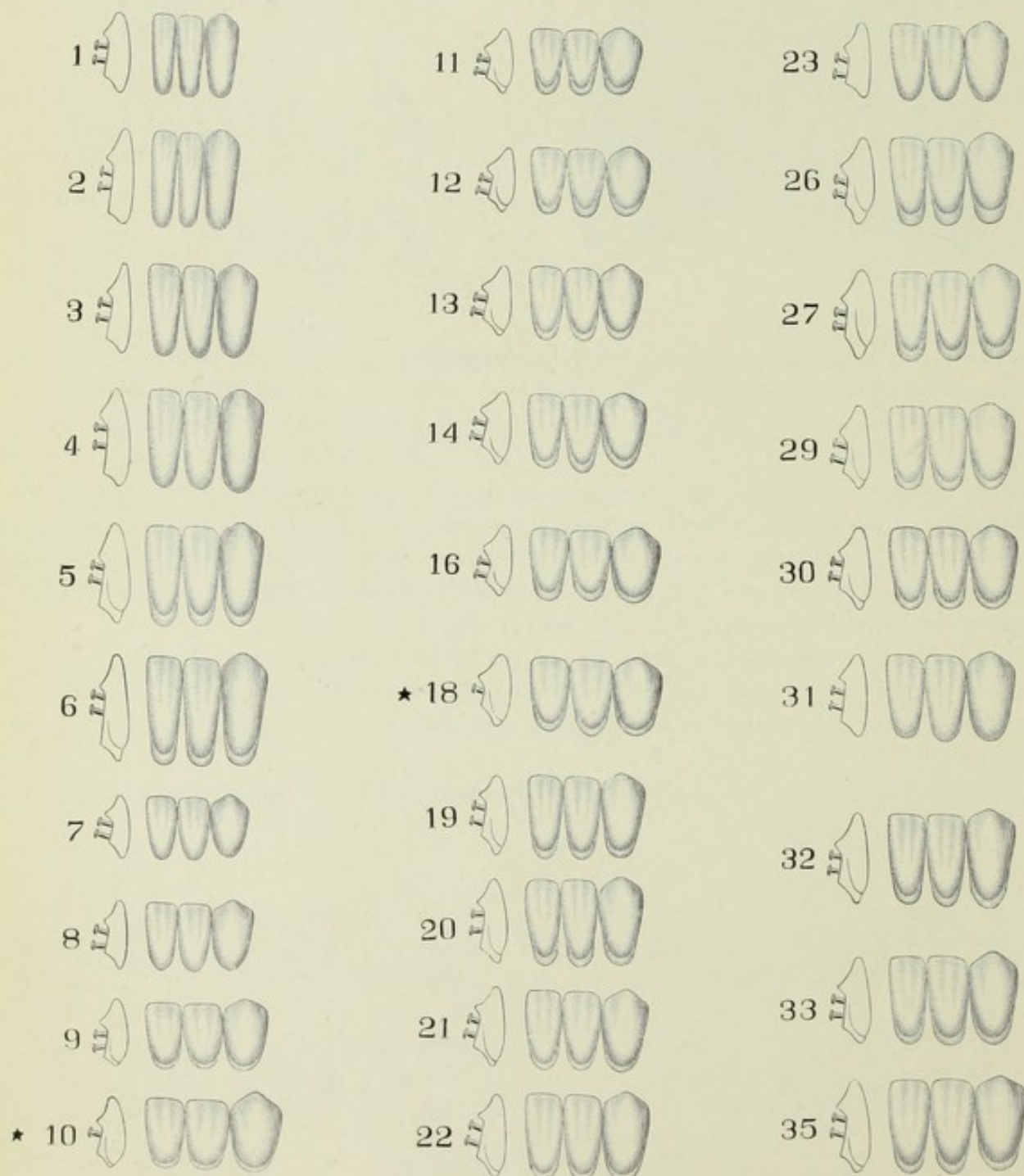
PLAIN TEETH FOR VULCANITE WORK

Lower, Incisors and Cuspid

The illustrations of lower incisors and cuspids show the labial faces of the teeth for the left side; an outline view of the central from the median approximal surface, indicating the thickness of the tooth, the length of the bite and of the ridge-lap, and the curve of the labial face.

Molds 51 to 58 inclusive are known as "natural" molds, and are used in assembling sets of 28 of the "natural" or artistic forms (see page 109).

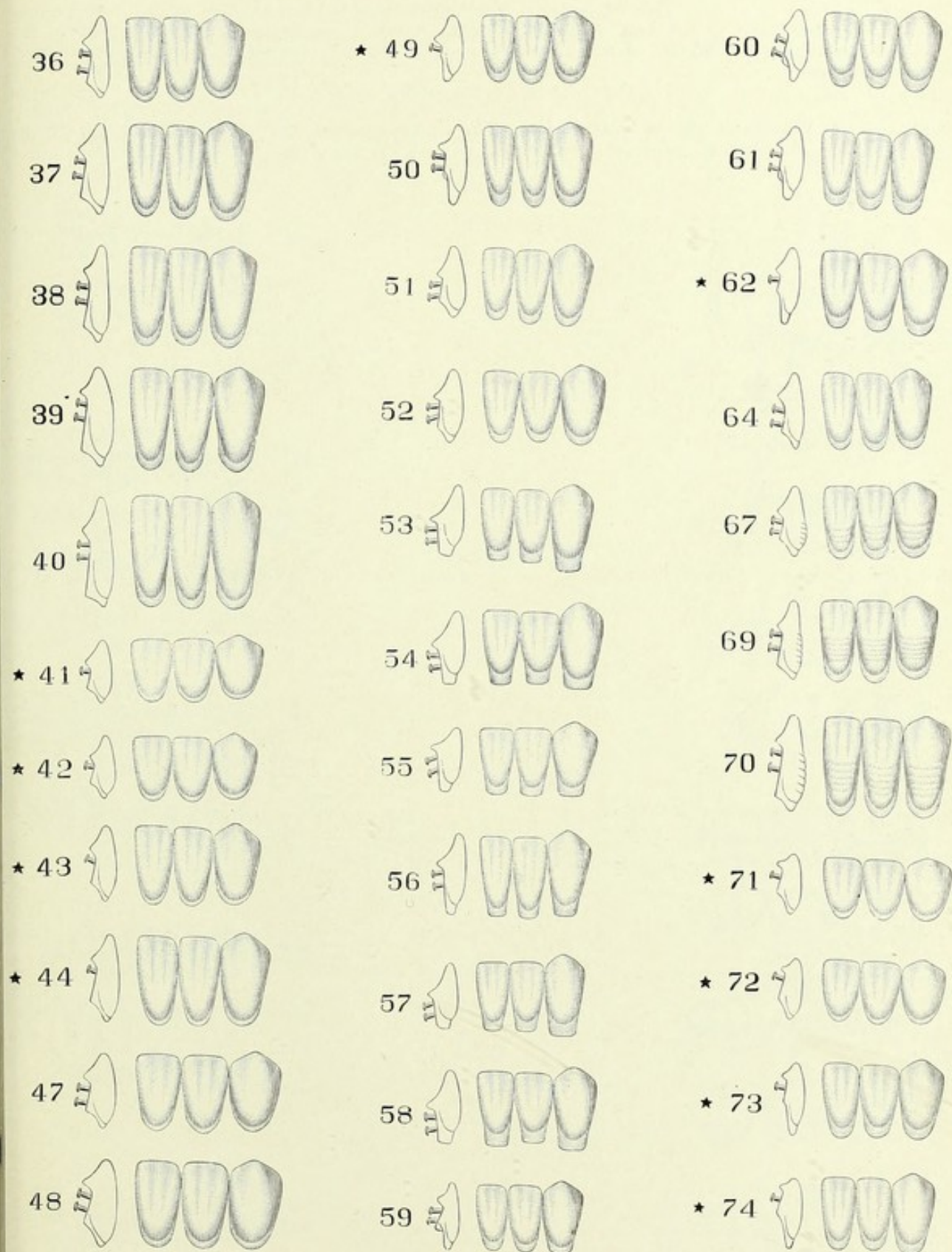
Sold as single teeth, and in sets of 2 (incisors or cuspids), 4 (centrals and laterals), 6 (centrals, laterals, and cuspids), 14 (full lowers), and 28 (full sets, upper and lower matched).



Molds marked with an asterisk (*) are made with the pins set crosswise only, while all others are made with the pins set lengthwise only.

PLAIN TEETH FOR VULCANITE WORK

Lower, Incisors and Cuspids—(Continued)



Molds marked with an asterisk (*) are made with the pins set crosswise only, while all others are made with the pins set lengthwise only.

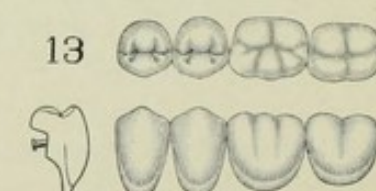
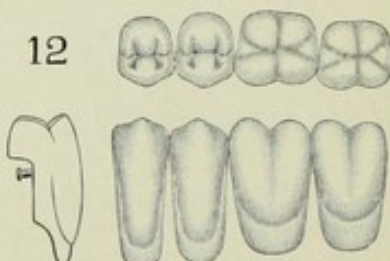
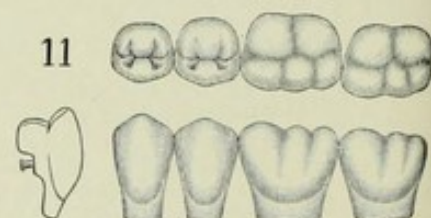
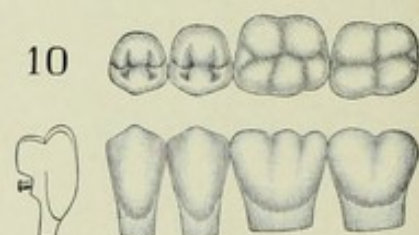
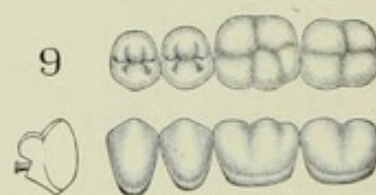
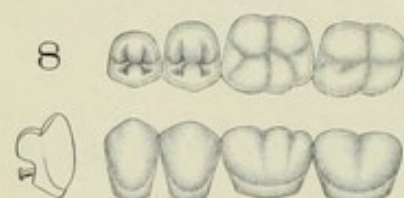
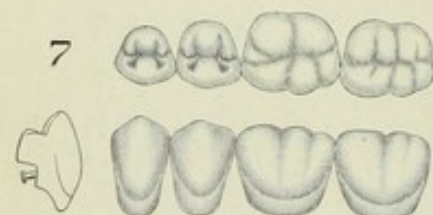
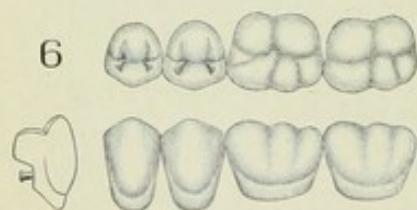
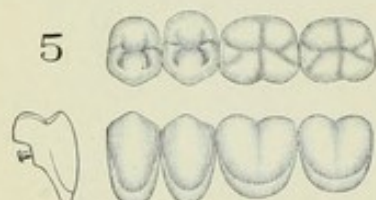
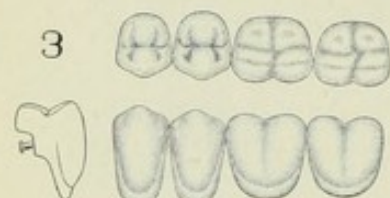
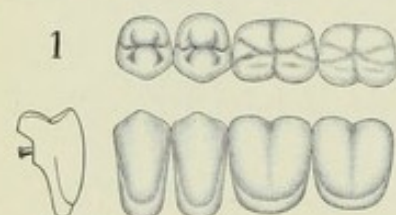
PLAIN TEETH FOR VULCANITE WORK

Lower, Bicuspid and Molars

The illustrations of sets of lower bicuspid and molars show the buccal faces of the teeth for the left side; an outline view of the first bicuspid from the anterior approximal surface, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the buccal face; also a view of the occlusal surfaces.

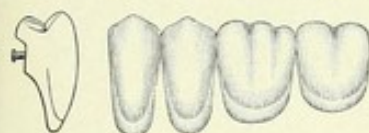
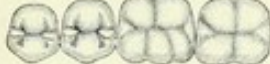
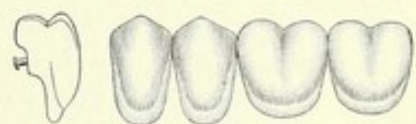

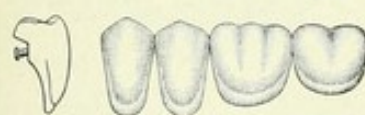
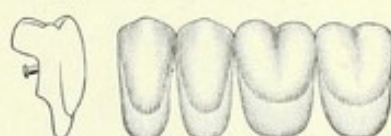
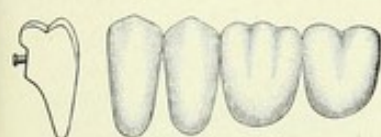

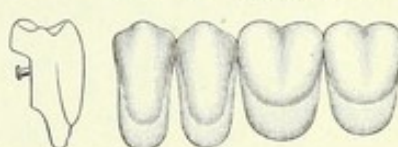

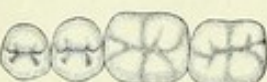
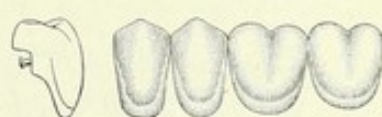

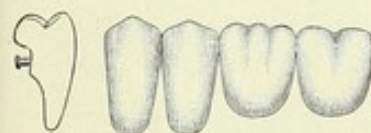
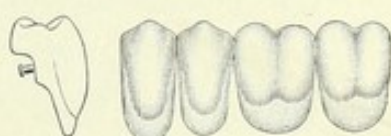
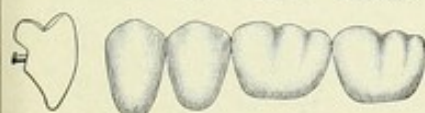
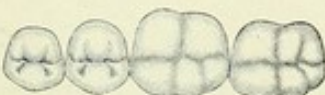
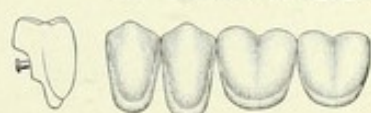

Molds 100 and 102 are "natural" forms, used in assembling sets of 28 of the forms shown in page 109.

Sold as single teeth, and in sets of 4 (bicuspids or molars), 8 (bicuspids and molars), 16 (bicuspids and molars matched with uppers), 14 (in full lower sets), and 28 (full sets, upper and lower matched).



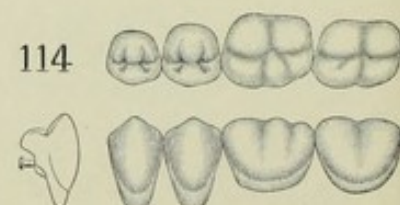
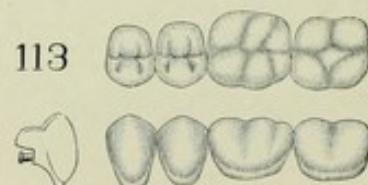
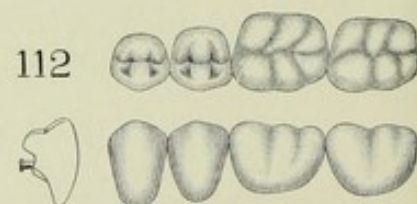
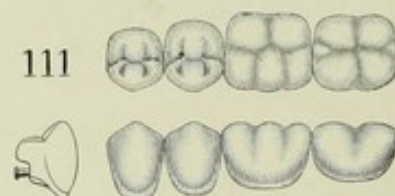
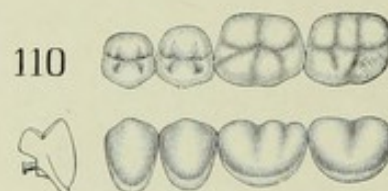
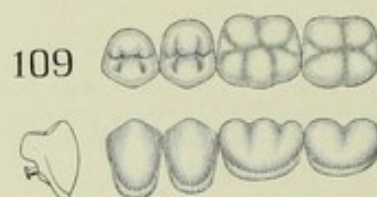
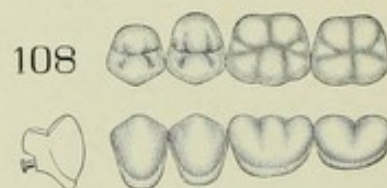
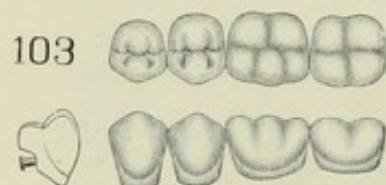
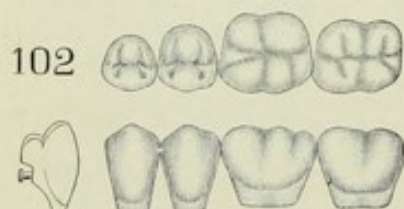
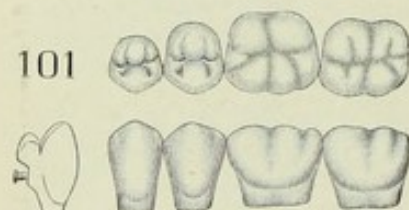
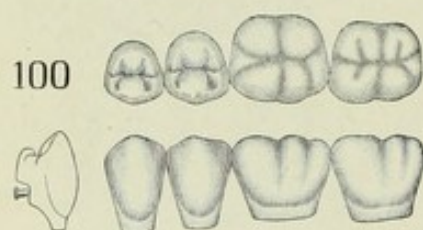
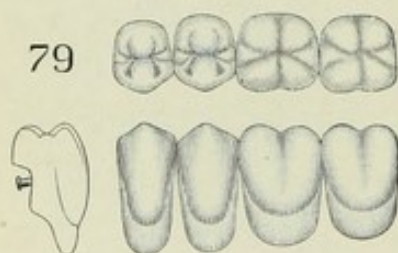
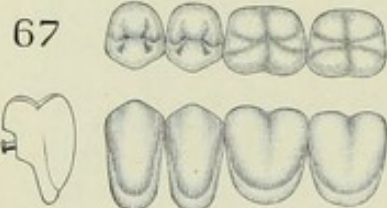
PLAIN TEETH FOR VULCANITE WORK

Lower, Bicuspid and Molars—(Continued)

14 21 15 40 16 42 17 49 19 61 20 66 

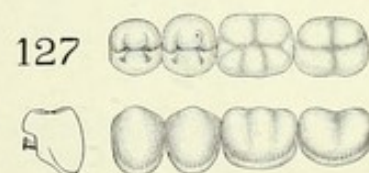
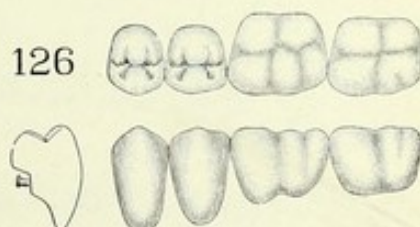
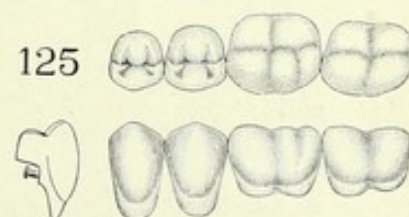
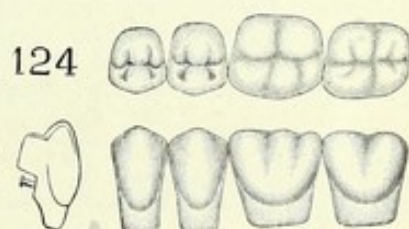
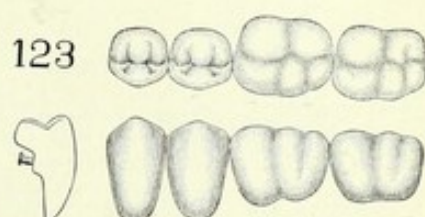
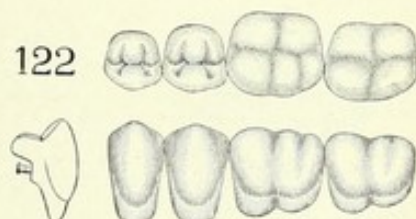
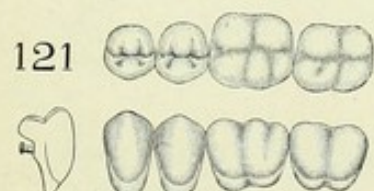
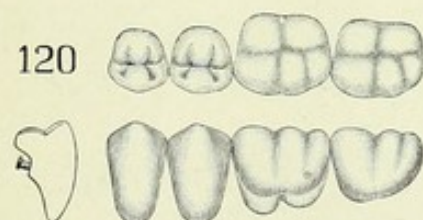
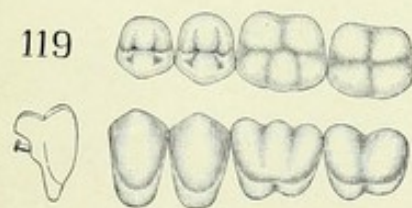
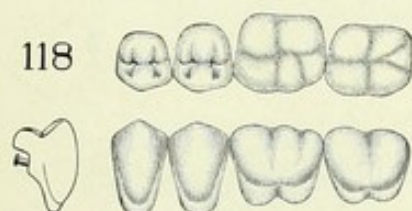
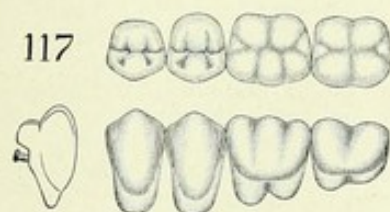
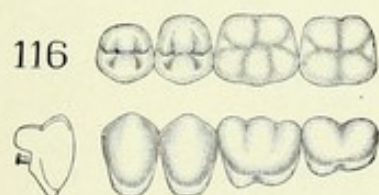
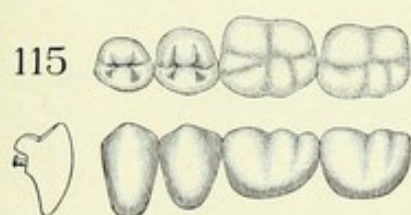
PLAIN TEETH FOR VULCANITE WORK

Lower, Bicuspid and Molars—(Continued)



PLAIN TEETH FOR VULCANITE WORK

Lower, Bicuspid and Molars—(Continued)

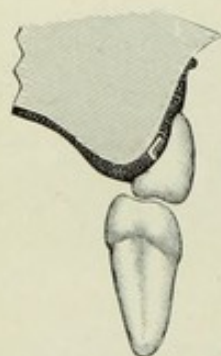




SADDLE-BACK TEETH FOR CROWN, BRIDGE, AND VULCANITE WORK

Upper, Bicuspsids and Molars

FIG. 1



Teeth in Occlusion

FIG. 2

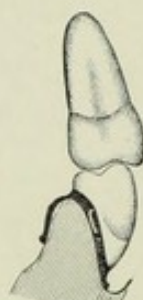
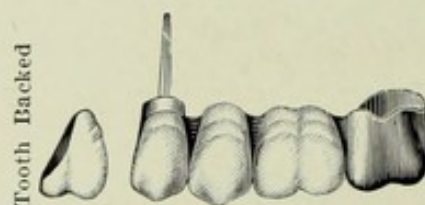


FIG. 3



Completed Posterior Bridge

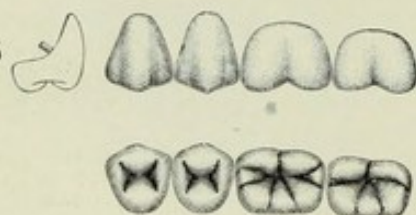
The so-called "saddle-back" bicuspsids and molars are especially designed for vulcanite dentures in cases in which an extremely full posterior maxillary ridge is combined with a short shut of the jaws. They are also well adapted for posterior crown- and bridge-work, in which they have a decided advantage over gold crowns because of the more natural appearance they present.

Figs. 1 and 2 show the occlusion of a saddle-back upper and lower with natural teeth; Fig. 3 a saddle-back bicuspid backed for attachment to a bridge, and a completed posterior bridge formed of saddle-back teeth.

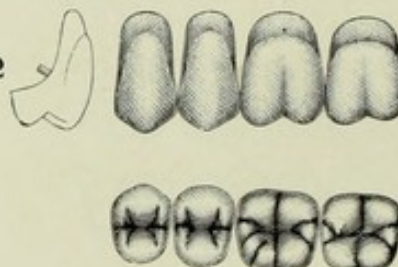
The illustrations show the buccal faces of the teeth for the left side; an outline view of the first bicuspid from the anterior approximal face, indicating the thickness of the tooth, the length of the ridge-lap and the curve of the buccal face; also, a view of the occlusal surfaces.

Sold as single teeth, and in sets of 4 (bicuspsids or molars), 8 (bicuspsids and molars), 16 (bicuspsids and molars matched with lowers, except 42, 49, 73, and 82, upper, and 24 and 56, lower).

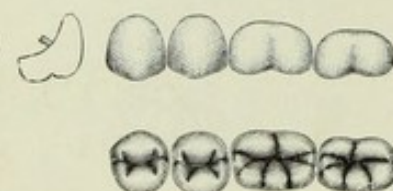
25



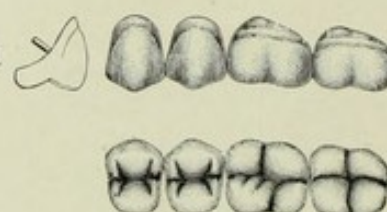
52



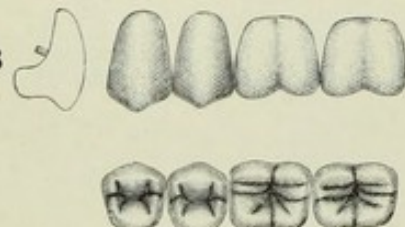
42



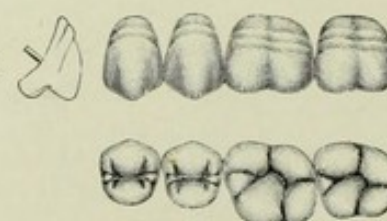
61



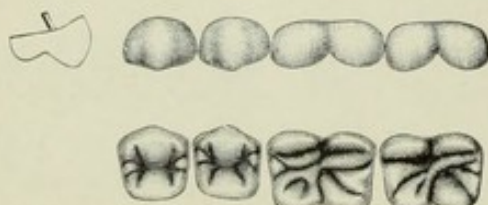
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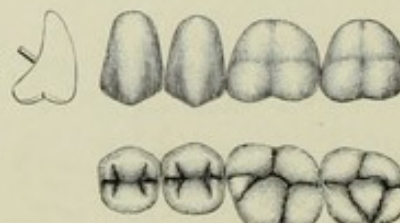
62



49

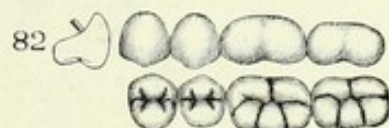
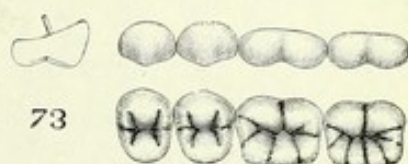
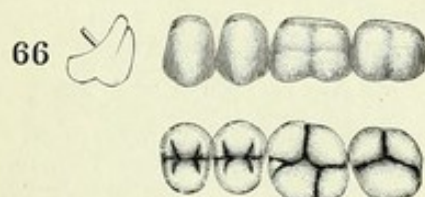
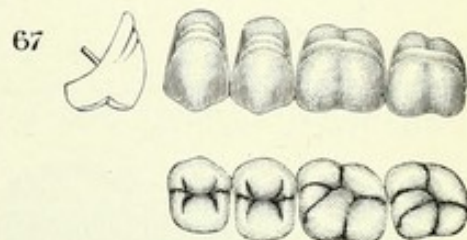
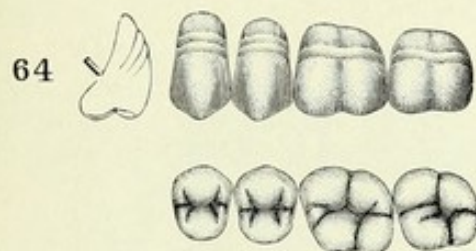


63

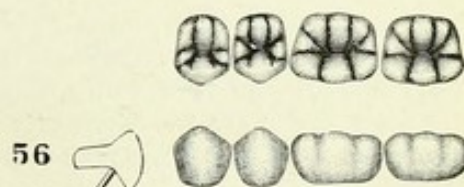
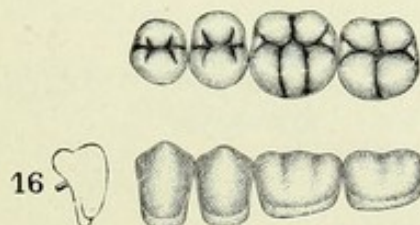
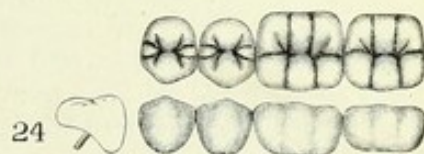
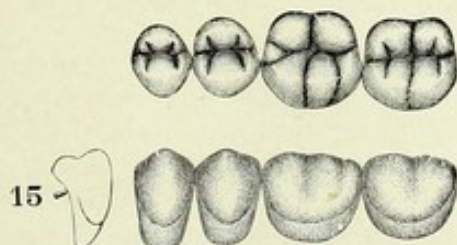
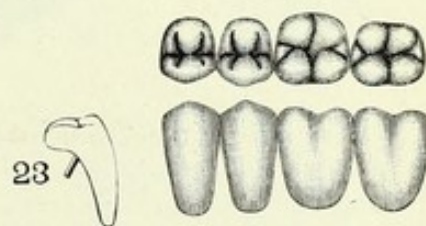
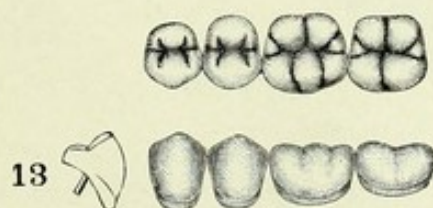
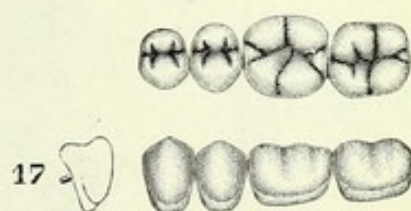
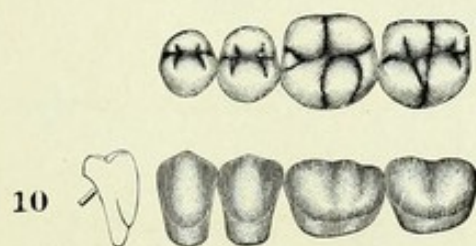


SADDLE-BACK TEETH FOR CROWN, BRIDGE, AND VULCANITE WORK

Upper, Bicuspids and Molars—(Continued)



Lower, Bicuspids and Molars



PLAIN TEETH FOR VULCANITE WORK

Countersunk Pin

FIG. 1

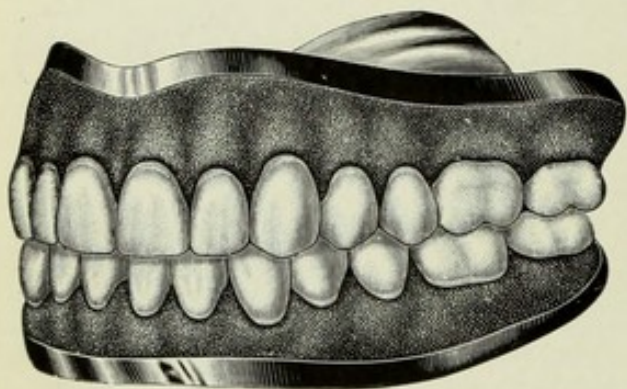


FIG. 2

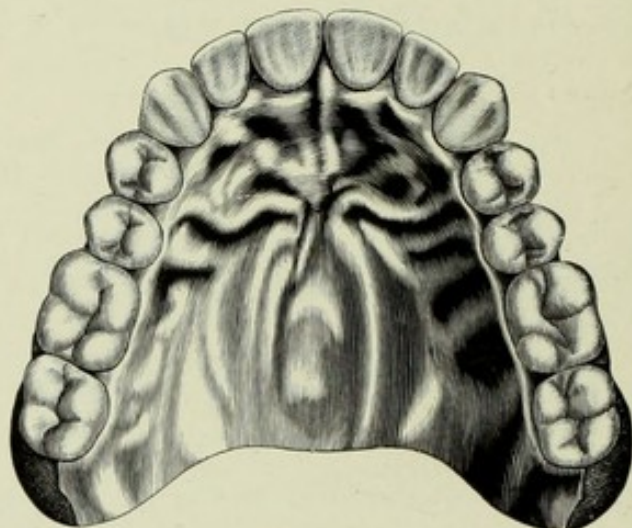
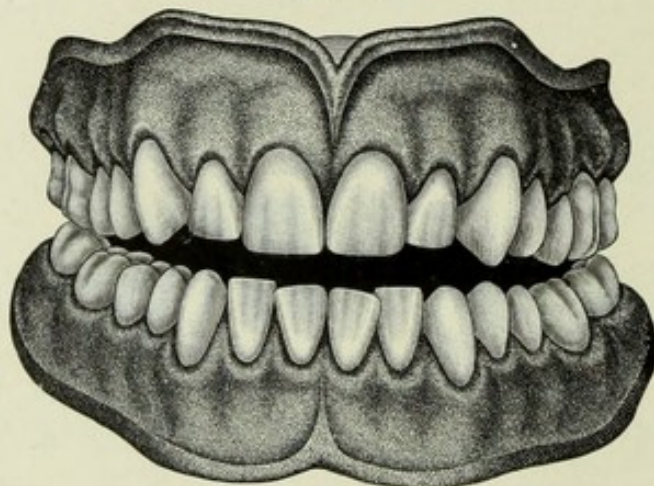


FIG. 3



The Countersunk-Pin Teeth were originally designed to afford the dentist a further opportunity to imitate nature in vulcanite work. They represent the entire crown in porcelain, which, with their close conformity to the natural organs in shape, makes them more agreeable to the tongue than the ordinary forms. Articulation in speech is thus easier and more distinct, and the artificiality of the teeth is not readily disclosed when the mouth is opened.

The base of each crown is hollowed out or "countersunk," and the pin is so inserted in the body of the tooth that the head projects into the countersink. The rubber is so packed that when vulcanized it envelops the pin, as well as the neck, forming a firm attachment. The attachment can be further strengthened by placing a brass or steel wire in the coronal cavity, leaving it long enough to extend beyond the neck into the rubber; or a staple (see illustrations of molds Nos. 1 upper and 4 lower) can be extended from one tooth to another. These wires or staples are of course to be placed in position after the case is invested in the flask, and before packing the rubber. Some prosthetic dentists notch the approximal walls at the cervical ends of the teeth, which allows the rubber to form a continuous bar over the ridge.

The Countersunk-Pin Teeth make a beautiful and serviceable denture when mounted either on vulcanite or on gold plate with a facing vulcanite for attachment, or on celluloid base.

Figs. 1 and 2 are two views of an upper denture made of Countersunk-Pin Teeth mounted on 18-karat gold plate, with vulcanite facing. Fig. 3 shows a full upper and lower denture on celluloid base.

PLAIN TEETH FOR VULCANITE WORK

Countersunk Pin

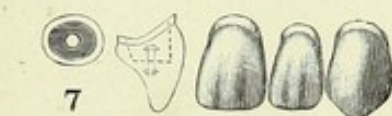
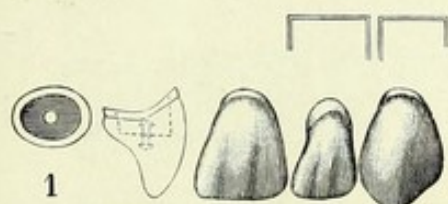
Upper, Incisors and Cuspid

The demand for this class of Teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on ORDER ONLY at the prices quoted on page 215. Teeth so made will not be returnable.

The illustrations show the labial faces of the incisors and cuspids, and the buccal faces of the bicuspid and molars for the left side; outline views indicating the bite, the position of the countersink and the pin, the thickness of the teeth, and the curve of the labial or buccal face; and a sectional view indicating the size of the countersink and the thickness of the porcelain wall.



Lingual and sectional views of the Countersunk-Pin Teeth.



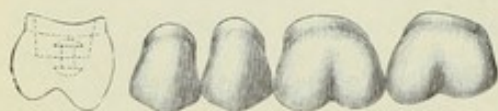
Lower, Incisors and Cuspid



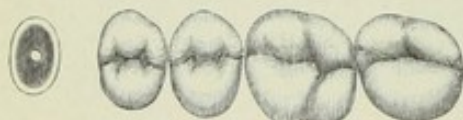
PLAIN TEETH FOR VULCANITE WORK

Countersunk Pin—(Continued)

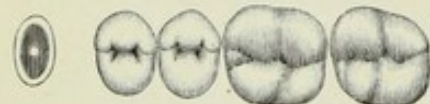
Upper, Bicuspid and Molars



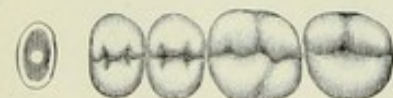
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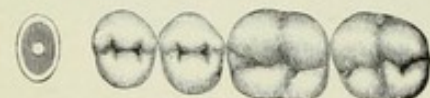
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5



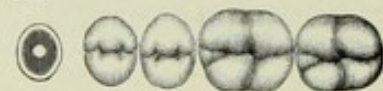
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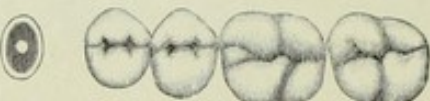
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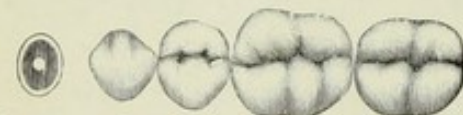
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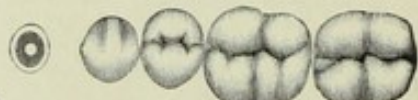
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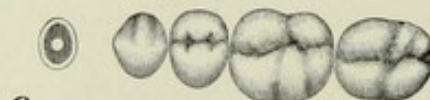
Lower, Bicuspid and Molars



3



4



6



DIATORIC (PINLESS) TEETH FOR VULCANITE WORK

Patented March 25, 1902

Equal to Plain Teeth for Vulcanite Work

The only essential difference between our Diatoric and Plain Teeth for Vulcanite Work is that the expensive factor, platinum, is eliminated from the former, and in consequence they are much lower in price. In every respect, except the pins, our Diatoric Teeth are precisely the same.

The molds are copies of our most popular forms of bicuspid and molars, the mold-work is the best we know how to produce, the molding and enameling cannot be excelled. In other words, they are *first-class teeth*. They have all the elements of strength, naturalness of shape and color, and ease of adaptation, which have won and maintained for our Porcelain Teeth their pre-eminence.

So far as their attachment to the vulcanite is concerned, there is no question that it is at least as strong as that of any pin teeth. The assured strength of this attachment will be readily understood by reference to the diagrams, and description which follow.

The Advantages of the Diatoric Form

The great advantage of our Diatoric Teeth is that they afford the dentist the opportunity to use the Premium Teeth of the World at a price which ought to prohibit the thought of so-called "cheap" teeth.

There are thirty-five molds of these Diatoric (Pinless) bicuspid and molars giving a range of selection ample for practically all needs.

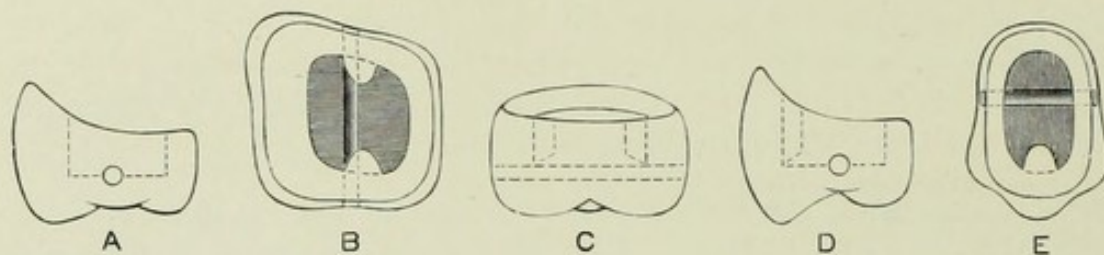
That the excellence of these teeth and their advantages are appreciated is testified by the great sale to which they have attained in the few years they have been before the profession.

Means of Attachment

To provide the necessary means of attachment, our Diatoric Teeth are hollowed or cupped out from the cervix well toward the occlusal surface (Fig. 1 A, D). At the level of the bottom of the recess a hole extends transversely across the tooth from the mesial to the distal approximal wall, forming a groove in the floor of the concavity (Fig. 1 A, B, C, D, E). The purpose of this hole is to permit an uninterrupted flow of the

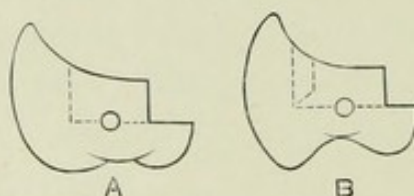
rubber when subjected to the "flasking" pressure, by affording vent for air and moisture at the bottom of the cavity. Without such vent, the close adaptation of the vulcanite to the walls would be interfered with, thereby seriously affecting the security of the attachment. As the air is forced out of the vents the softened rubber flows in, filling the groove and the holes, and forming two additional attachments, which materially

FIG. 1



strengthen the hold upon the tooth. A further reinforcement of the attachment is provided by means of undercut lugs (Fig. 1 C, D) projecting from the walls of the recess (Fig. 1 B, E) in all of the molds except the bicuspid of Nos. 18 upper and 1, 2, 4, 5, and 10 lower, the holes or cups of which are too small to permit it. These lugs practically lock the plug of vulcanite into the recess so that it cannot pull out, a feature we

FIG. 2



consider not only a great improvement over our older forms, but a long advance over any other pinless teeth on the market. It unquestionably affords an amply secure attachment. For cases where an abnormally short shut of the jaws requires that the teeth be set right on the ridge, the necessary depth of rubber for a strong attachment can be provided for by grinding at the palatal side of the cervix of the tooth (Fig. 2 A, B).

DIATORIC (PINLESS) TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars

Patented March 25, 1902

The illustrations show the buccal and occlusal surfaces of the teeth for the left side. The anterior approximal view of the first bicuspid indicates the thickness of the tooth, the length of the ridge-lap, the curve of the buccal face, and the position and size of the transverse hole leading to the recess.

Sold in sets of 4 (bicuspids or molars), 8 (bicuspids and molars), 16 (upper and lower bicuspids and molars matched), and "Combination Sets" (see page 137).



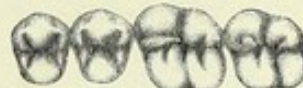
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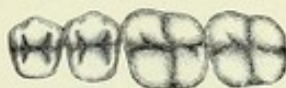
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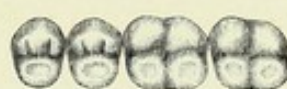
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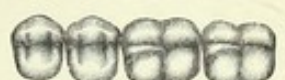
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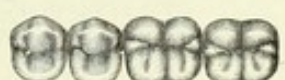
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11



12



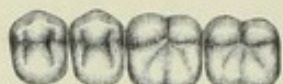
DIATORIC (PINLESS) TEETH FOR VULCANITE WORK

Upper, Bicuspid and Molars—(Continued)

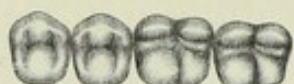
Patented March 25, 1902



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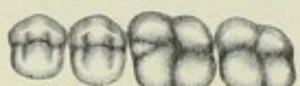
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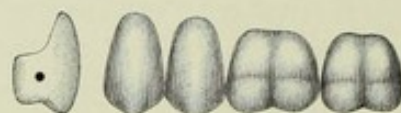
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18



19



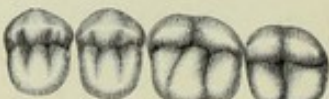
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21

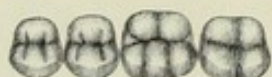


22



Lower, Bicuspid and Molars

1



2

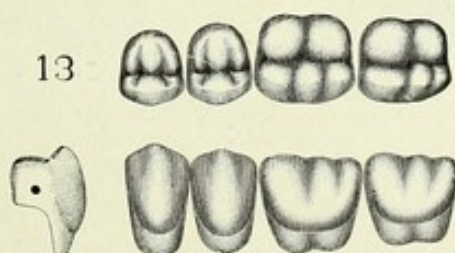
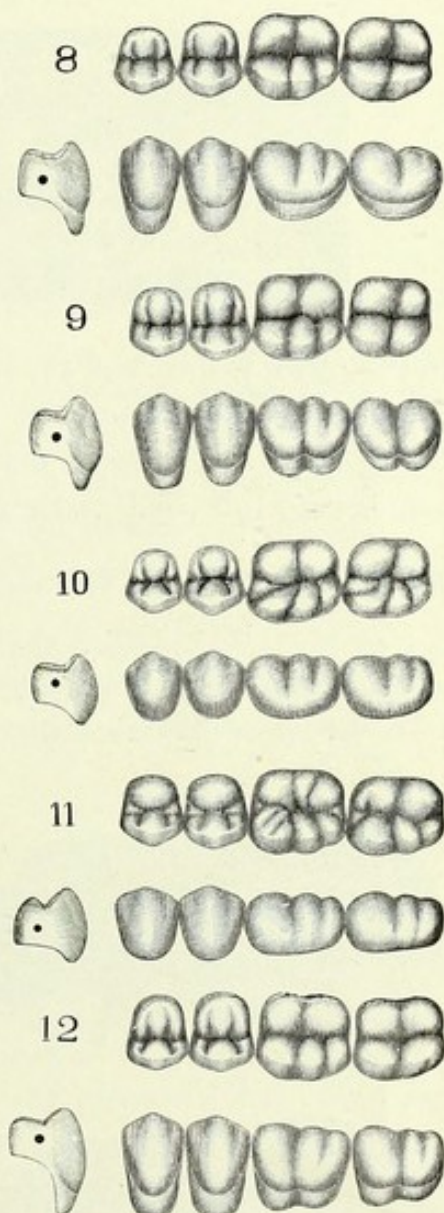
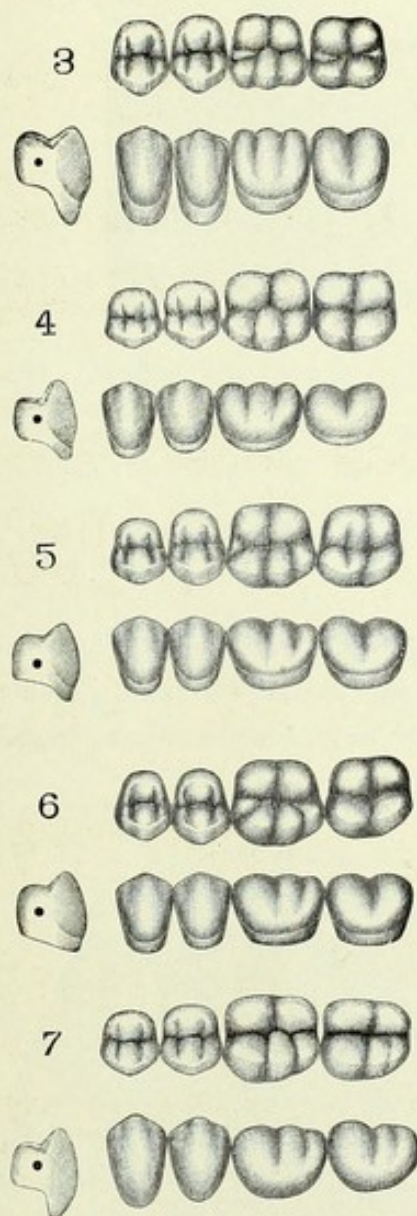




DIATORIC (PINLESS) TEETH FOR VULCANITE WORK

Lower, Bicuspid and Molars—(Continued)

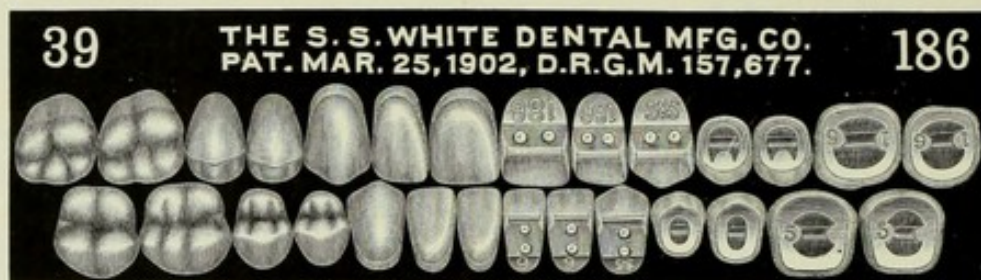
Patented March 25, 1902



S. S. WHITE "COMBINATION SETS"

The natural outcome of the adoption of Diatoric Bicuspids and Molars is their use with Plain Incisors and Cuspids for Vulcanite work to form full sets of 14 and 28. To make perfectly clear the nature of this adaptation we illustrate a full "Combination Set" of 28 (see Fig. 1). The teeth for the right side are shown as usually carded

FIG. 1



for sale, with the labial and buccal faces in view. Those for the left side are reversed, to exhibit the palatal surfaces, the pins in the incisors and cuspids and the recesses in the bicuspids and molars. On pages 138, 139 are shown the molds of incisors and cuspids used in "Combination Sets," as supplied from stock.

How Diatorics Hold to the Vulcanite

To show how these "Combination Sets," make up, and also to demonstrate the nature of the attachment between our Diatoric Bicuspids and Molars and the vulcanite of the denture, the three illustrations, Figs. 2, 3, 4, are introduced. Fig. 2 shows the

FIG. 2

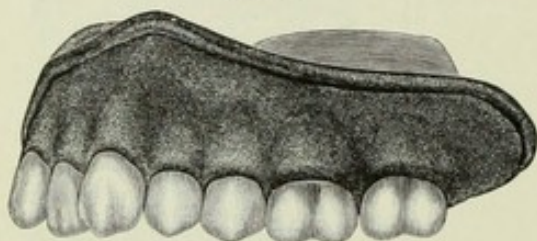


FIG. 3

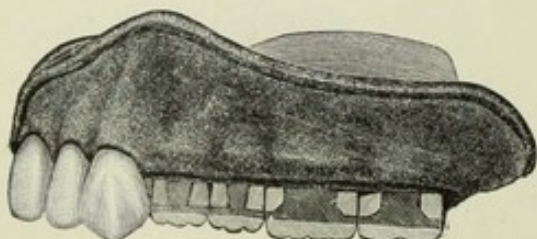
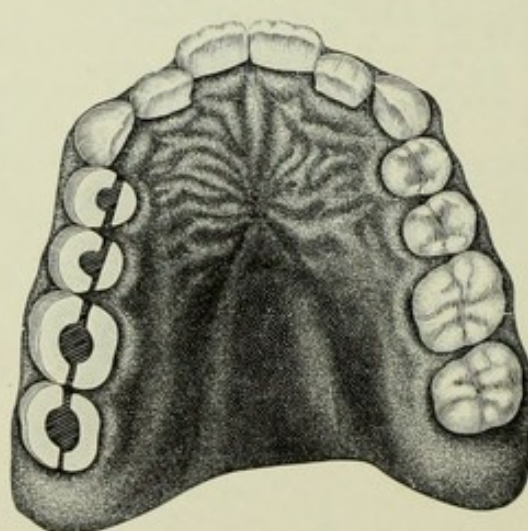


FIG. 4



blending of the Plain and Diatoric Teeth and the finish of the set on the labial and buccal surfaces. Figs. 3 and 4 demonstrate the strength of the attachment of the Diatoric Teeth, the former having been cut vertically, the latter horizontally. In Fig. 4, also, the uncut side gives a clear idea of the finish of the occlusal surfaces.



FIG. 5

If proof were wanting of the character and reliability of the hold of S. S. White Diatoric Teeth to the vulcanite, it would be supplied by the illustration herewith (Fig. 5). The denture from which the illustration was made was constructed of an S. S. White "Combination Set." After the teeth were mounted, the denture was submitted to the action of an acid which dissolved out the porcelain, leaving what we see here. Note the continuous rib of vulcanite extending from the posterior surface of the second molar to the mesial surface of the first bicuspid, buttressed by the dovetailed plugs of vulcanite representing the cavities in the teeth. No more secure attachment is possible than that here shown.

S. S. WHITE "COMBINATION SETS" ARE TEETH OF HIGH QUALITY AND LOW PRICE

In placing our "Combination Sets" at the disposal of the profession we aim to supply the demand of all dentists who want high-grade teeth of our manufacture, at a price considerably lower than that charged for our sets of Plain Teeth for Vulcanite Work.

Our full sets of *Plain Teeth for Vulcanite Work* contain *Platinum Pins* throughout the entire set, so that they are absolutely high grade so far as composition, form, shade and pins are concerned.

To reduce the manufacturing cost and selling price of strictly high-grade porcelain teeth, only two methods can be pursued.

1st. The pins can be made of a base metal, or

2d. The pins can be eliminated entirely and other means for attachment be provided in the tooth.

The method first mentioned, that of using a base-metal pin, is by far the easiest way of cheapening the production. It is only necessary to substitute the base-metal pin for the noble-metal pin (Platinum), no material change in the manufacturers' facilities for tooth production being required.

The second method, providing some method of attachment in place of metal pins is by no means easy. The manufacturer must first design practical tooth forms embodying the new means of attachment, and when this has been accomplished, he must design and manufacture an entirely new stock of molds for producing the teeth.

When the question of supplying the demand for lower price teeth of our manufacture was placed before us for consideration, we naturally desired to find a substitute for Platinum.

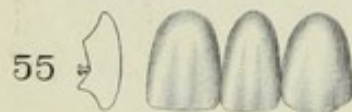
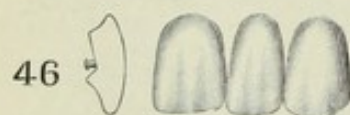
We fully realized the task of making ready for a new form of tooth. We carefully considered the practical value of every metal which would likely prove available.

We made careful experiments on base metal pin teeth of other manufacture, but we found nothing in the form of a metal pin which we were willing to proclaim as a substitute for Platinum.

Having decided against the use of Base-Metal Pins in our teeth we designed and manufactured the S. S. White pinless bicuspids and molars and combined them with Platinum-Pin incisors and cuspids to form the now familiar S. S. White "Combination Sets." Their thorough reliability has been established through years of widespread use.

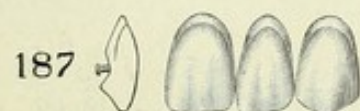
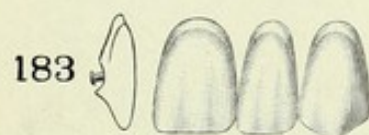
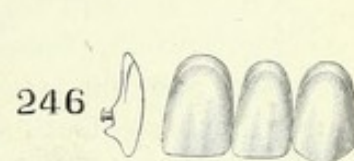
"COMBINATION SETS"—(Continued)

"Combination Sets" are supplied from stock with the following molds of Plain Incisors and Cuspids. Other combinations can be made from partial sets as ordered.



"COMBINATION SETS"—(Continued)

"Combination Sets" are supplied from stock with the following molds of Plain Incisors and Cuspids. Other combinations can be made from partial sets as ordered.



PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

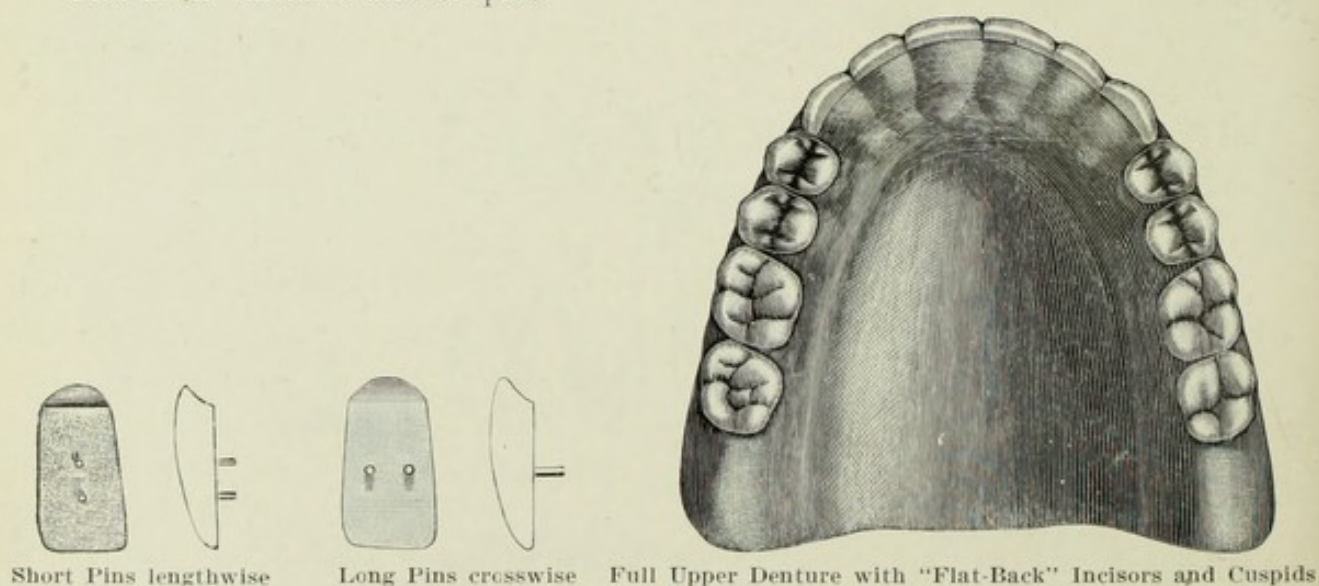
For Metal Plate Work

The style of Porcelain Teeth now to be considered is the original form devised and used for metal plate work. The back of the tooth is flat, with two short plain (headless) pins set lengthwise for riveting to the backing by which the tooth is soldered to the plate.

The demand for Plain Teeth having short pins has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on order only at the prices quoted on page 215. Teeth so made will not be returnable.

For Vulcanite Work

The dentists of Great Britain and the Continent prefer this form of teeth for vulcanite as well as for metal plate work, and they know them as "Flat-Back." To better adapt them to vulcanite work, the pins are made longer, and are set transversely. To give the proper hold in the vulcanite, they bend the long headless pins into hook forms. Modified in this way, the incisors and cuspids have come to be more largely used in vulcanite than in the metal plate work for which they were originally designed. We illustrate the palatal view of a full upper denture made by an English dentist, with "Flat-Back" incisors and cuspids.



Short Pins lengthwise

Long Pins crosswise

Full Upper Denture with "Flat-Back" Incisors and Cuspids

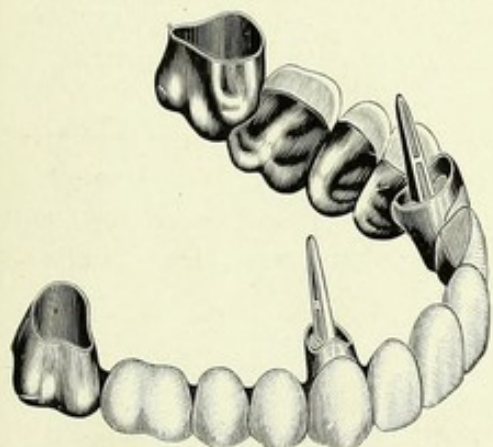
For Crown- and Bridge-Work

The "Flat-Back" teeth last described—those with plain (headless) *long* pins set crosswise—are also largely used in crown- and bridge-work.

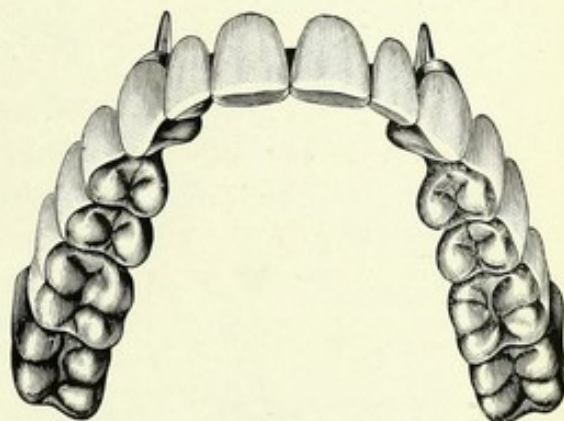
They are especially adapted to making the crowns known as Richmond, and bridges in which that form of crowns is employed, as shown in the illustrations following.



Richmond Crown in parts
and complete



A full denture Richmond Bridge, side view



A full denture Richmond Bridge, occlusal view

The anchorage consists of two molar cap crowns, and two Richmond crowns with Logan anchor posts.

These teeth are also employed by porcelain specialists in the construction of porcelain crowns and bridges.

The illustrations of incisors and cuspids show the labial faces of the teeth for the left side, an outline view of the central incisors from the median approximal face, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the labial face.

These teeth are classified as to size and shape, separating those with neck from those without, and gathering molds with corrugated necks, with thin cutting-edges, shouldered necks, and lapping laterals into groups. This classification is intended to facilitate the selection of teeth by the dentist, who, at a distance from our depots, is compelled to depend upon the catalog as a guide to the size and general character of tooth required.

Sold as single teeth, and in sets of 2 (centrals, laterals, or cuspids), 4 (incisors), 6 (incisors and cuspids).

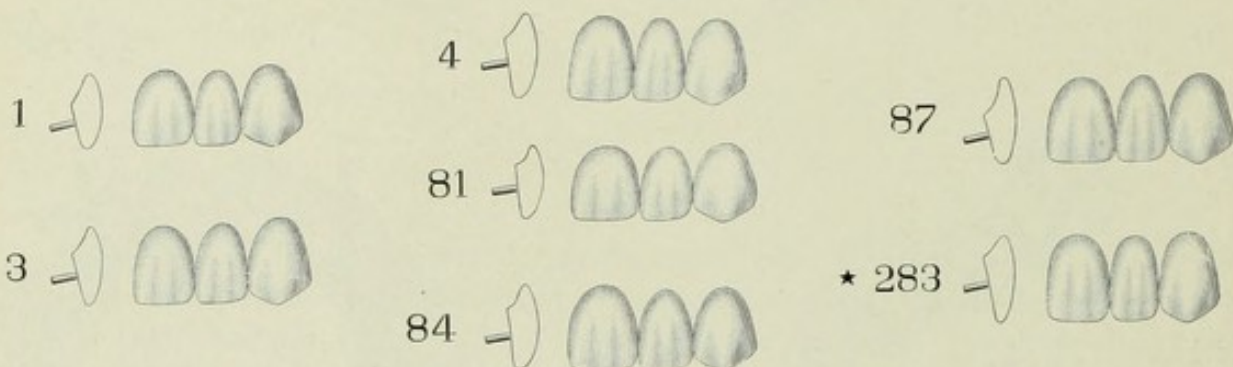
All the molds shown in the following classification of incisors and cuspids are made with long pins set crosswise; those marked with the asterisk (*) can also be made with short pins set lengthwise. (See page 140.)

IN ORDERING, ALWAYS DESIGNATE THE KIND OF PINS WANTED

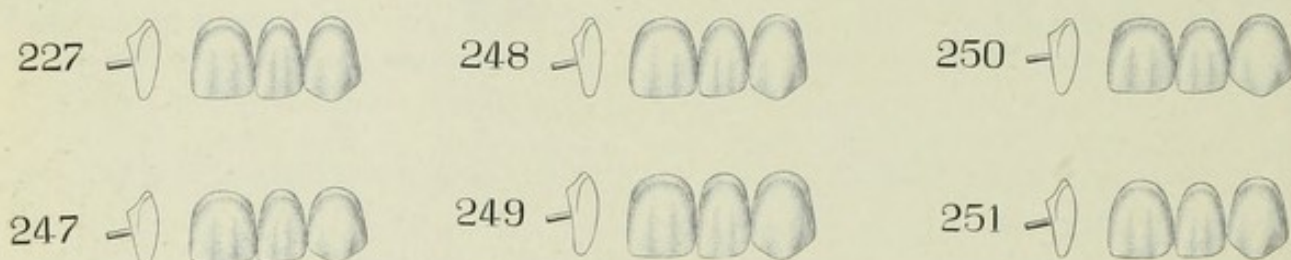
PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid

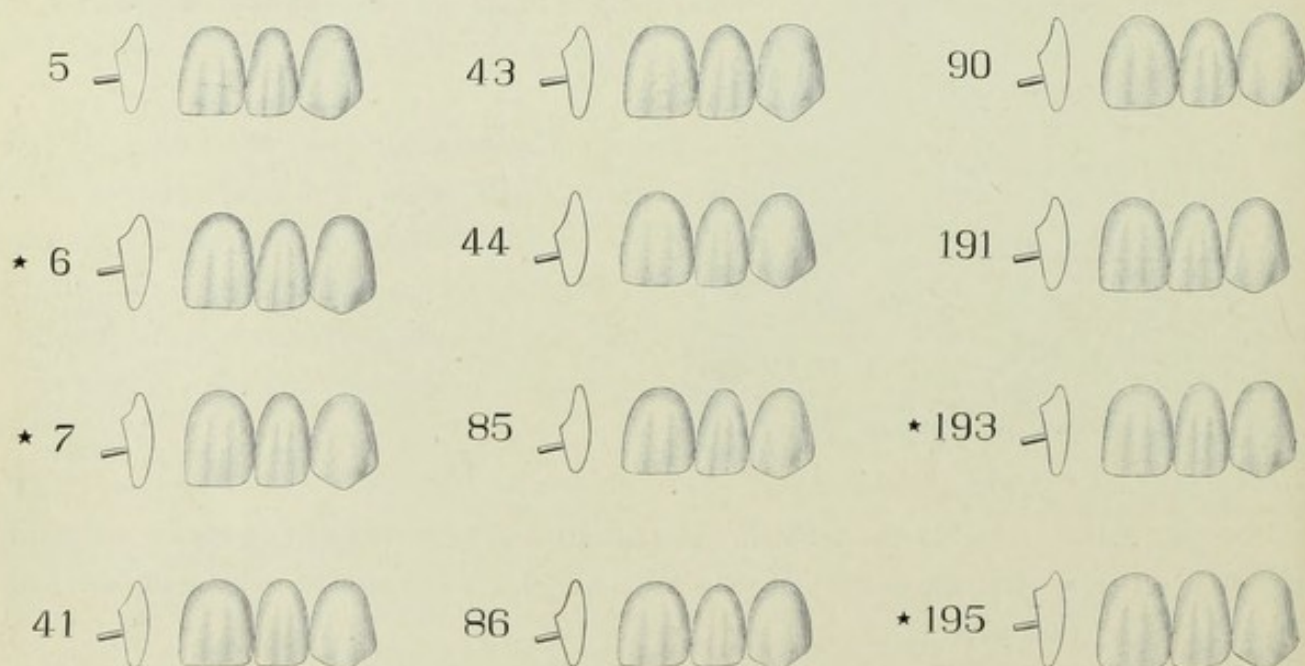
SMALL



SMALL, WITH NECK



SMALL MEDIUM



In ordering, always designate the kind of pins wanted (see page 141)



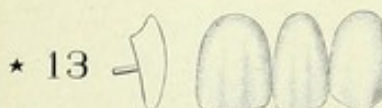
PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

SMALL MEDIUM, WITH NECK



MEDIUM

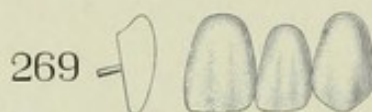
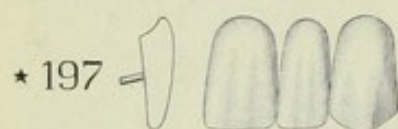
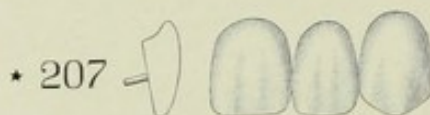
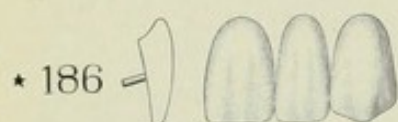
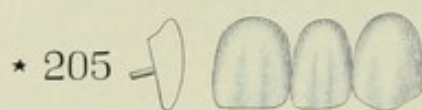
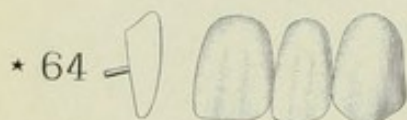


In ordering, always designate the kind of pins wanted (see page 141)

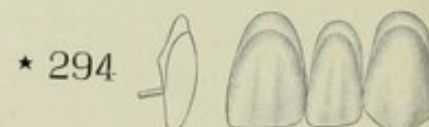
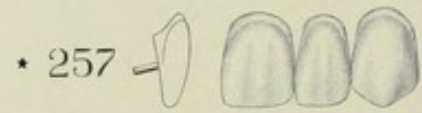
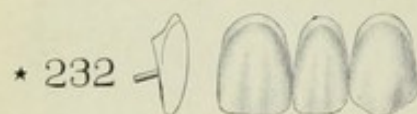
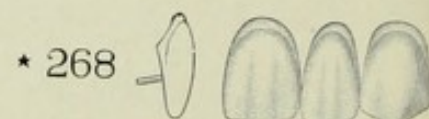
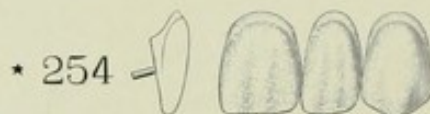
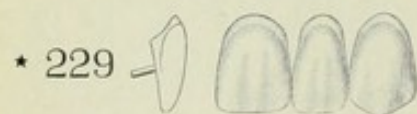
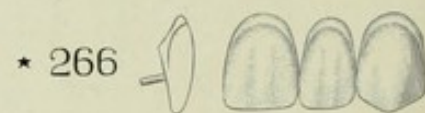
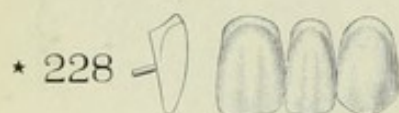
PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

MEDIUM—(Continued)



MEDIUM, WITH NECK

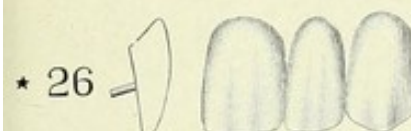
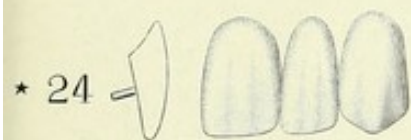


In ordering, always designate the kind of pins wanted (see page 141)

PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

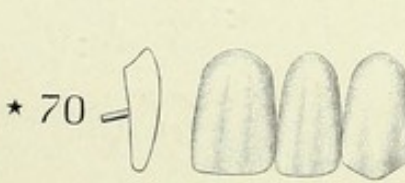
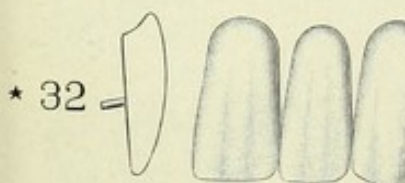
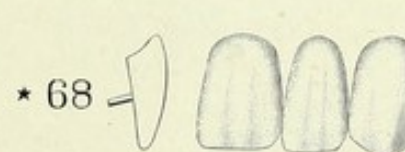
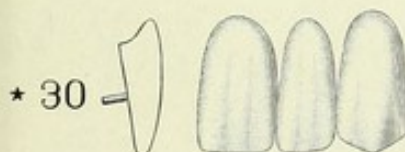
LARGE MEDIUM



LARGE MEDIUM, WITH NECK



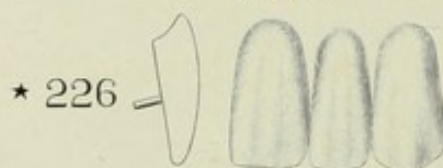
LARGE



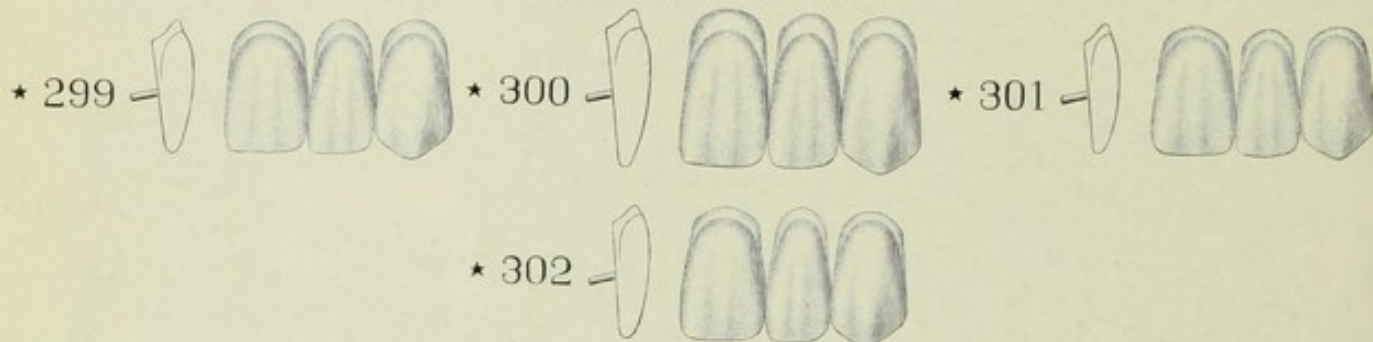
In ordering, always designate the kind of pins wanted (see page 141)

PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK
Upper, Incisors and Cuspid—(Continued)

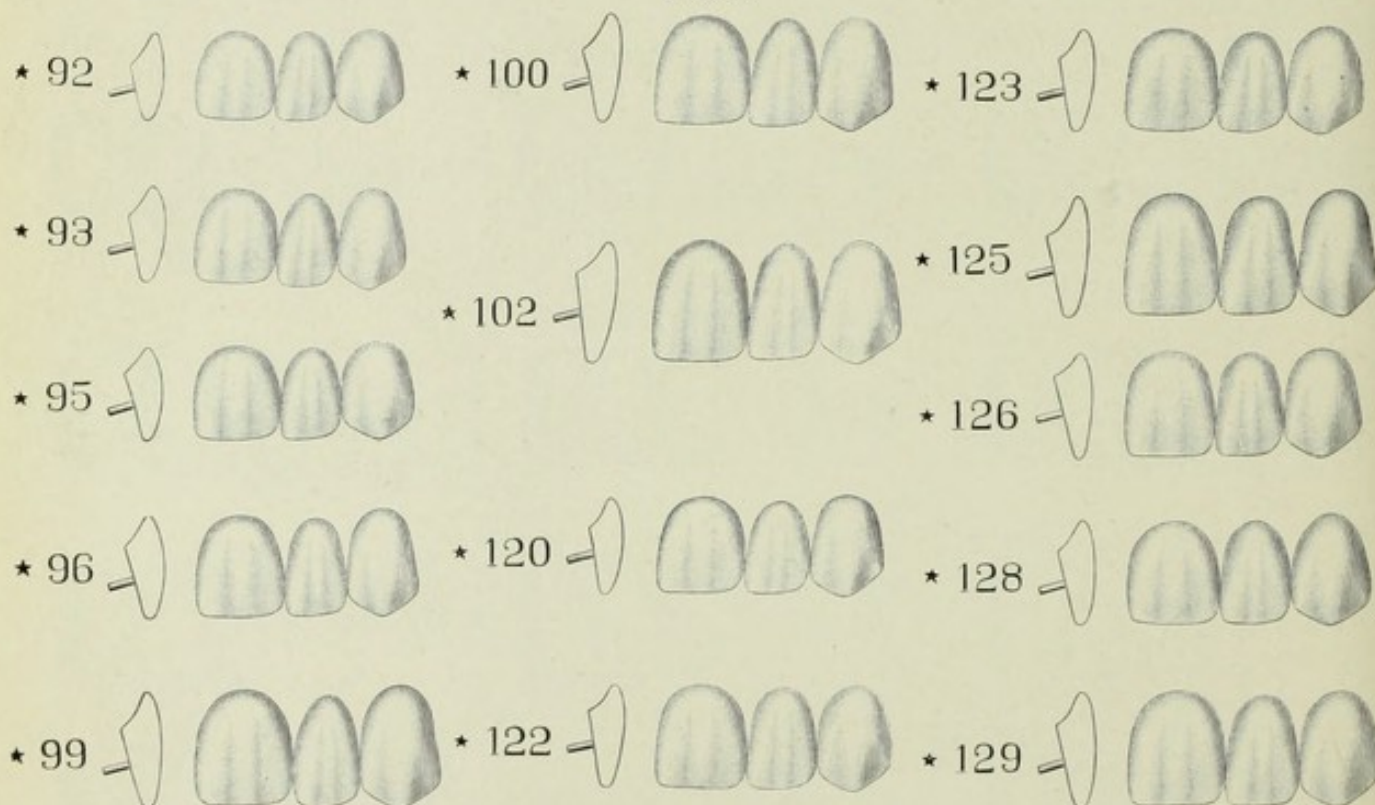
LARGE



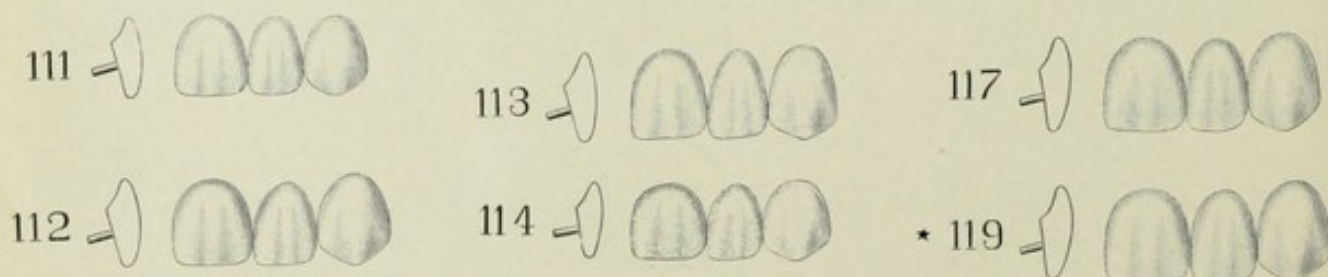
LARGE, WITH NECK



BROAD



SHORT BROAD



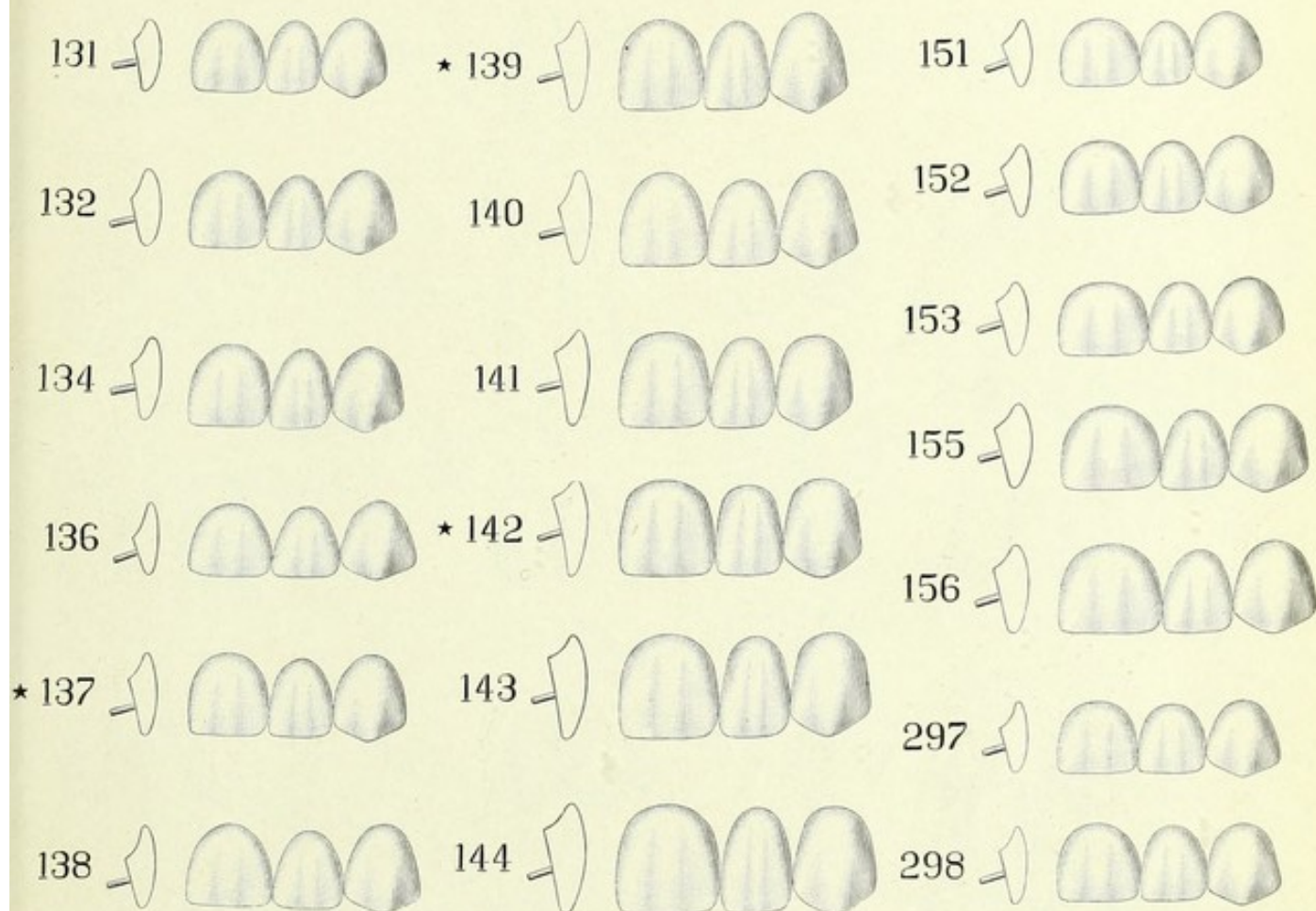
In ordering, always designate the kind of pins wanted (see page 141)



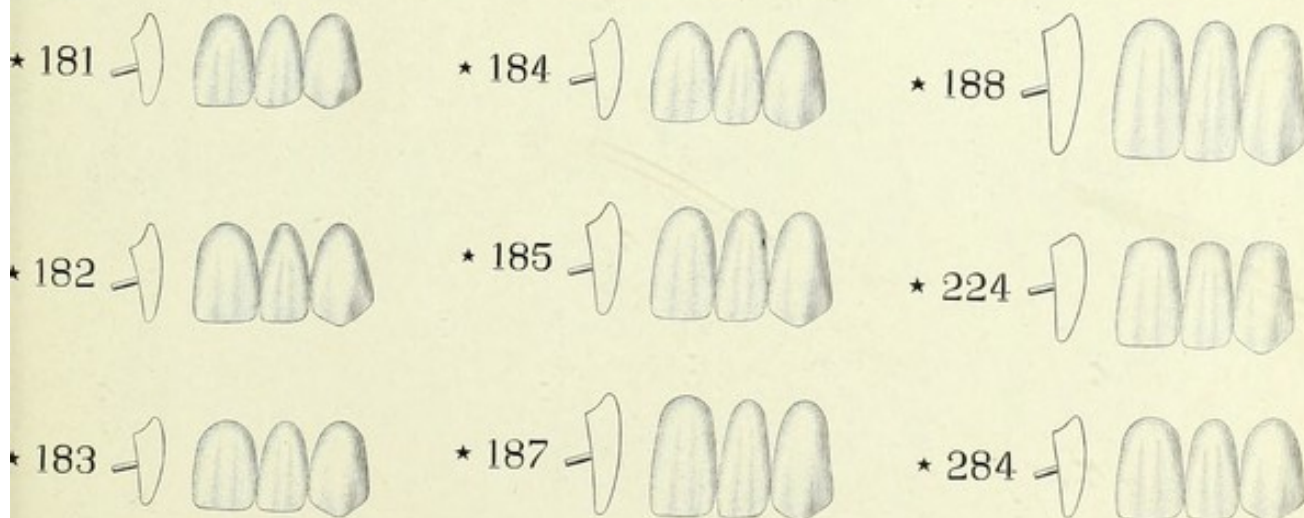
PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

SHORT BROAD—(Continued)



NARROW

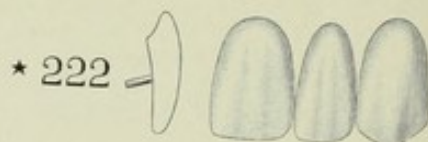
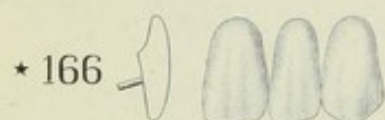
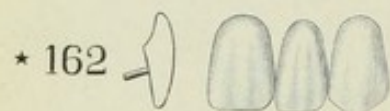


In ordering, always designate the kind of pins wanted (see page 141)

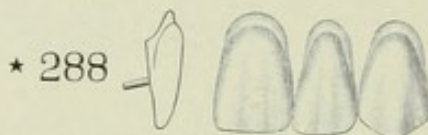
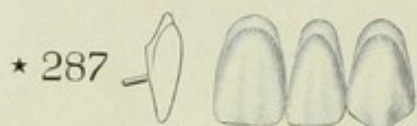
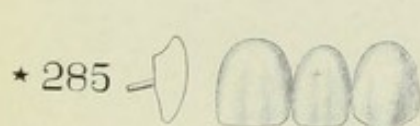
PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

THIN



THIN CUTTING-EDGE



CORRUGATED NECK

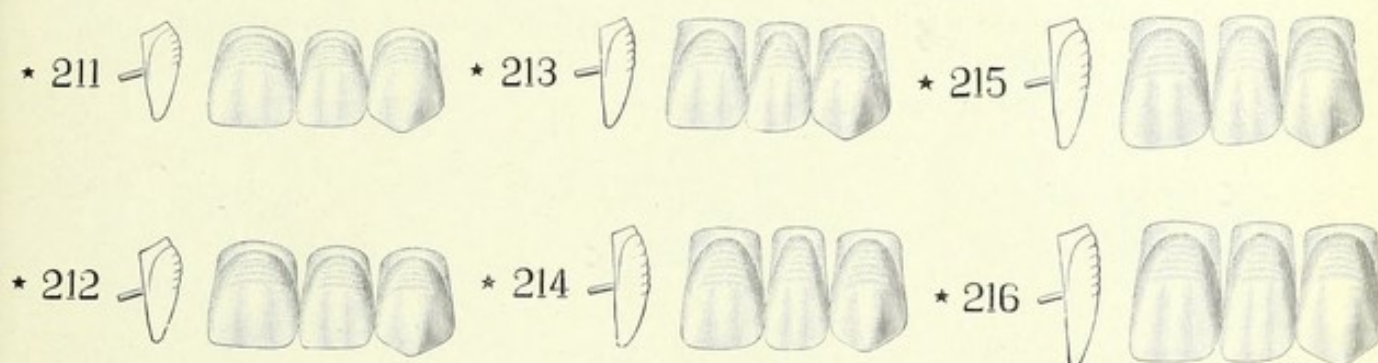


In ordering, always designate the kind of pins wanted (see page 141)

PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

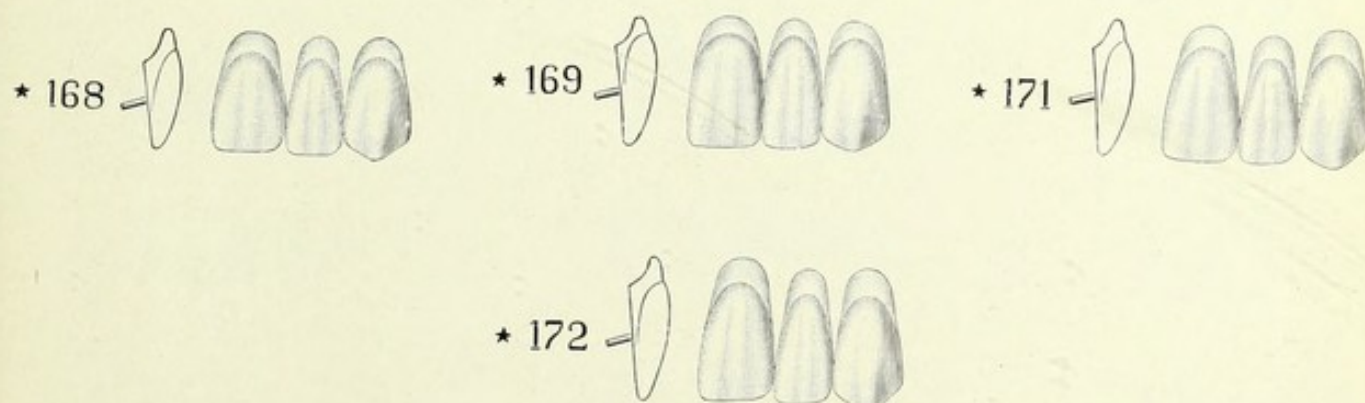
CORRUGATED NECK, THIN CUTTING-EDGE



LAPPING LATERALS



SHOULDER NECK



In ordering, always designate the kind of pins wanted (see page 141)

PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

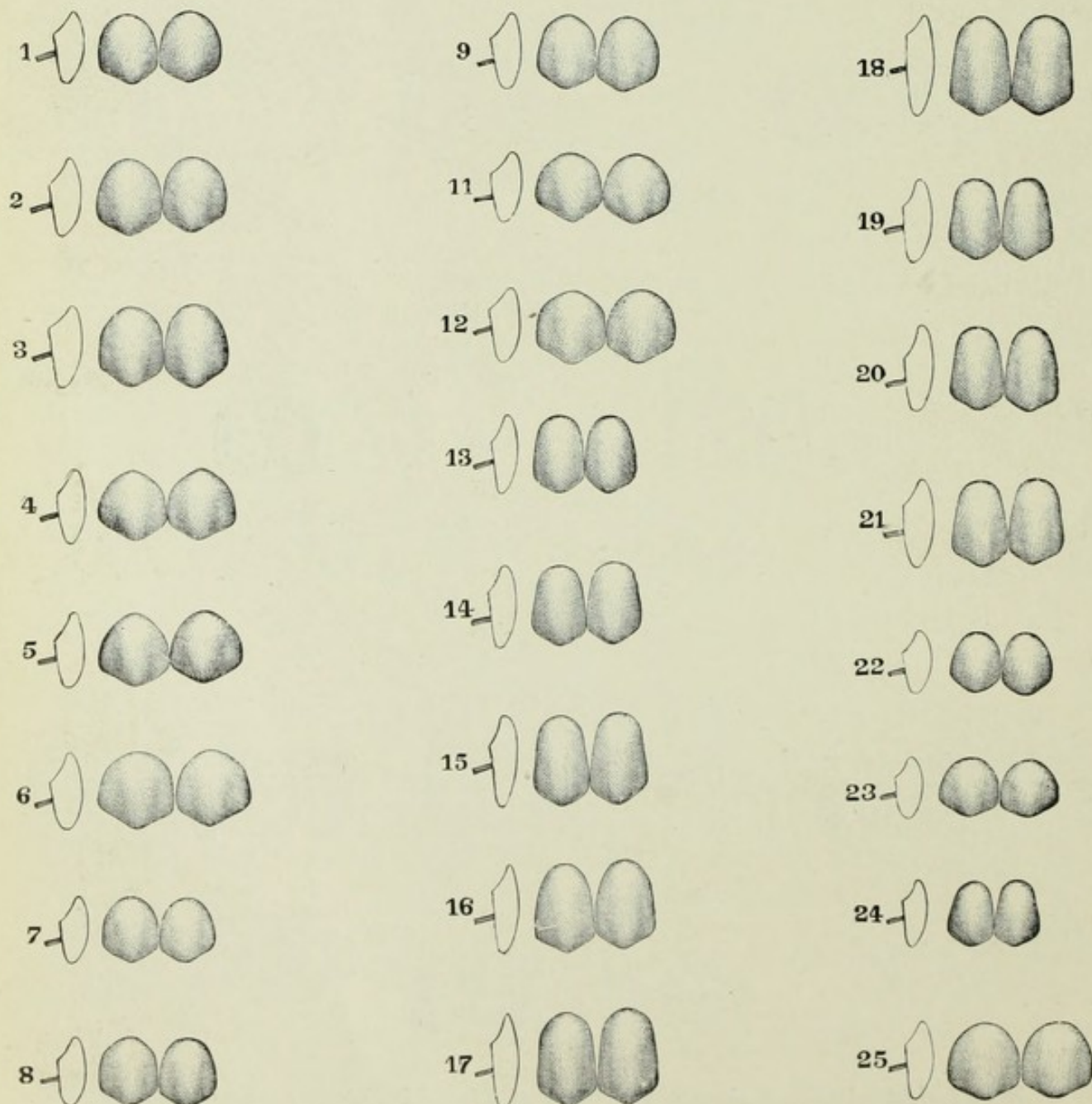
Upper Cuspids, Special

This line of Cuspids was originally designed for our foreign trade, to be used instead of bicuspids with "flat-back" incisors and cuspids in vulcanite work. They are also used in metal plate, crown- and bridge-work, and in the class of cases described on page 190.

Supplied only with the long pins set crosswise, except Nos. 53, 54, 55, 58, 59, and 60, in which, because of the narrowness of the teeth, the pins are set lengthwise.

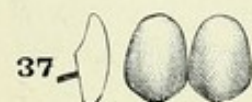
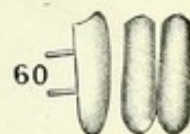
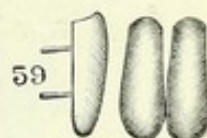
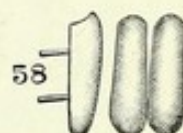
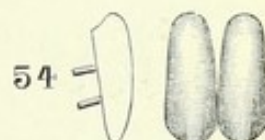
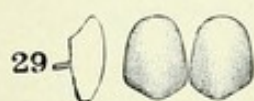
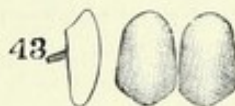
The illustrations show the labial faces of the teeth; also an outline view from the approximal face indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the labial face.

Sold as single teeth, and in sets of 2, rights and lefts.



PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Upper, Cuspids—(Continued)



PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

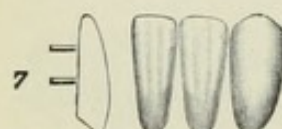
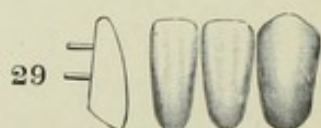
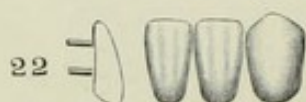
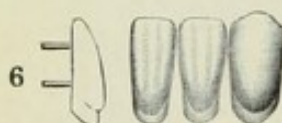
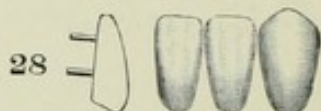
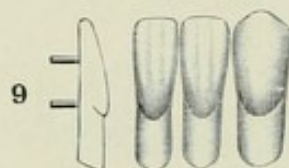
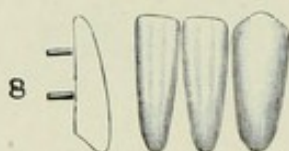
Lower, Incisors and Cuspid

The Lower Incisors and Cuspids illustrated on this and the following page are used principally in metal plate, crown-, and bridge-work; but they are employed to some extent in vulcanite dentures, to which they are adapted by bending the pins into hook forms.

Made only with long pins set lengthwise, this style and placing of pin adapting itself to all the uses named above.

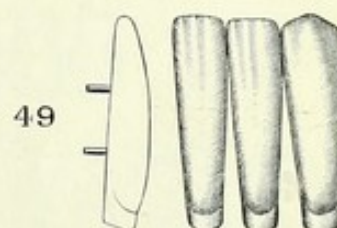
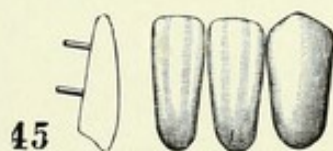
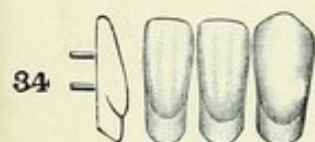
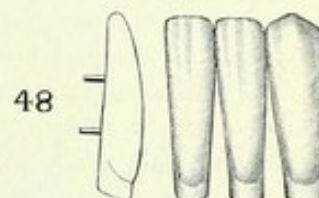
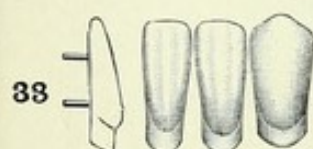
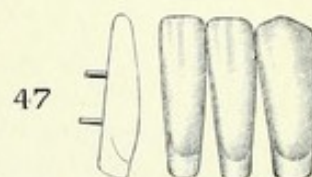
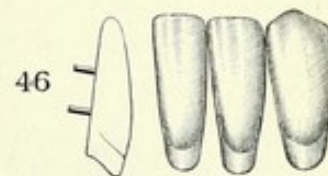
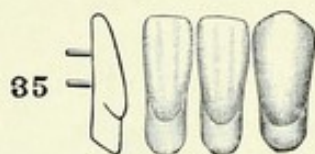
The illustrations show the labial faces of the teeth for the left side; an outline view of the central incisor from the median approximal face, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the labial face.

Sold as single teeth, and in sets of 4 (centrals and laterals), and 6 (centrals, laterals, and cuspids).



PLAIN TEETH FOR METAL PLATE, CROWN, BRIDGE, AND VULCANITE WORK

Lower, Incisors and Cuspid—(Continued)



VENEERS OR FACINGS FOR CROWN, BRIDGE, AND VULCANITE WORK

Upper, Bicuspid and Molars

FIG. 1



FIG. 2

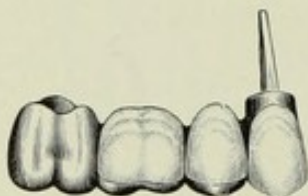


FIG. 3



Veneers or Facings are used chiefly in crown- and bridge-work. Nos. 68, 69, 71, and 72 upper and 18, 20, and 21 lower are so shaped as to require but little grinding, while the thickness through the body of the tooth lessens the quantity of gold needed for the backing. Fig. 1 shows a bicuspid of No. 68 Mold complete with solid gold cusp and backing. Figs. 2 and 3 show the buccal and palatal views of a completed bridge, with bicuspid and molar Veneers.

Veneers or Facings are also used for special cases in vulcanite work (see pages 119 and 190) The illustrations of bicuspid and molars show the buccal faces of the teeth for the left side, and an outline view of the first bicuspid from the anterior approximal face, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the buccal face.

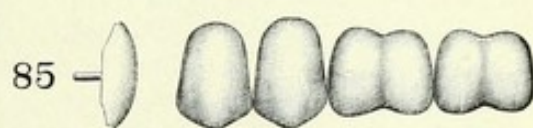
They are made only with long pins set crosswise.

Sold as single teeth, and in sets of 4 (bicuspids or molars), and 8 (bicuspids and molars).

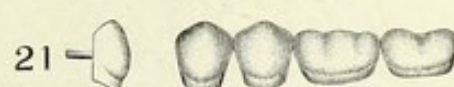
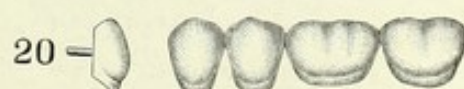


VENEERS OR FACINGS FOR CROWN, BRIDGE, AND VULCANITE WORK

Upper, Bicuspid and Molars—(Continued)



Lower,
Bicuspid and Molars



PLAIN TEETH FOR METAL PLATE WORK

Upper, Bicuspid and Molars

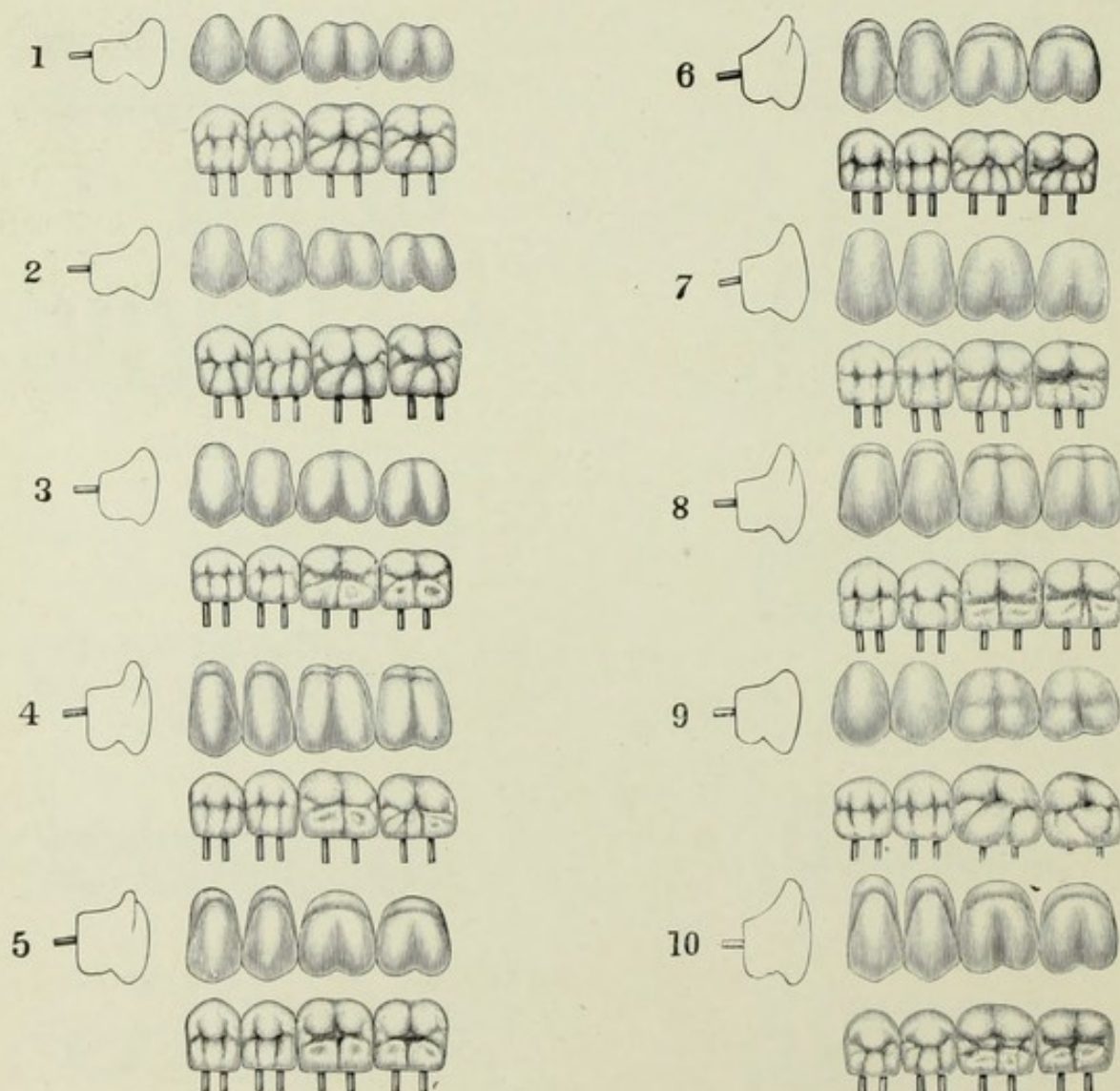
These Bicuspid and Molars for metal plate-work, have flat backs with long pins set crosswise. They can also be made with *short pins* set lengthwise, excepting molds 1, 2, and 3, which are too short on the back of the tooth to permit of this arrangement of the pins. (See page 140.)

The illustrations show the buccal faces of the teeth for the left side, an outline view of the first bicuspid from the anterior approximal surface, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the buccal face; also, a view of the occlusal surfaces.

Sold as single teeth, and in sets of 4 (bicuspid and molars), and 8 (bicuspid and molars).

These teeth are intended for use on metal plates and saddle bridges only. They are not suitable for ordinary span bridges, nor for use as "dummy" teeth on any plate or bridge which does not afford a substantial metal backing for the *ridge-lap as well as the flat back of the tooth.*

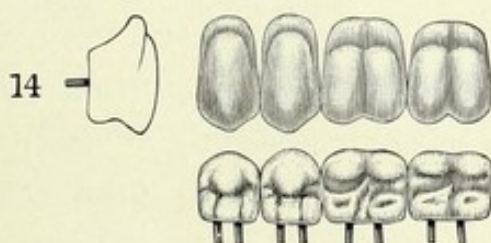
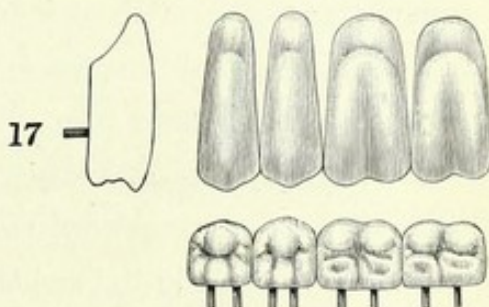
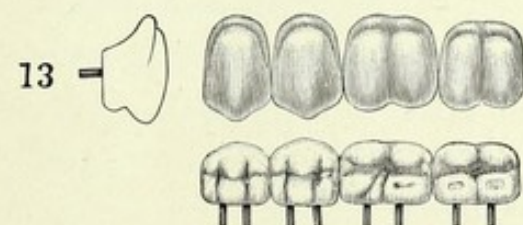
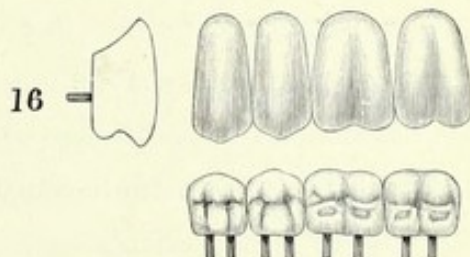
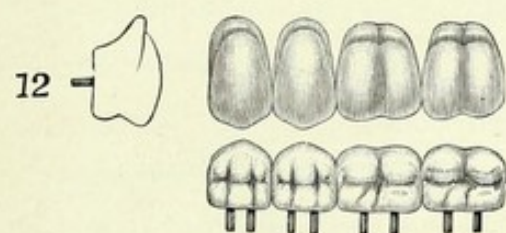
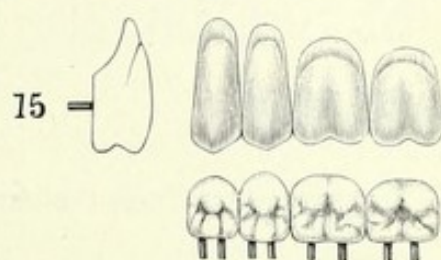
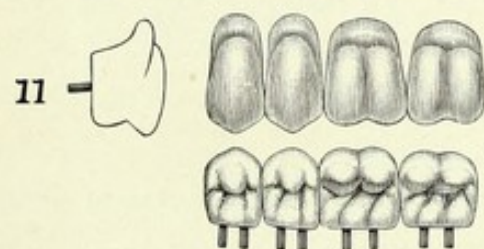
Some practitioners use these teeth as unsupported "dummies" by simply backing the teeth and soldering them to neighboring attachments. When used in this way the porcelain or its pin is liable to be fractured by the great force to which it must necessarily be subjected. We know that the teeth and the pins and the attachment of tooth and pins will be found sufficiently strong to serve all intended purposes, but we must caution the profession against using metal plate molars and bicuspid in any case where they cannot be properly supported by plate or saddle.



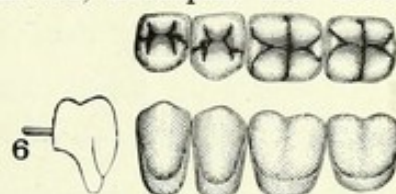


PLAIN TEETH FOR METAL PLATE WORK

Upper, Bicuspid and Molars—(Continued)



Lower, Bicuspid and Molars



The Lower Bicuspid and Molars illustrated above are examples of an assortment of forms for metal plate-work, with flat backs. Made with short pins set lengthwise (See page 140), and long pins set crosswise.

The illustrations show the buccal faces of the teeth for the left side, an outline view of the first bicuspid from the anterior approximal surface, indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the buccal face; also a view of the occlusal surfaces.

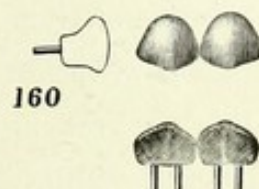
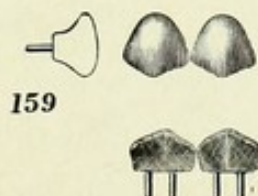
Sold as single teeth, and in sets of 4 (bicuspid or molars), and 8 (bicuspid and molars).

SEMI-BICUSPIDS FOR METAL PLATE AND VULCANITE WORK

These teeth used principally (mostly in Europe) for metal plate-work, were designed for cases having an extremely short shut of the jaws. They are provided with the long headless pins set crosswise, and may be used for vulcanite work by bending the pins into a hook form.

The illustrations show the buccal face of the only two molds of this description made; an outline view of the first bicuspid from the anterior approximal surface indicating the thickness of the tooth, the length of the ridge-lap, and the curve of the buccal face; also a view of the occlusal surfaces.

Sold in sets of 4 (bicuspid).



GUM SECTIONS FOR VULCANITE WORK

“GUM” teeth have decided advantages over Plain in cases where the patient, either because of the shortness of the upper lip or through habit, exposes the gum to any considerable extent in speaking or laughing. Porcelain excels anything else ever used in its capacity for imitating gum tissue. Gum color can be exactly reproduced, and the resemblance is intensified when the porcelain gum is moistened with the saliva of the mouth, which gives it a flesh-like texture difficult to distinguish from the natural tissue.

Gum Sections had their inception in the carving of block teeth, which was quite common among the profession about seventy years ago, at which time a large proportion of the artificial teeth used by the dentist were the product of his own handiwork. The manufacturers began to supply them about 1856 for the Blandy process (see page 17). These sections differed from those of today in two particulars. They had no pins, and were divided in many cases somewhat differently; the central and lateral being in one section, the cuspid and first bicuspid in the second, and the second bicuspid and two molars in the third. There were thus the same number of sections in a set of fourteen as in those now in use, in which the two incisors and the cuspid form the first section, the two bicuspids the second, and the two molars the third. The latter is of course a better arrangement.

These Blandy sections were used to some extent, but it was not until the introduction of the vulcanite base that Gum Sections came into prominence, and the manufacturers placed on the market an extensive line of forms. At first these were supplied with the long headless pins, which were bent into hook shapes to form the hold in the vulcanite. About 1862 the headed pins were introduced.

Gum Sections were a decided improvement over Single Gum Teeth, inasmuch as they largely reduced the labor of mounting a set of teeth and produced a much more artistic effect. Instead of thirteen joints to grind and fit, there were but five, and these so placed as to be less visible when the mouth was opened.

We have not only provided a complete line for full upper and lower dentures, but have also considered the many partial cases, so that, wherever the resorption of the alveolus will permit of the insertion of Gum Teeth, a substitute may be found in our large assortment.

The illustrations of incisors and cuspid sections show a perspective view of the labial face of the right upper section, with the central as arranged on the median line of the mouth so as to show its exact width, the lateral and cuspid being foreshortened in width due to

the perspective; an edge view of the teeth in the same relative position, giving a correct idea of the curve of one-half of the central arch; a side view of the central, indicating the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face, and the inclination of the gum; and an outline view of the gum edge, denoting its thickness and curve.

The outline of the gum edge in the illustrations of Gum Sections may be made to serve a very useful purpose as a guide to the space which the section will occupy. A strip of tin such as is used in suction chambers (sheet wax will also answer) bent around and molded to the labial surface of the model from the median line to the point where the joint between the cuspid and first bicuspid should come, applied to the gum-edge outline will speedily show whether any particular section is applicable to the case in hand.

Classified for ready selection according to length of Bite and Gum, with special groups, as Lapping Laterals, Elongate Centrals with Lapping Laterals, Elongate Centrals, Detached Cuspids, Protruding Upper Jaw, V-Shaped Protruding Upper Jaw, Protruding Lower Jaw, Shouldered, Festooned Gum, Bulging Ridge, and Extra Short Gum Sections.

Sold as single blocks, and in sets of 6 (incisors and cuspids), 10 incisors, cuspids, and bicuspid), 14 (full uppers), and 28 (full uppers and lowers matched).

PARTIAL AND COMPLETE SETS OF GUM SECTIONS FOR VULCANITE WORK

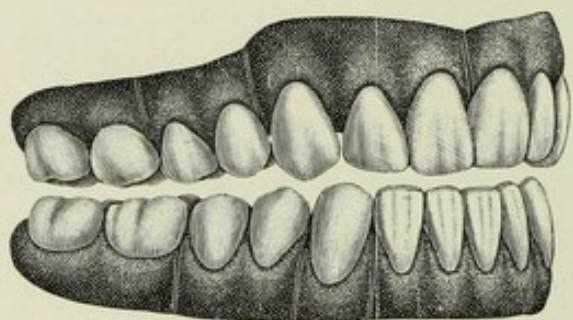
A set of 2



35

87

17



A set of 3, Right and Left



6

A set of 4, two sections

216



A set of 4, one section

12



A set of 4, two sections

140



A set of 6

123



A set of 6, Elongate Centrals

28



A set of 10

64



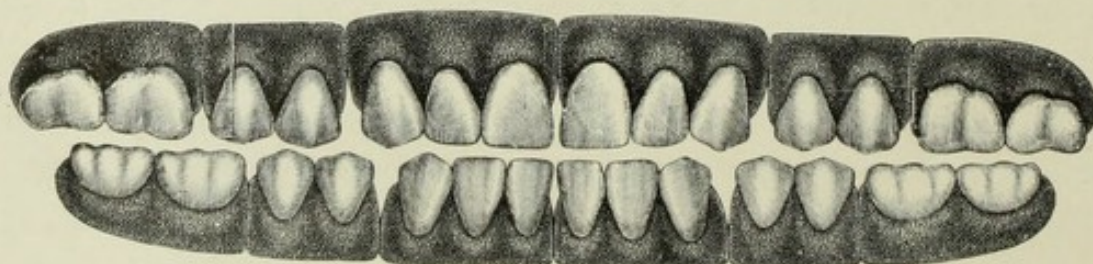
A set of 14

46



A set of 28

190



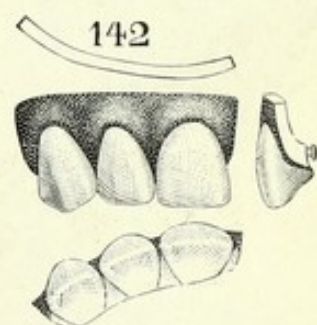
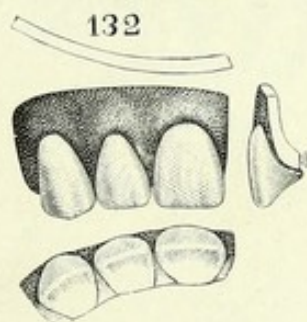
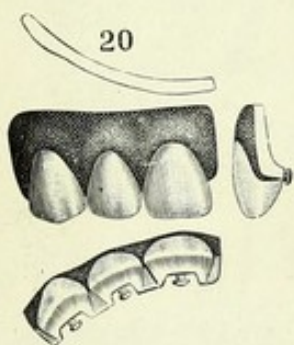


GUM SECTIONS FOR VULCANITE WORK

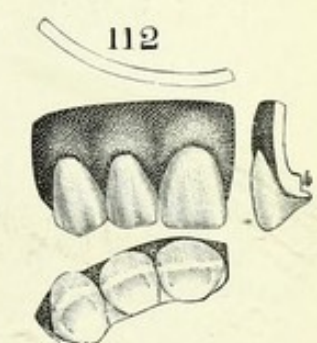
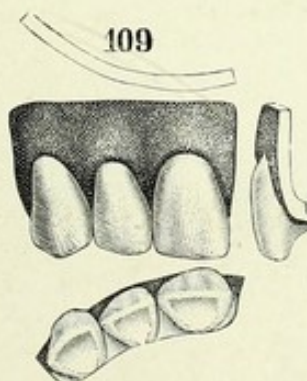
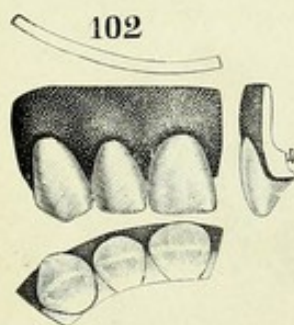
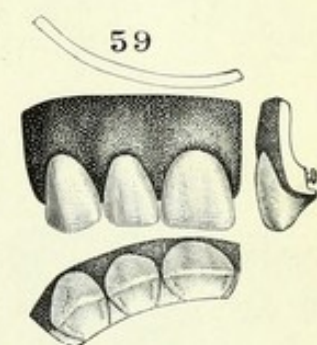
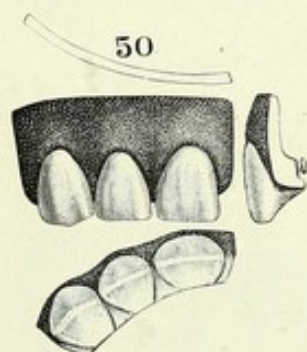
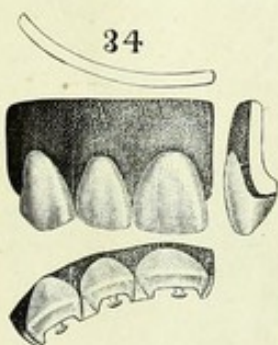
Upper, Incisors and Cuspid

SHORT BITE.—Short Gum

(For suggestions as to the uses of Short-Bite Teeth, see page 44)



SHORT BITE.—Medium Gum



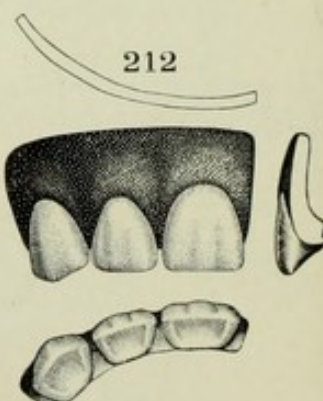
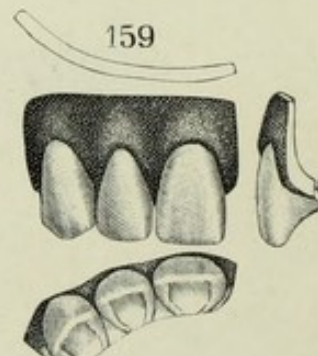
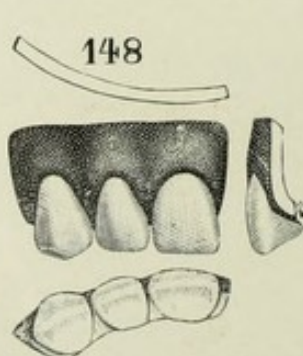
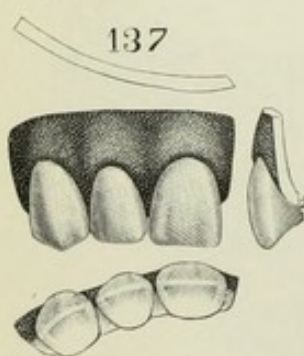
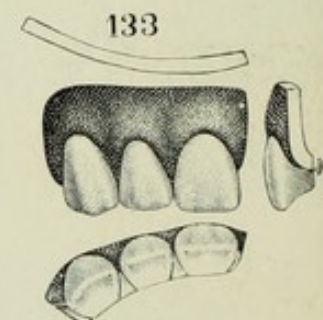
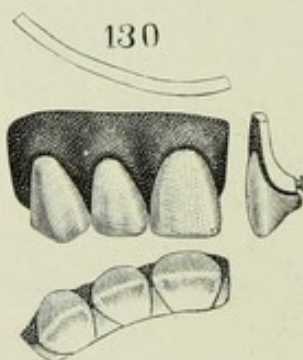
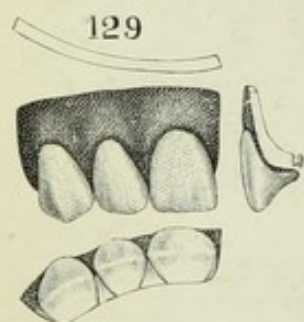
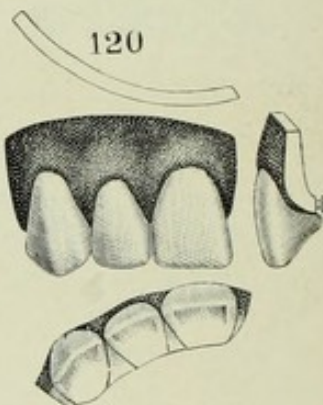
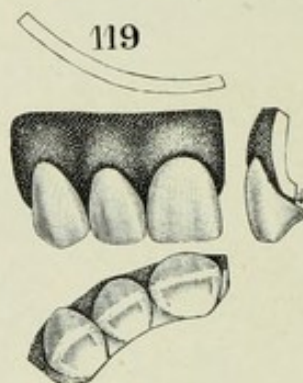
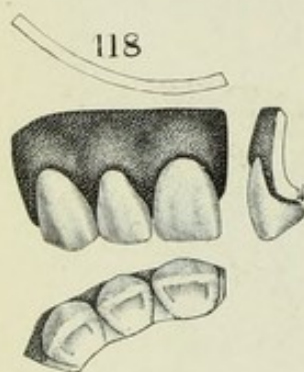
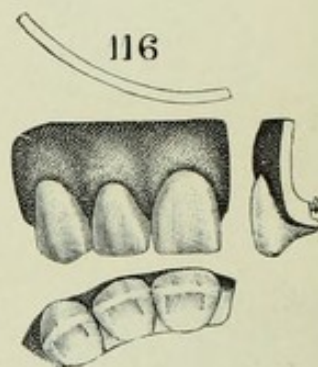
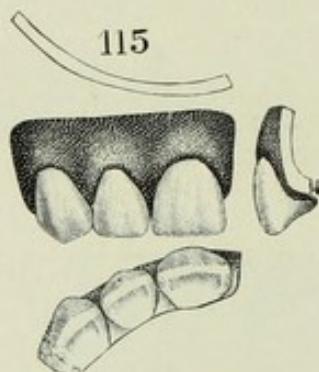
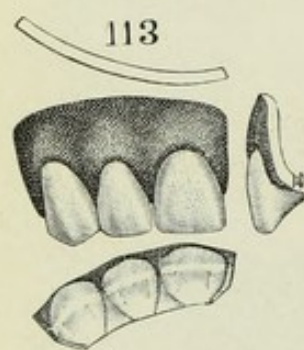
For Short-Bite Plain Teeth, see pages 103, 105, 107

GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

SHORT BITE.—Medium Gum—(Continued)

(For suggestions as to the uses of Short-Bite Teeth, see page 44)

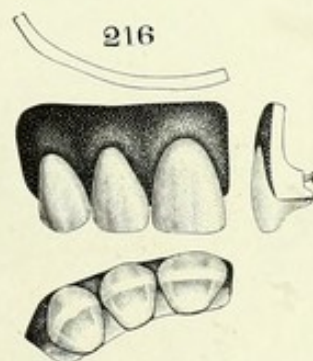
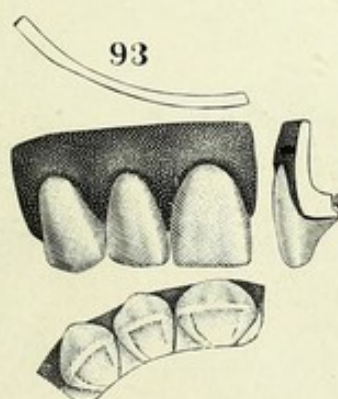
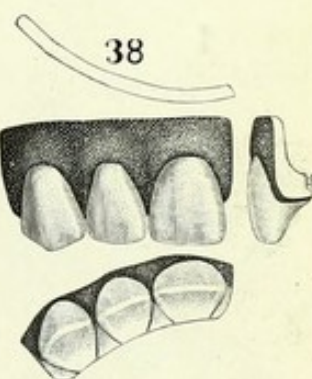
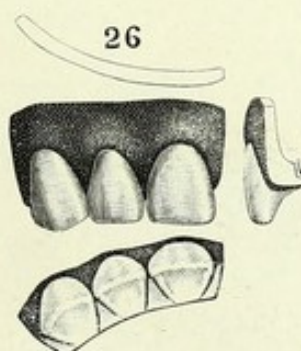
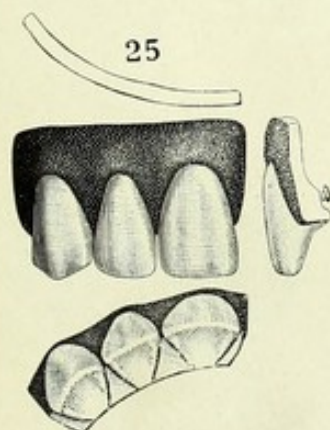
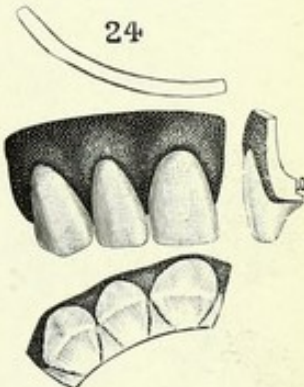
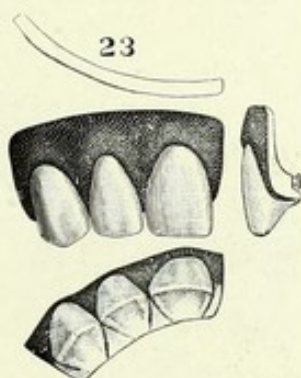
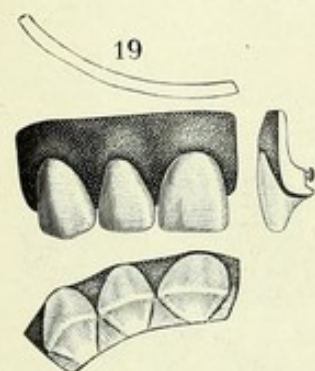
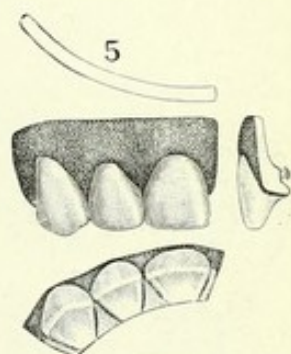
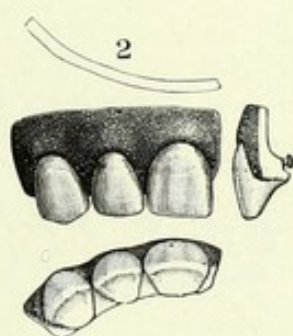
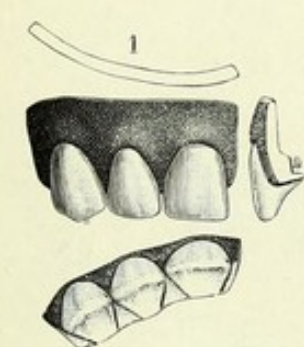


For Short-Bite Plain Teeth, see pages 103, 105, 107

GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

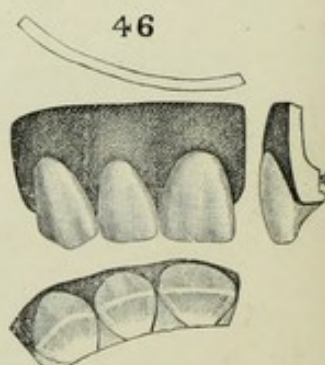
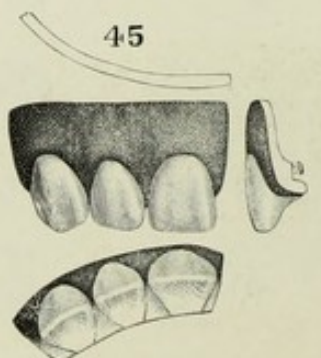
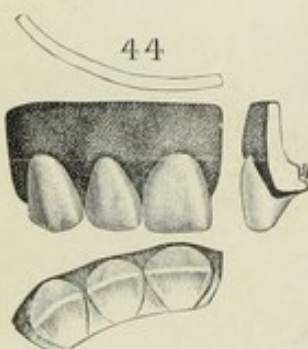
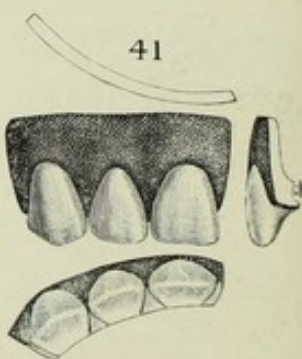
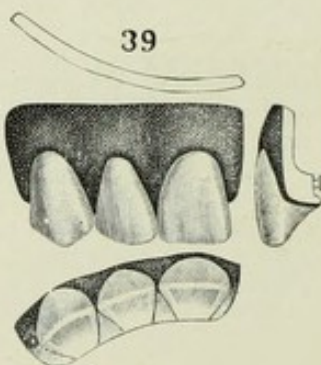
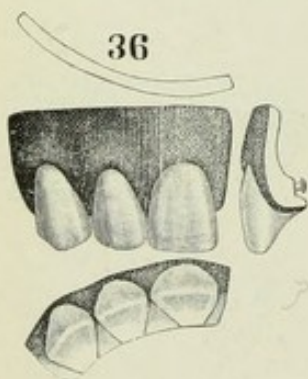
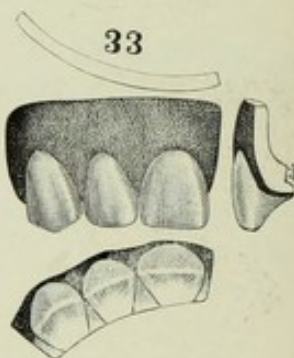
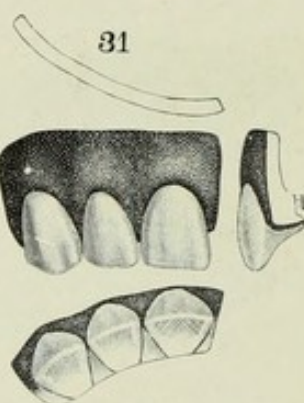
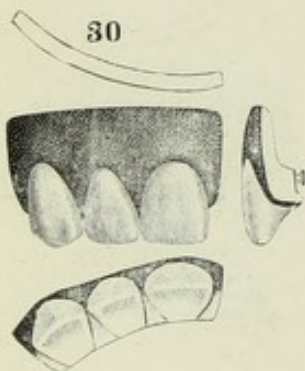
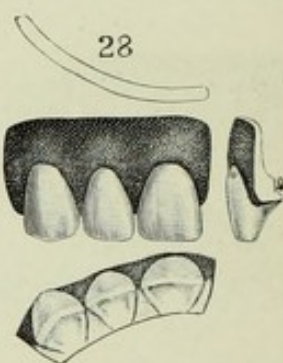
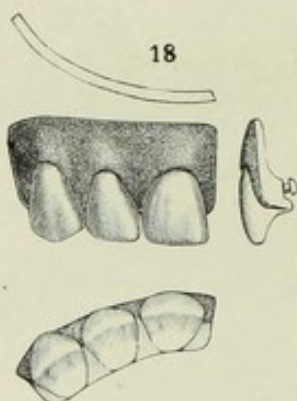
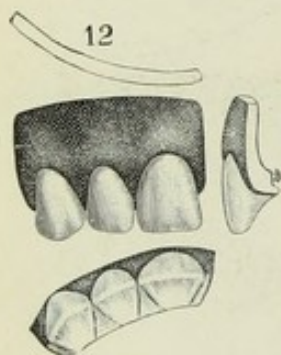
MEDIUM BITE.—Short Gum



GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

MEDIUM BITE.—Medium Gum

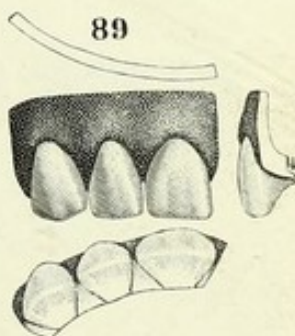
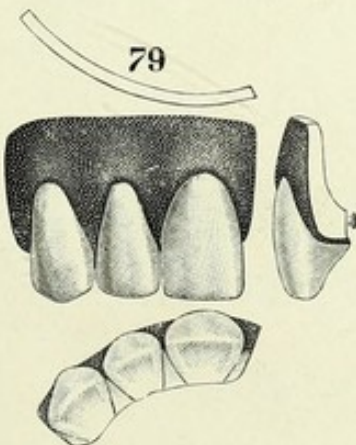
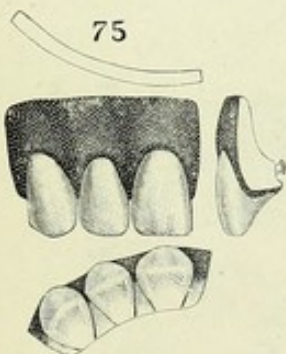
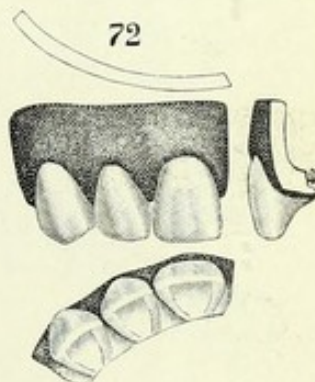
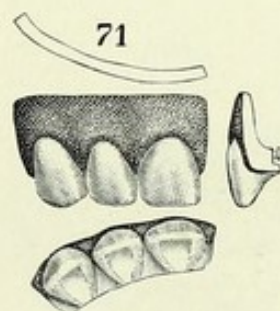
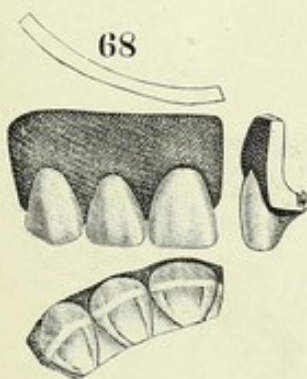
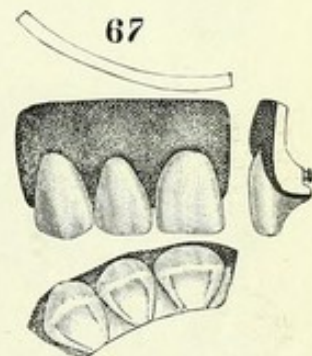
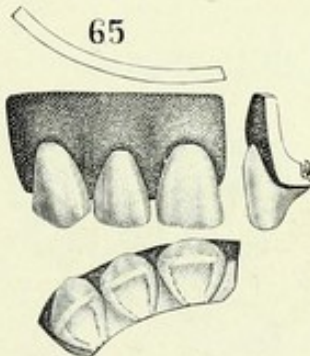
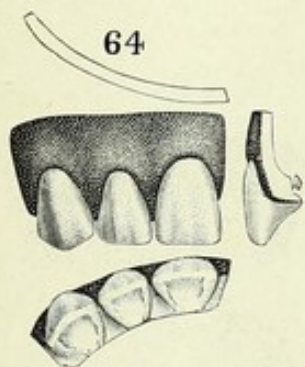
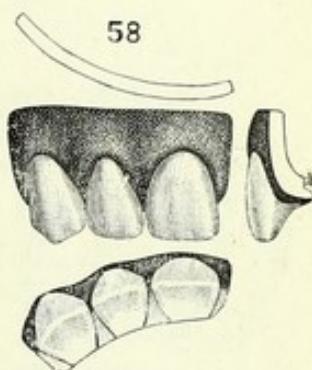
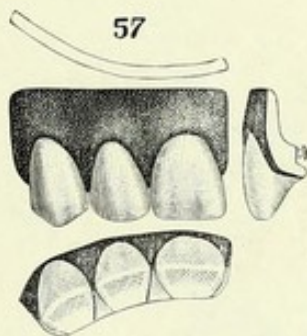
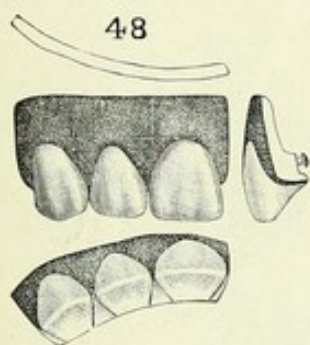




GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

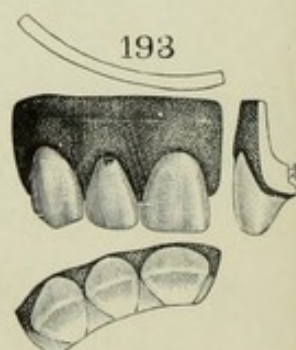
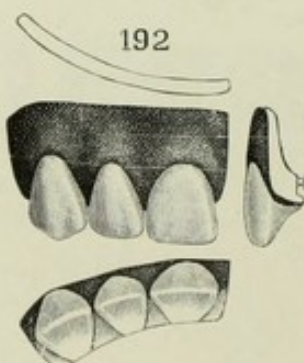
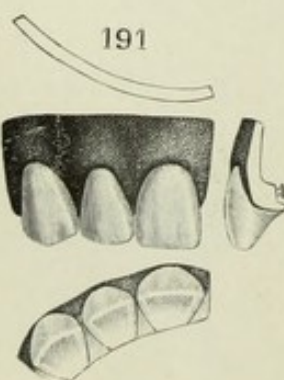
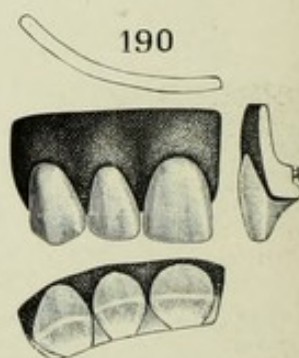
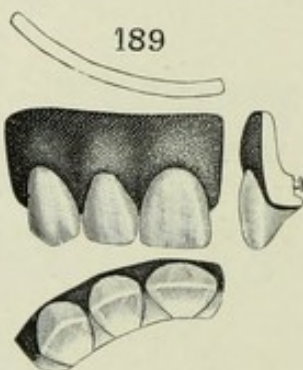
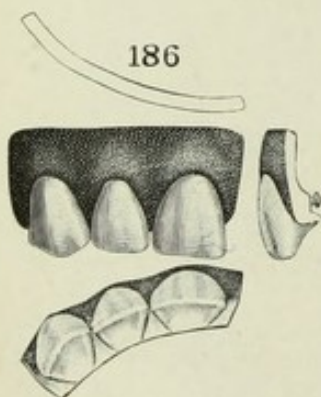
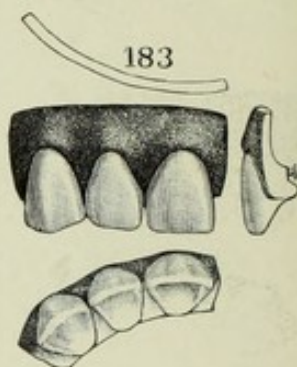
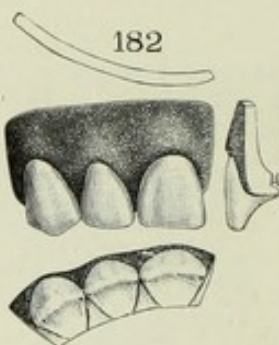
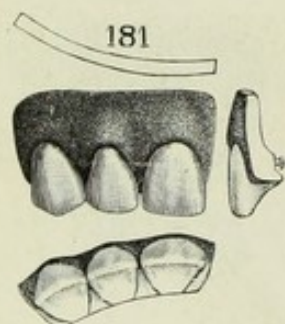
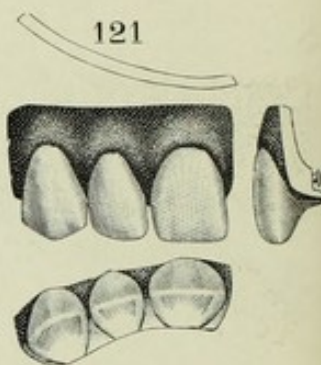
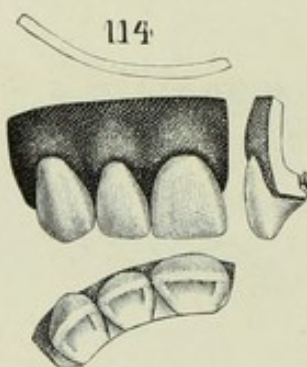
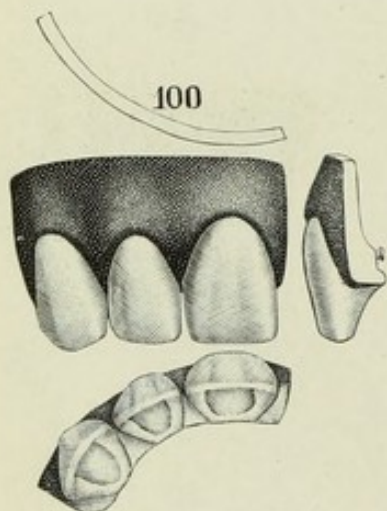
MEDIUM BITE.—Medium Gum—(Continued)



GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

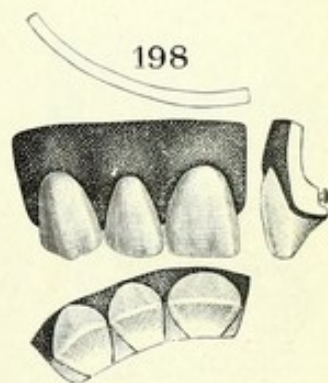
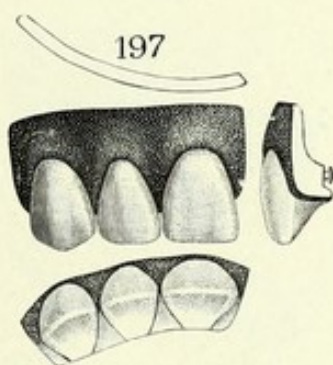
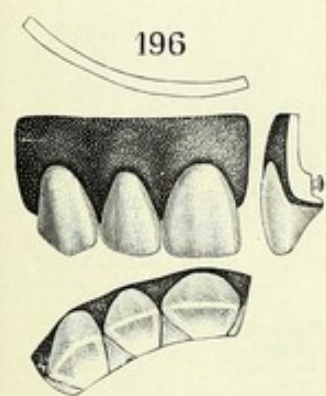
MEDIUM BITE.—Medium Gum—(Continued)



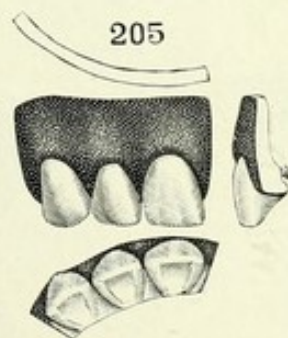
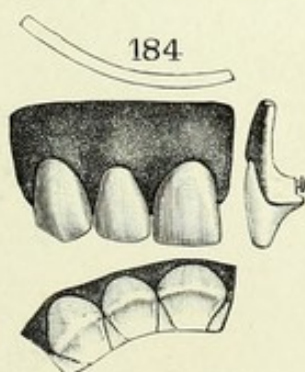
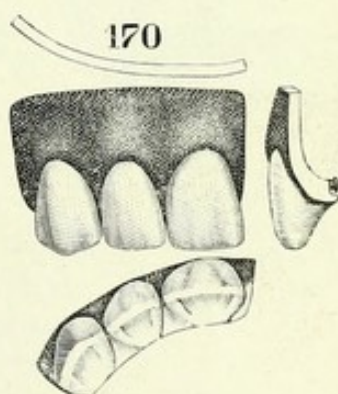
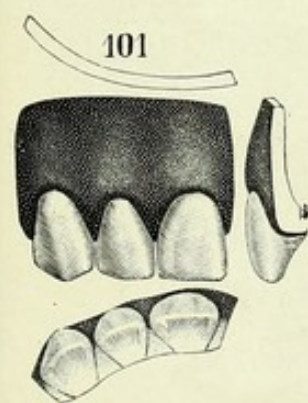
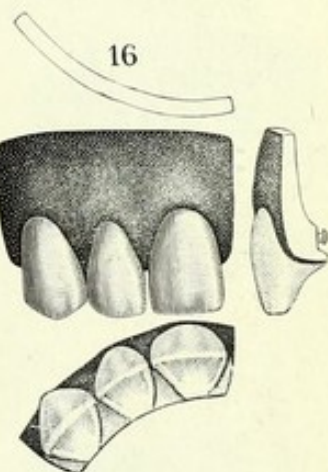
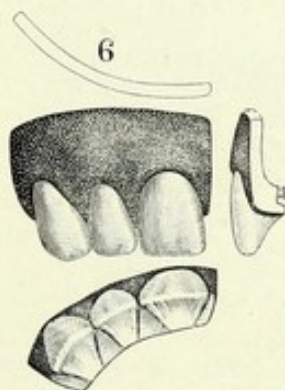
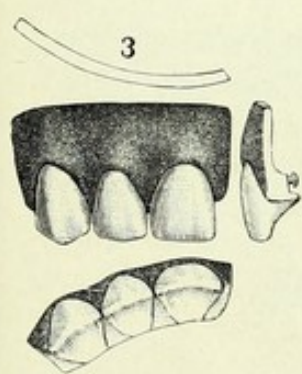
GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

MEDIUM BITE.—Medium Gum—(Continued)



MEDIUM BITE.—Long Gum

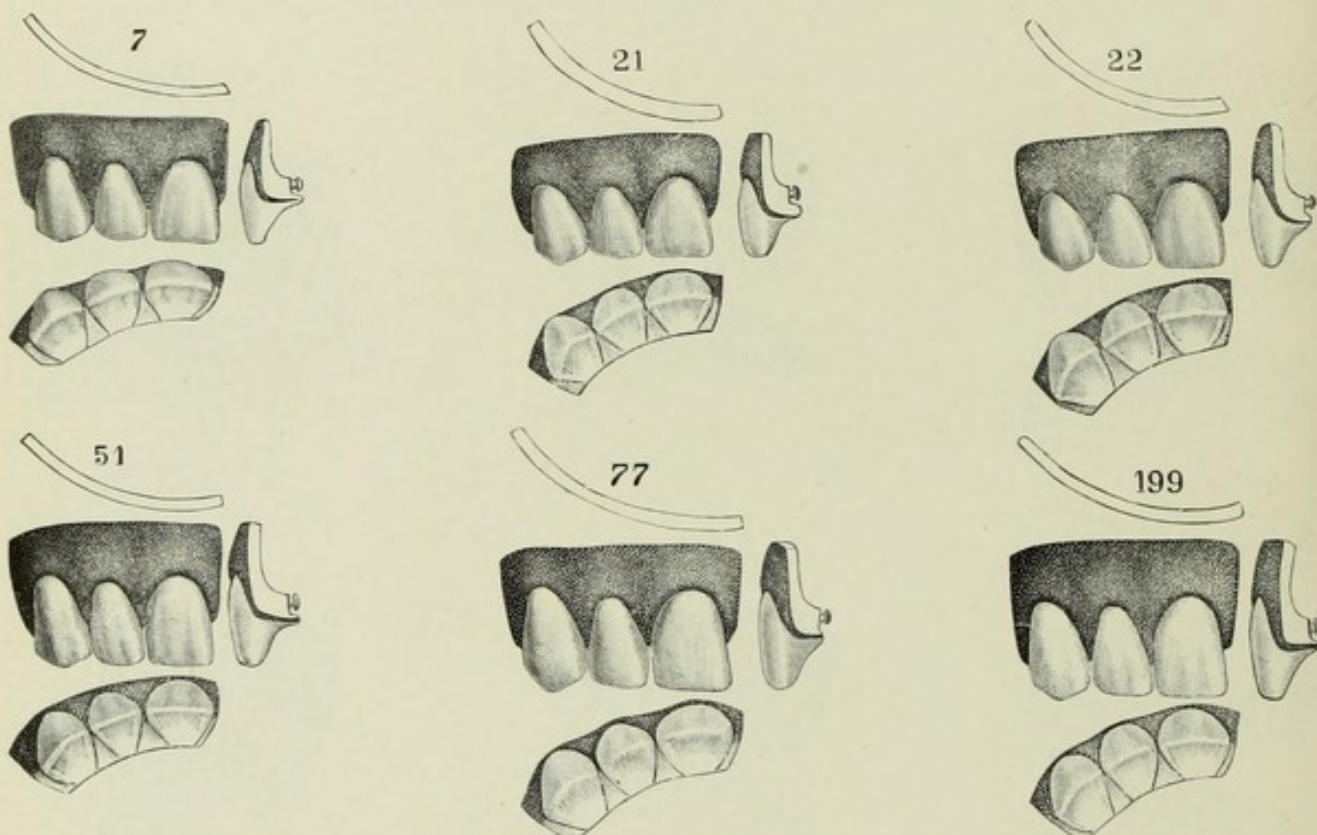


GUM SECTIONS FOR VULCANITE WORK

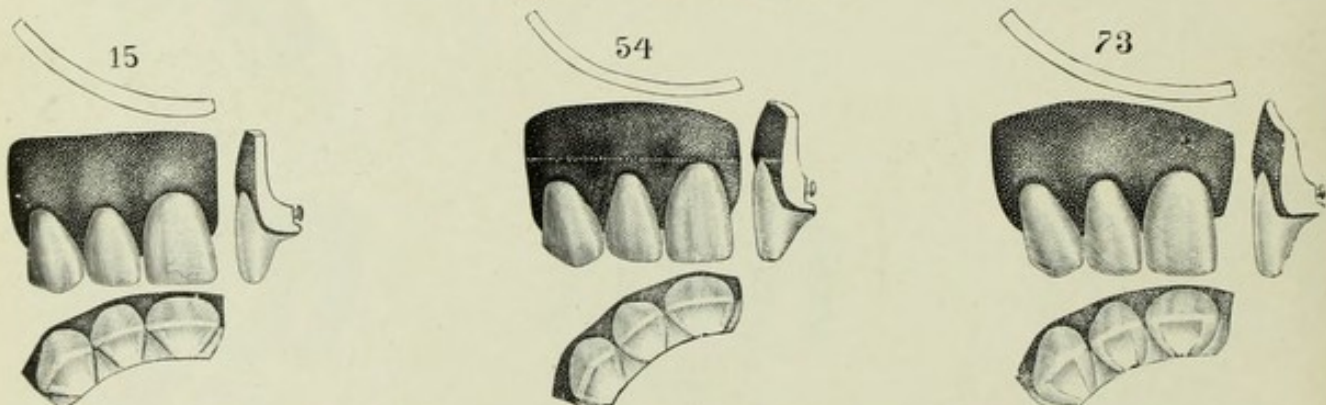
Upper, Incisors and Cuspid—(Continued)

LONG BITE.—Medium Gum

(For suggestions as to the use and misuse of Long-Bite Teeth, see pages 42, 43)



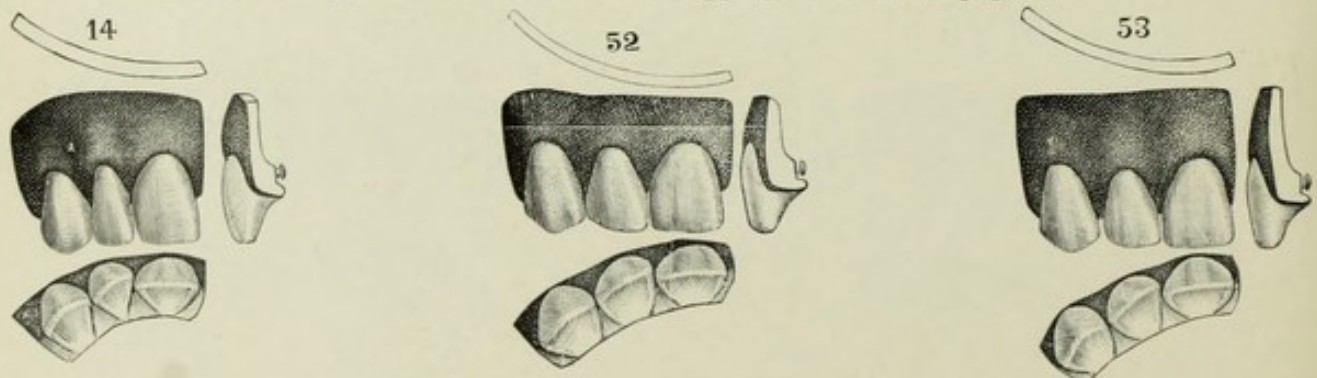
LONG BITE.—Long Gum



For Long-Bite Plain Teeth, see pages 102, 105, 106, 107, 109

LAPPING LATERALS

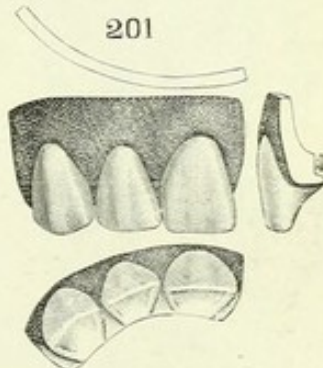
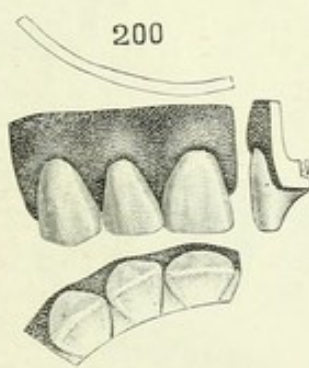
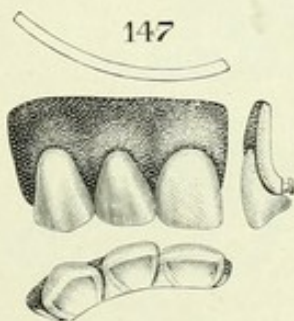
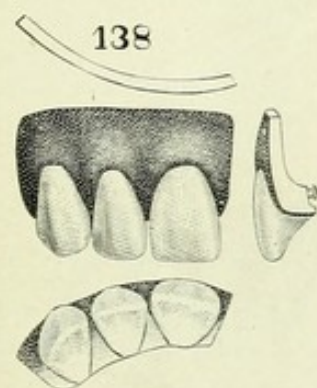
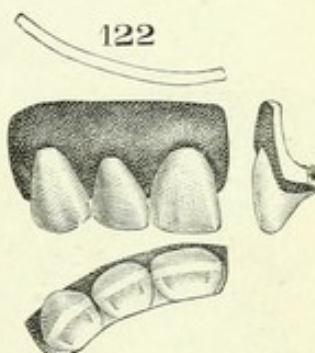
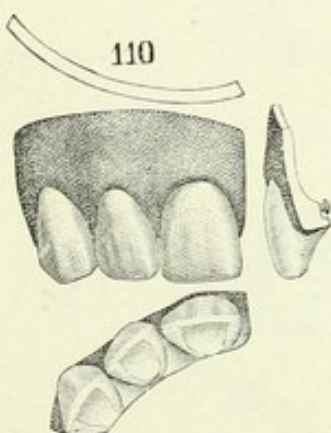
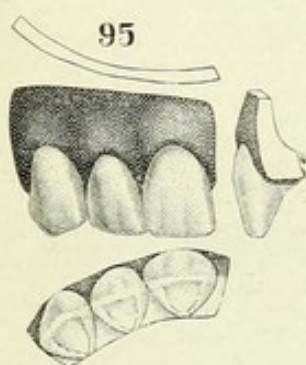
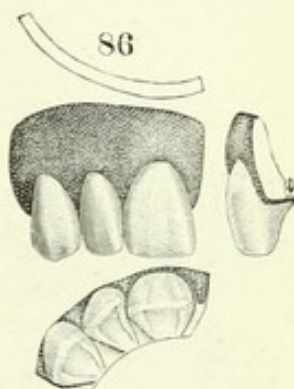
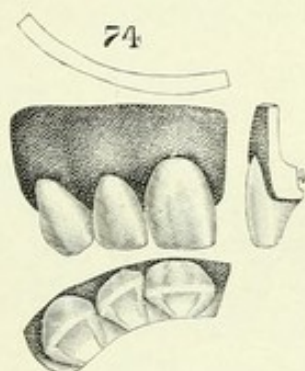
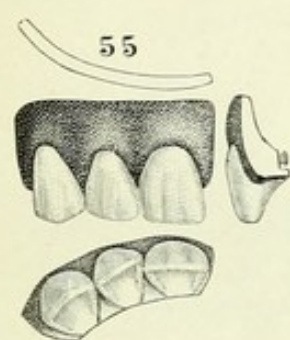
(For suggestions as to the use of Lapping Laterals, see page 54)



GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

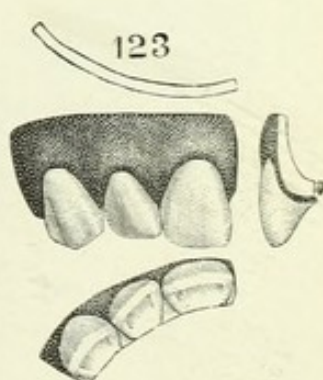
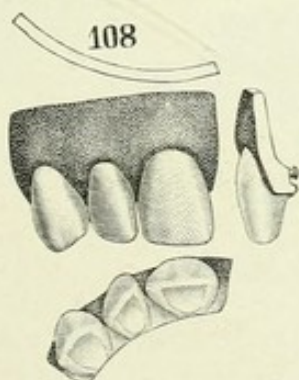
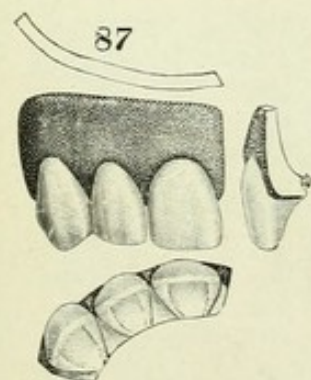
LAPPING LATERALS.—(Continued)



For Plain Teeth with Lapping Laterals, see pages 108, 109

ELONGATE CENTRALS, WITH LAPPING LATERALS

(For suggestions as to the use of Elongate Centrals, see pages 56, 57)

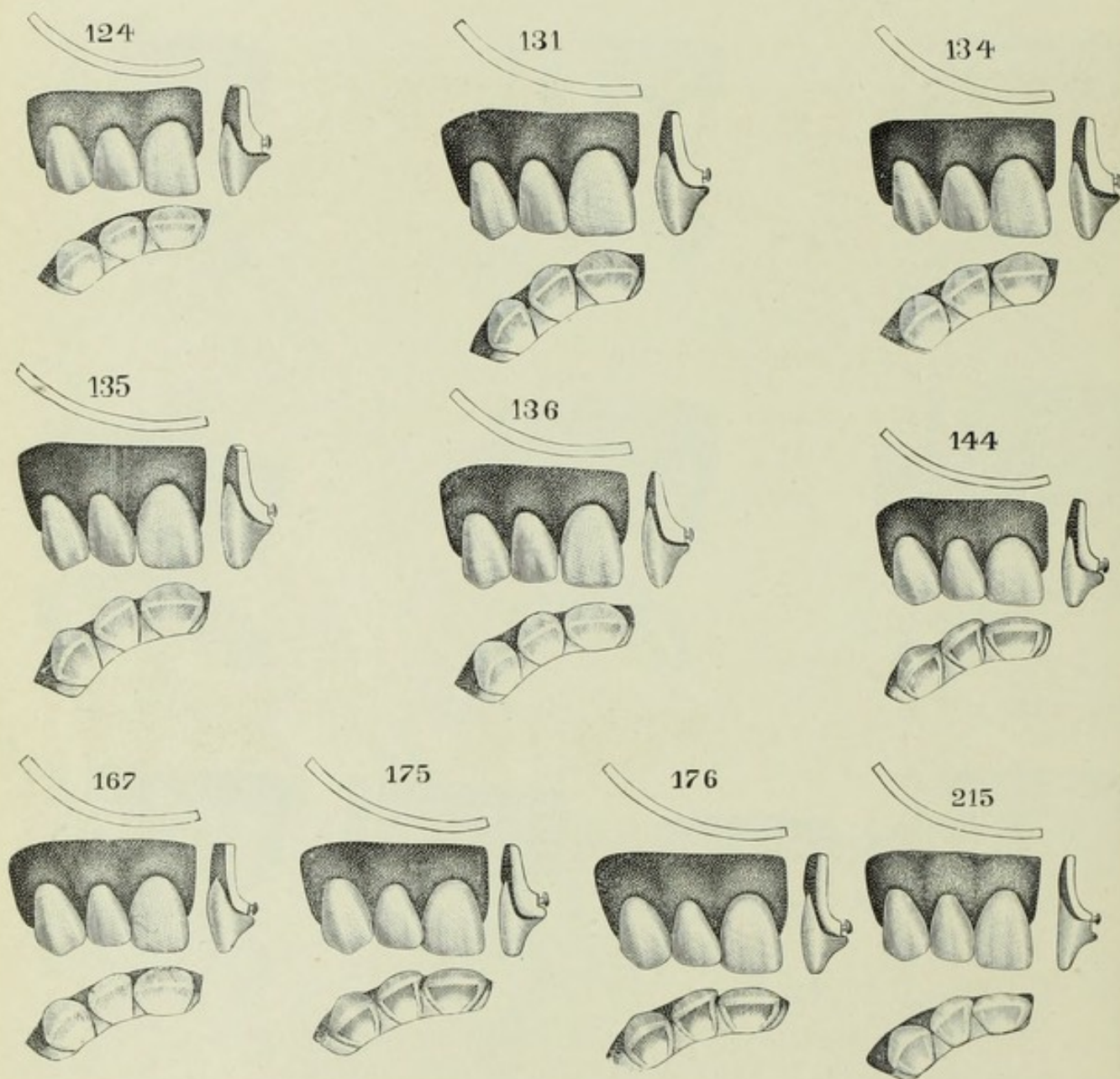




GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

ELONGATE CENTRALS, WITH LAPPING LATERALS—(Continued)



ELONGATE CENTRALS

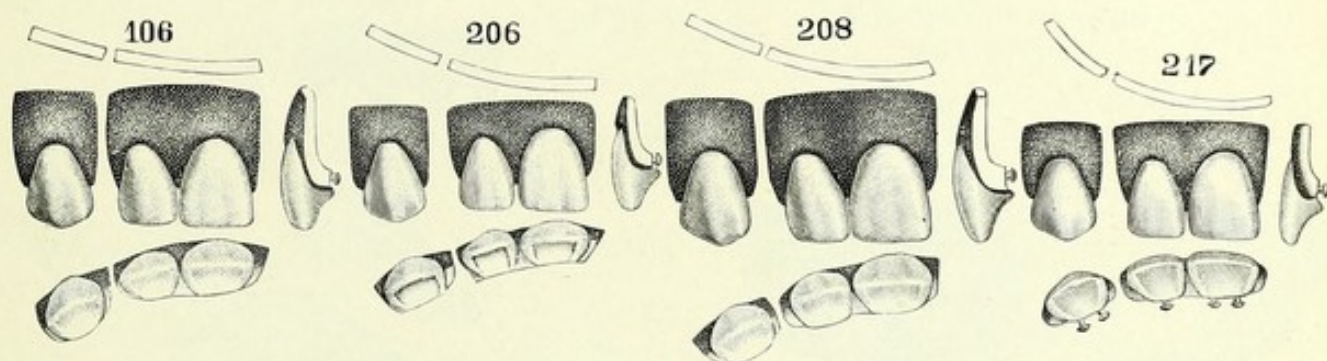


For Plain Teeth with Elongate Centrals, see pages 108, 109

GUM SECTIONS FOR VULCANITE WORK

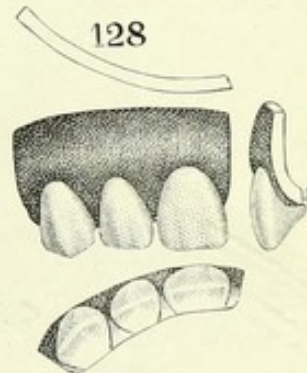
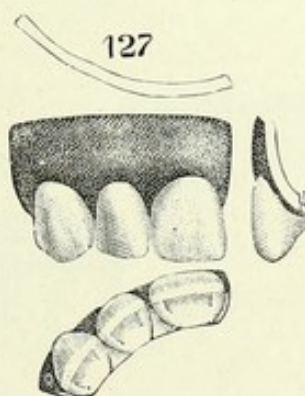
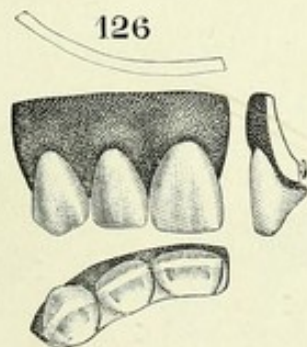
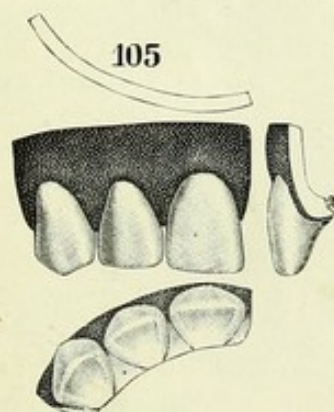
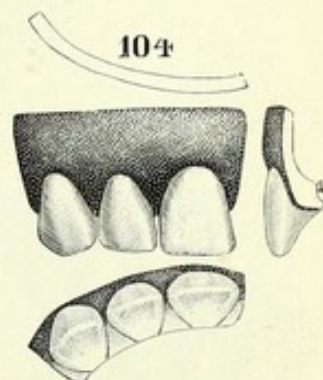
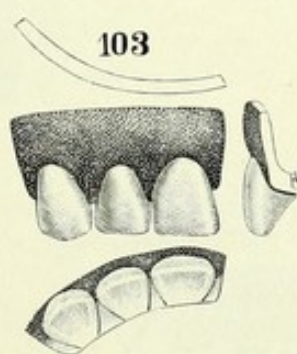
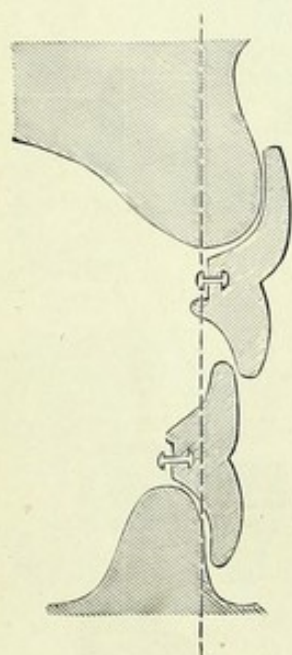
Upper, Incisors and Cuspid—(Continued)

DETACHED CUSPIDS



PROTRUDING UPPER JAW

(For suggestions as to the management of protruding upper jaw, see page 45)



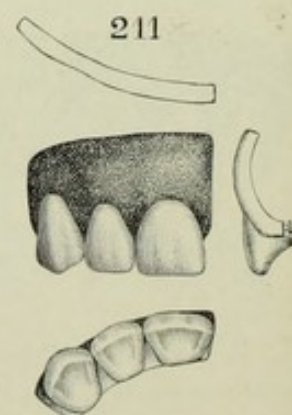
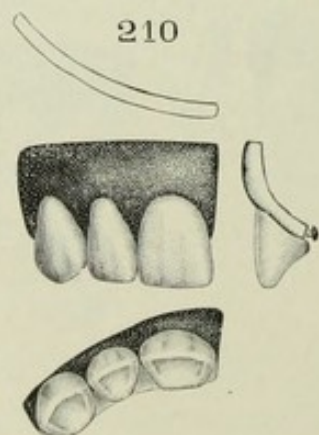
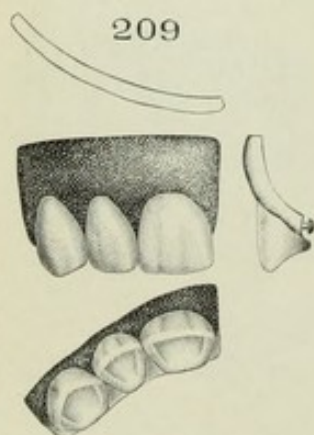
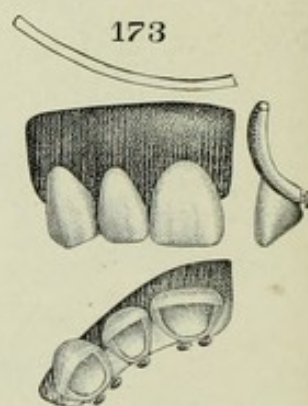
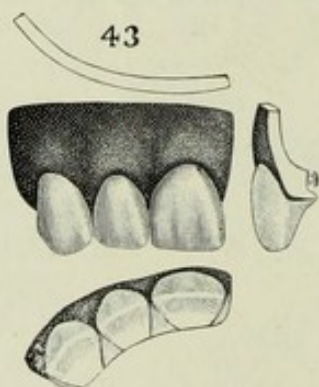
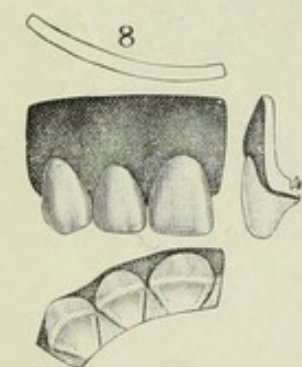
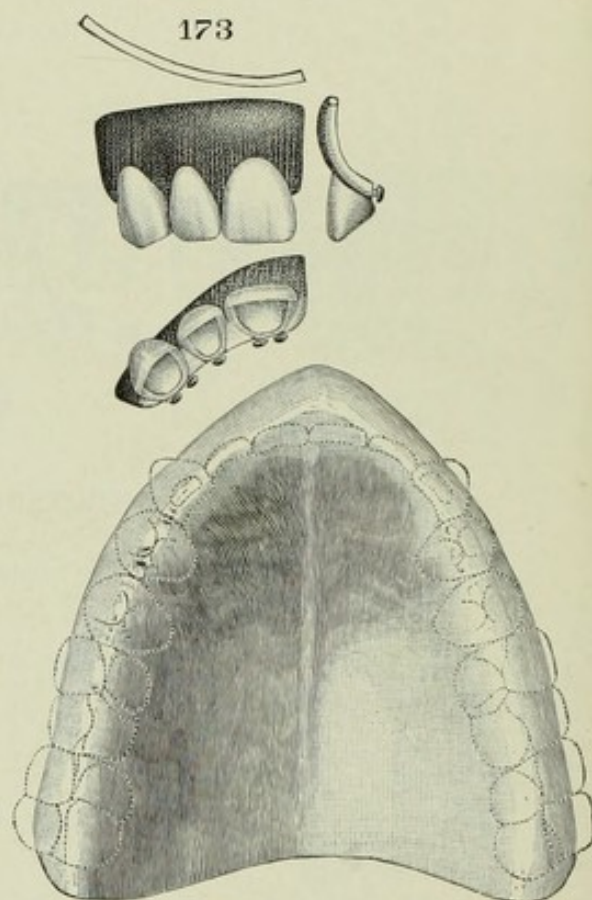
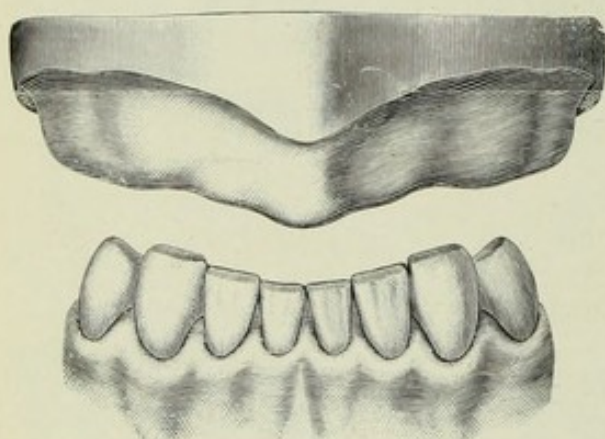
For Plain Teeth adapted to cases of protruding upper jaw, see illustrations of Short Ridge-Lap Teeth, pages 102, 103, 104, 105, 107.

GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

V-SHAPED PROTRUDING
UPPER JAW

(For suggestions as to the management of V-shaped protruding upper jaw, see page 45)

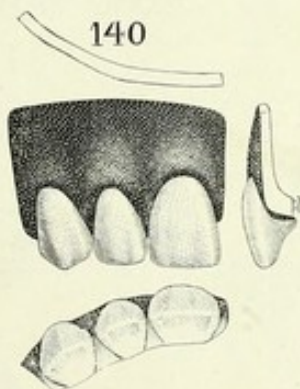
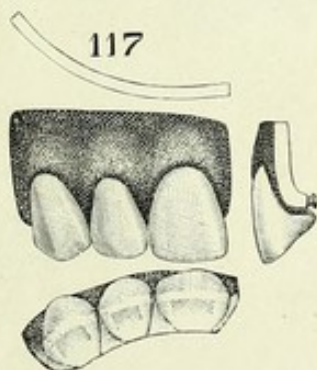
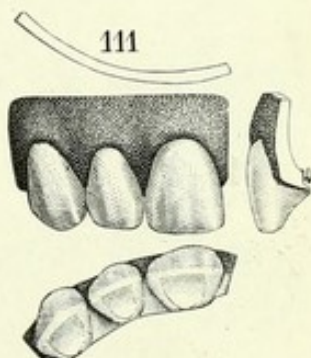
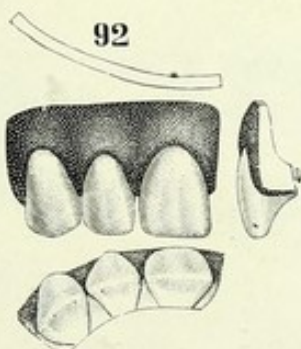
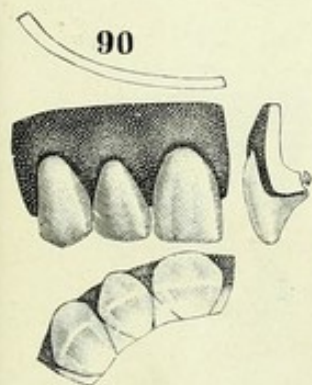
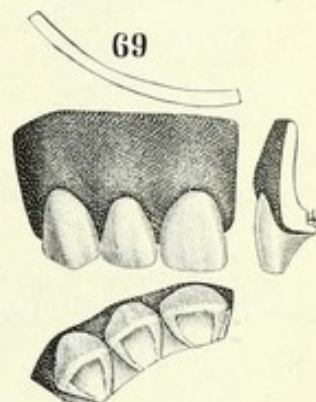
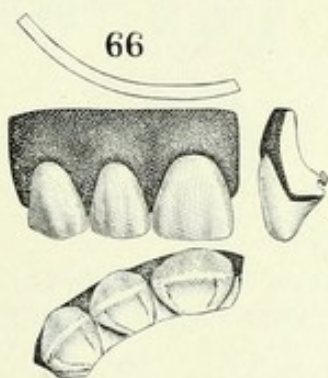
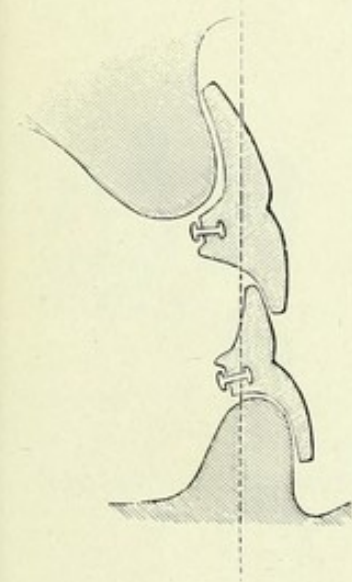


GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

PROTRUDING LOWER JAW

(For suggestions as to the management of protruding lower jaw,
see pages 47, 48)



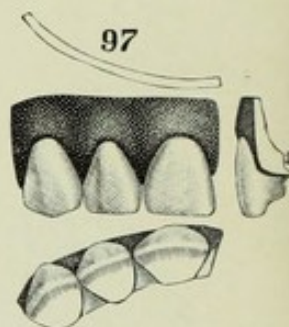
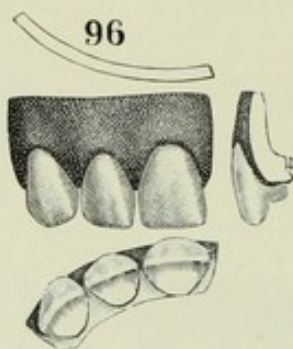
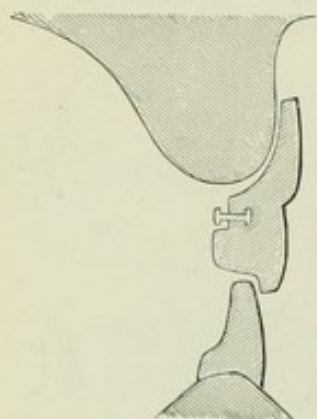
For Plain Teeth for protruding lower jaw, see illustrations of Long Ridge-Lap Teeth, pages 103, 105, 106, 108.

GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

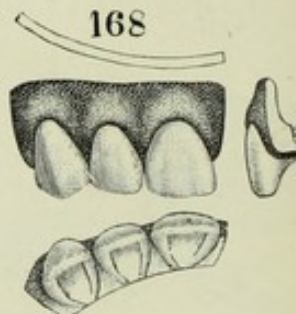
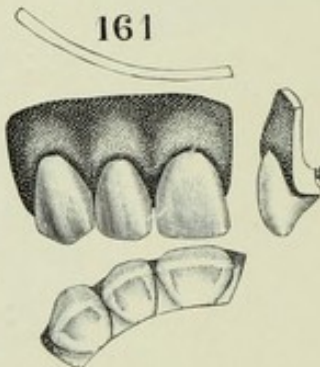
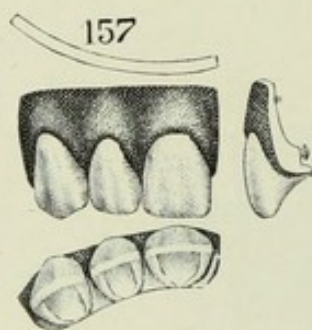
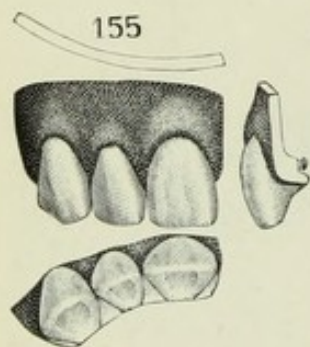
SHOULDERED (MASTICATING) INCISORS

(For suggestions as to the uses of Masticating Incisors, see page 43)

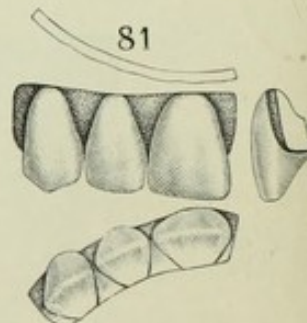
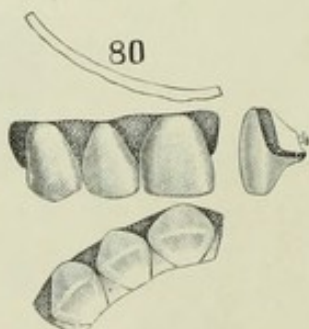
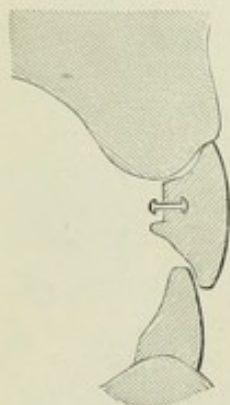


For additional Gum Sections for use as Masticating Incisors, see illustrations of Short-Bite Teeth, pages 161, 162. For Plain Teeth for the same purpose, see pages 103, 105, 107.

FESTOONED GUM



EXTRA SHORT GUM (For temporary Dentures)

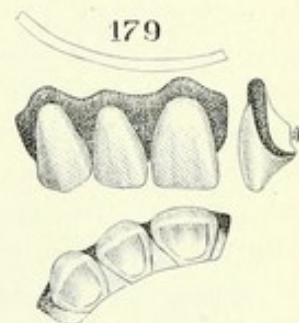
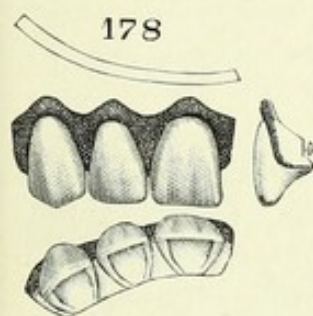


(For suggestions as to the use of Extra Short Gum Sections, see pages 50, 51)

GUM SECTIONS FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

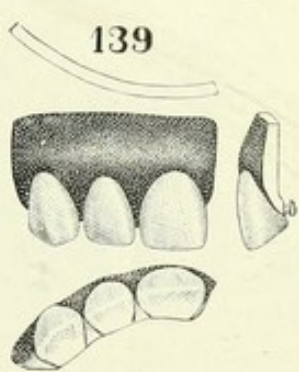
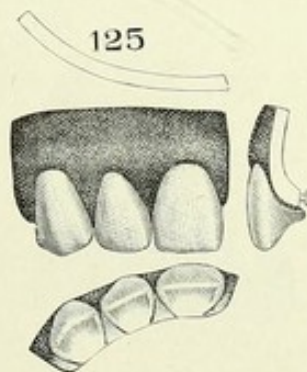
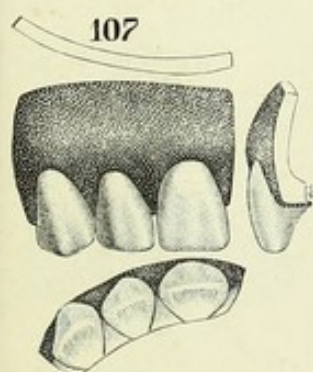
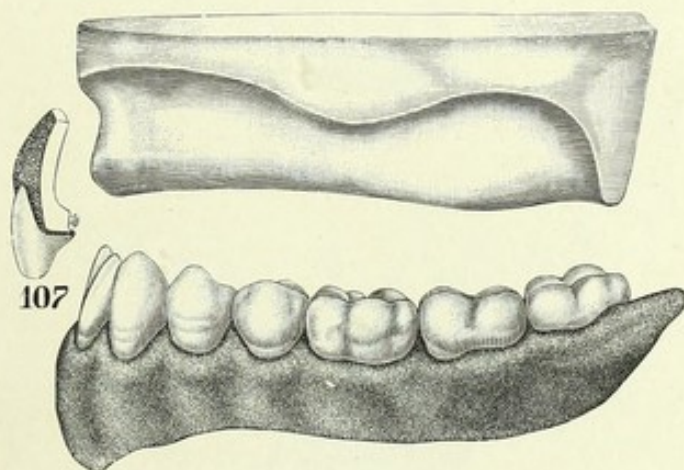
EXTRA SHORT GUM (for Temporary Dentures)—(Continued)



For Plain Teeth for Temporary Dentures, see Short Ridge-Lap molds, pages 102, 103, 104, 105, 107

BULGING RIDGE

(For suggestions as to the use of Bulging-Ridge Teeth, see page 50)



GUM SECTIONS FOR VULCANITE WORK

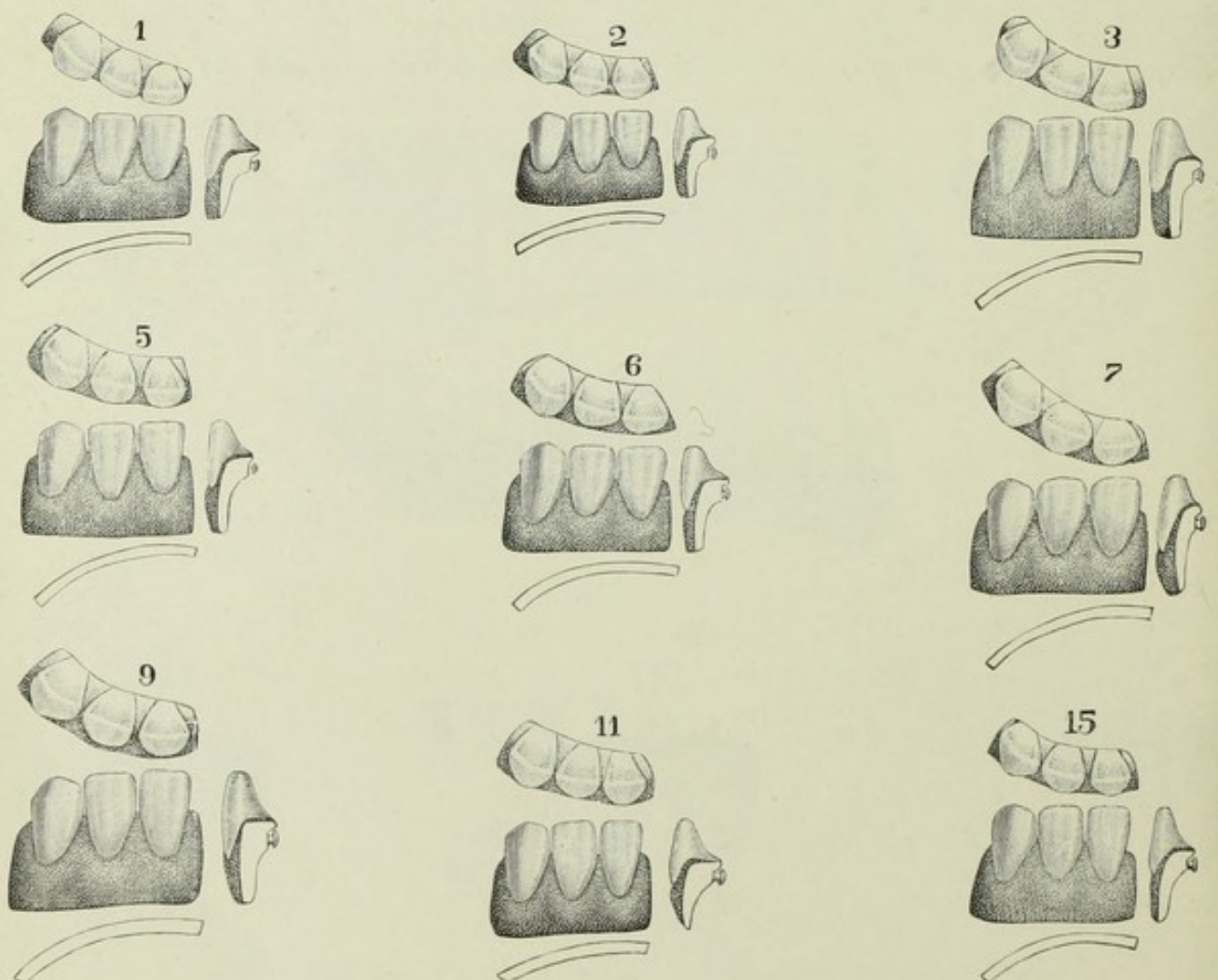
Lower, Incisors and Cuspid

The illustrations show a perspective view of the labial face of the right lower section of central, lateral, and cuspid teeth, with the central as arranged on the median line of the mouth so as to show its exact width, the lateral and cuspid being foreshortened in width due to their perspective; an edge view of the teeth in the same relative position, giving a correct idea of the curve of one-half of the central arch; a side view of the central, which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum; and an outline view of the gum edge, denoting its thickness and curve. (In the sets which have the four incisors on one block we show the entire section; and in the case of the set with plain incisors, the entire set for the right side is shown.)

They are classified for ready selection as to length of Gum, with special groups, as Lapping Laterals, Festooned Gums, Detached Cuspids, Incisors in one block, and Plain Incisor Sections.

Sold as single blocks, and in sets of 6 (incisors and cuspids), 14 (full lowers), and 28 (full uppers and lowers matched).

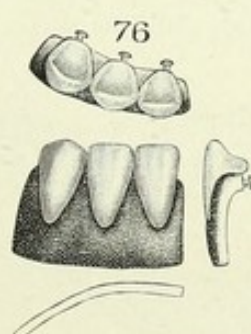
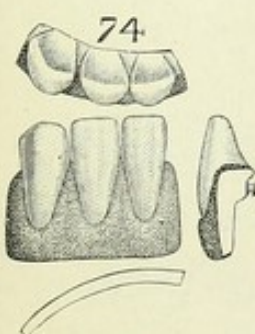
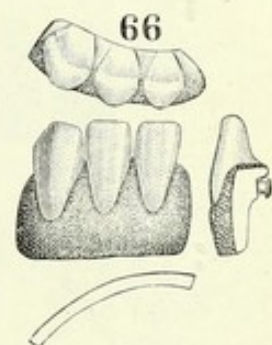
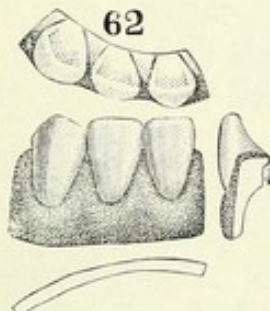
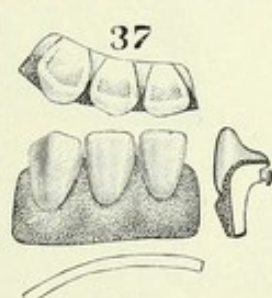
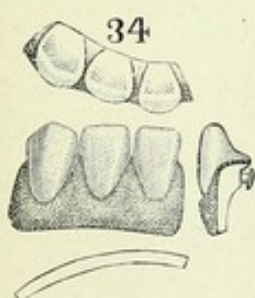
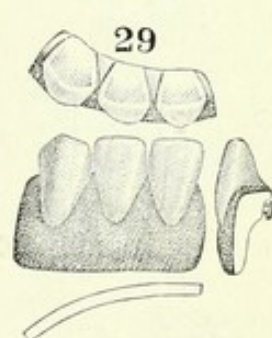
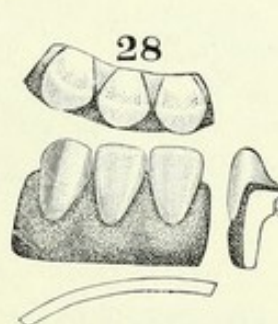
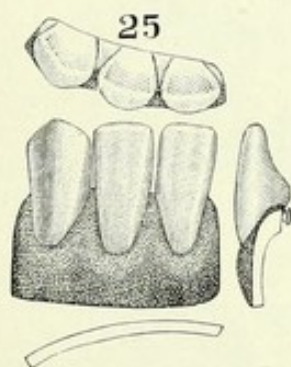
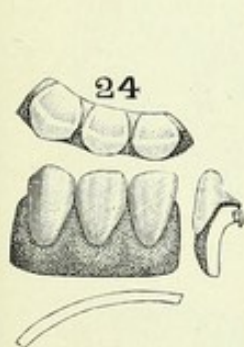
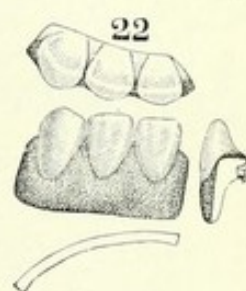
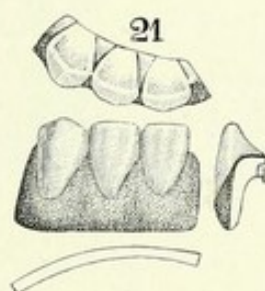
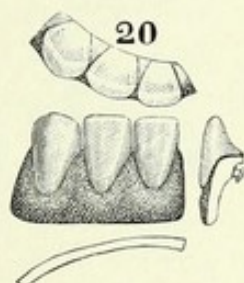
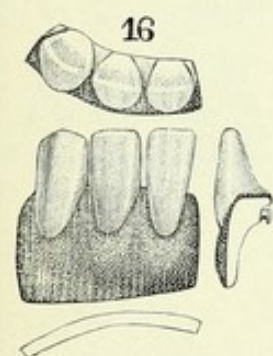
MEDIUM GUM



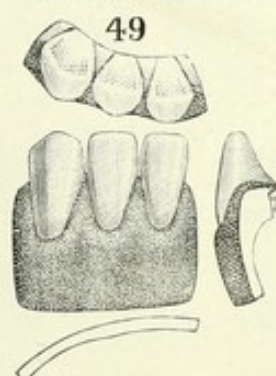
GUM SECTIONS FOR VULCANITE WORK

Lower, Incisors and Cuspid—(Continued)

MEDIUM GUM—(Continued)



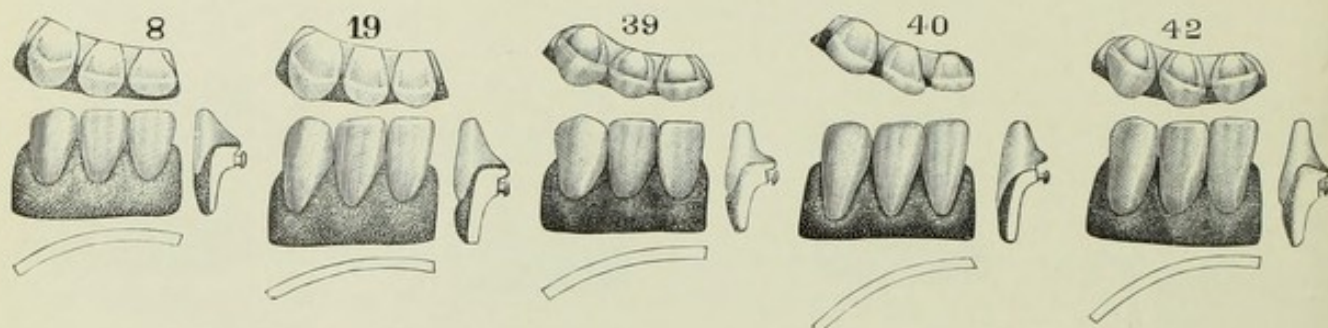
LONG GUM



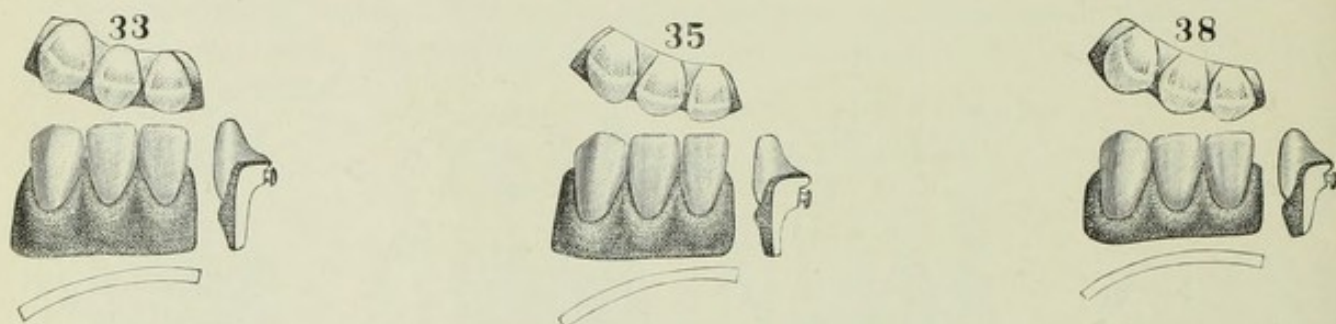
GUM SECTIONS FOR VULCANITE WORK

Lower, Incisors and Cuspid—(Continued)

LAPPING LATERALS



FESTOONED GUM

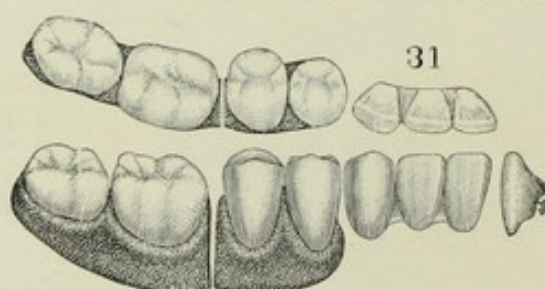


INCISORS IN ONE BLOCK



PLAIN INCISOR SECTIONS

For cases where there is complete absorption of the process toward the angle of the jaw, and only partial absorption in the front, the incisor sections are made gumless. These gumless sections are believed to afford a stronger denture than single Plain Teeth would make, especially if the case is one which will not permit of the rubber being extended under the heel of the section.



GUM SECTIONS FOR VULCANITE WORK

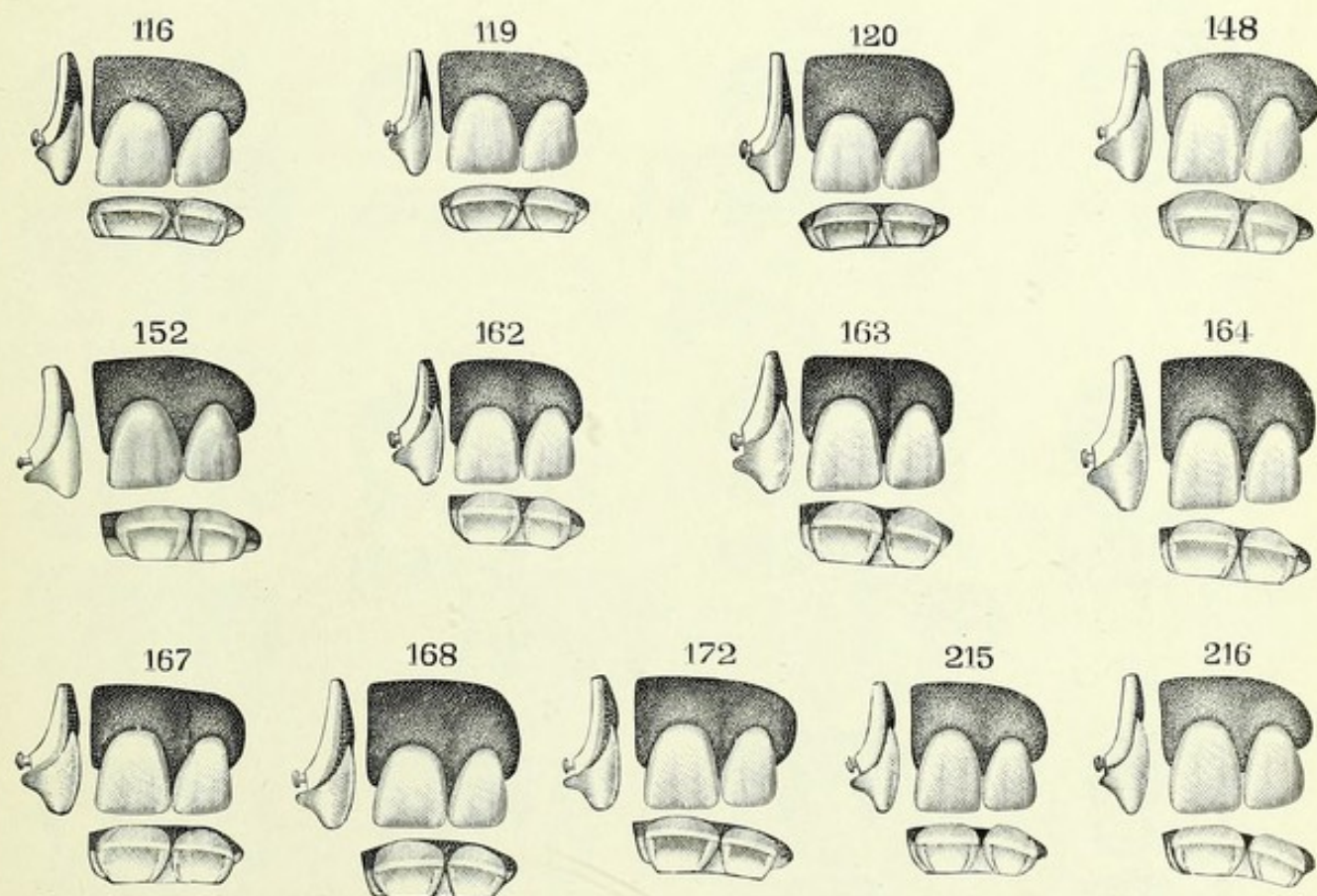
Partial Upper, Sets of 4, in Two Sections

The illustrations show a perspective view of the labial face of the left upper section of central and lateral teeth with the central as arranged on the median line of the mouth, so as to show its exact width, the lateral being foreshortened in width due to its perspective; an edge view of the teeth in the same relative position, giving a correct idea of the curve of that portion of the central arch; and a side view of the central, which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum.

They are classified for ready selection as to length of bite, with special groups, as Lapping Laterals, Bulging Ridge, and Festooned Gums.

Sold as single blocks, and in sets of 4.

SHORT BITE



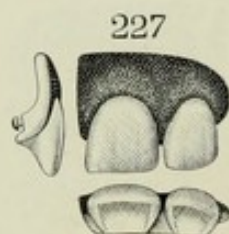
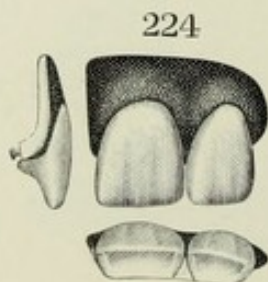
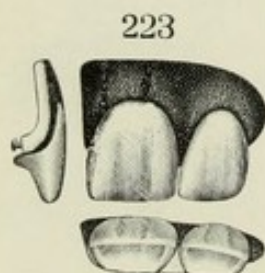
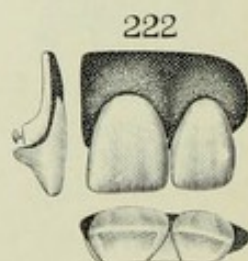
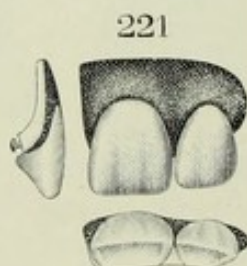
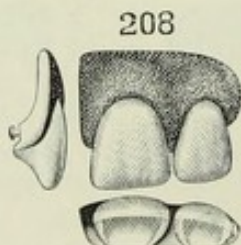
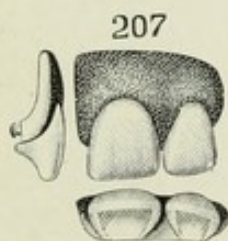
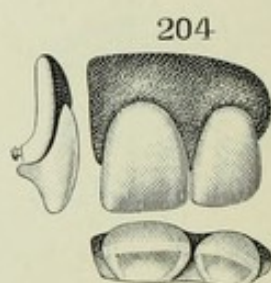
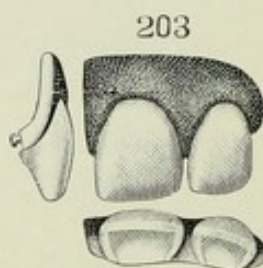
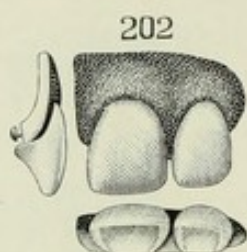
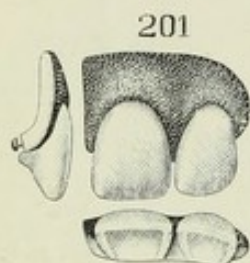
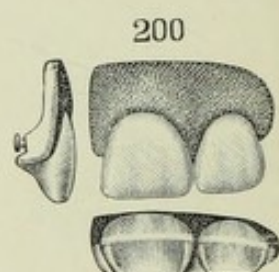
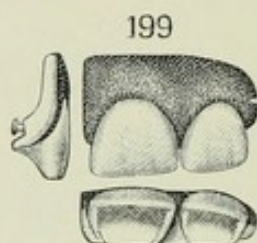
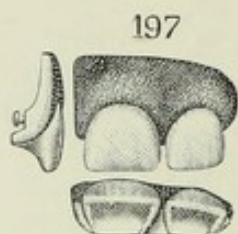
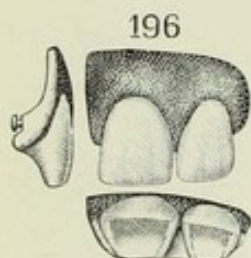
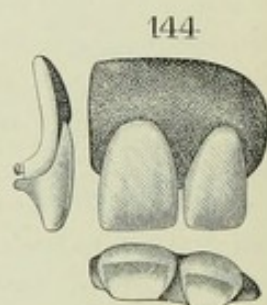
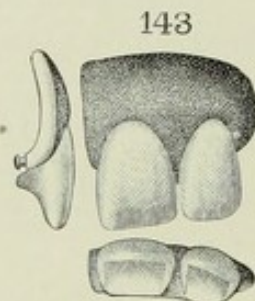
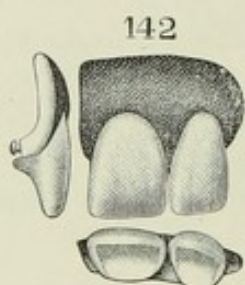
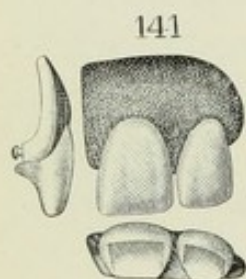
MEDIUM BITE



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4, in Two Sections—(Continued)

MEDIUM BITE—(Continued)

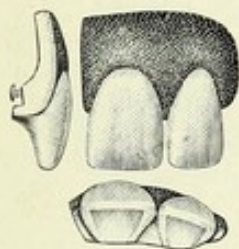


GUM SECTIONS FOR VULCANITE WORK

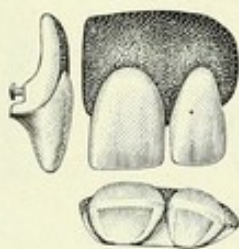
Partial Upper, Sets of 4, in Two Sections—(Continued)

LONG BITE

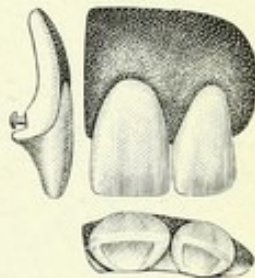
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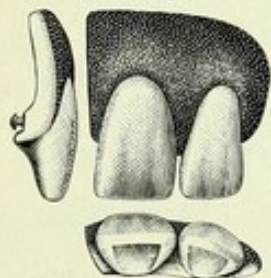
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107



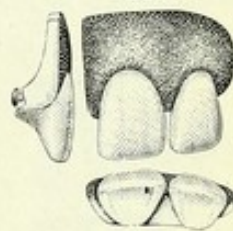
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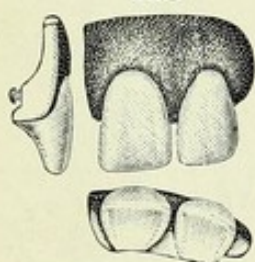
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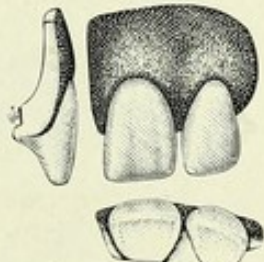
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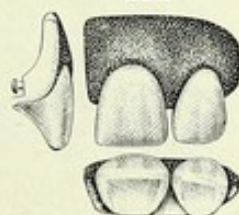
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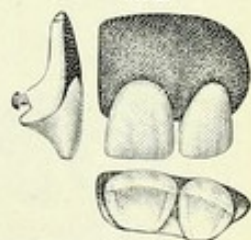
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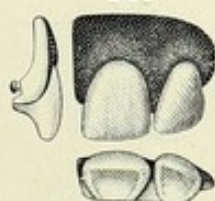


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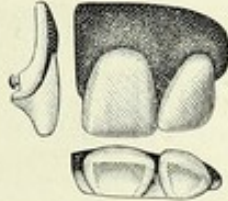


LAPPING LATERALS

239



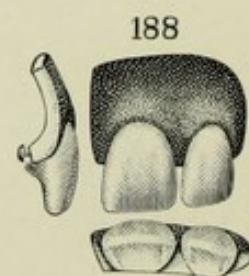
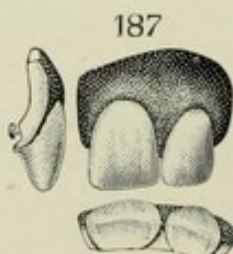
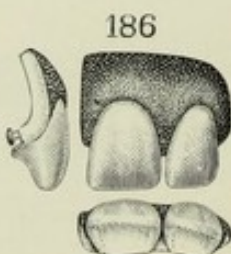
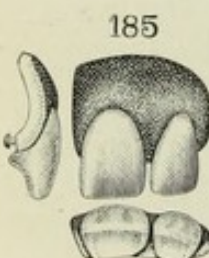
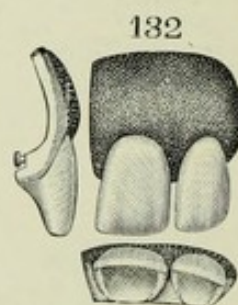
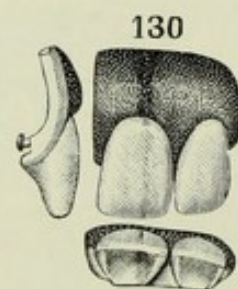
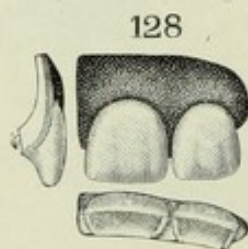
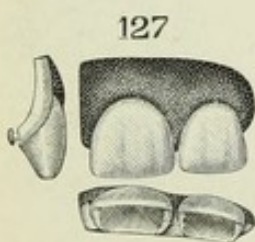
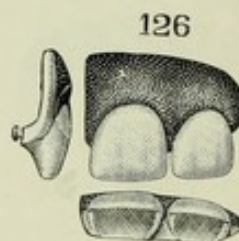
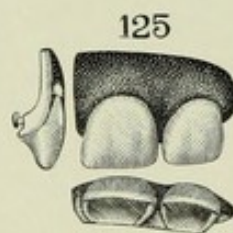
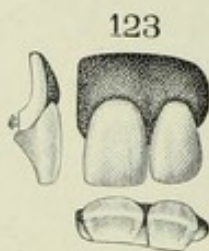
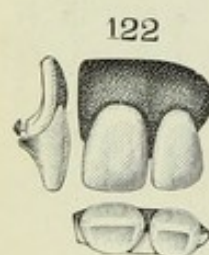
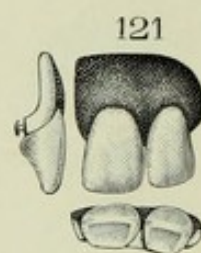
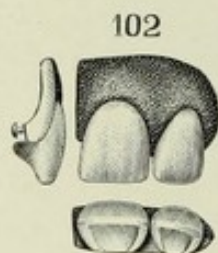
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GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4, in Two Sections—(Continued)

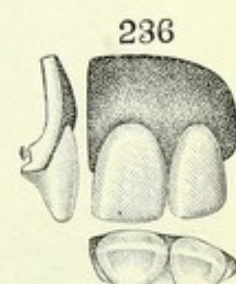
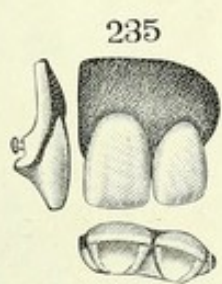
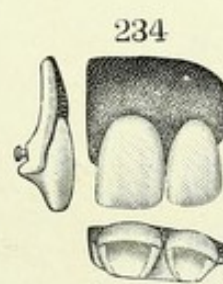
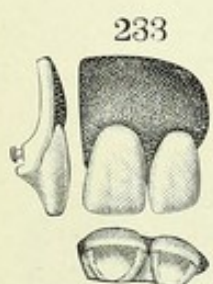
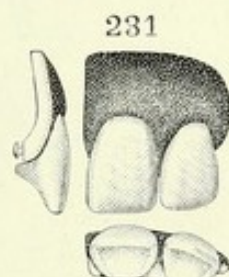
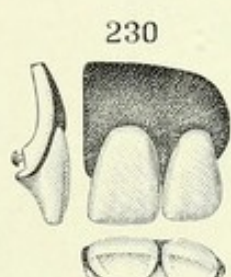
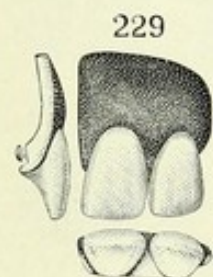
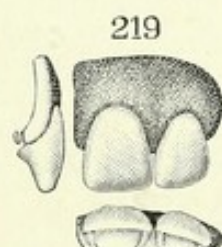
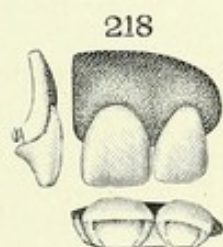
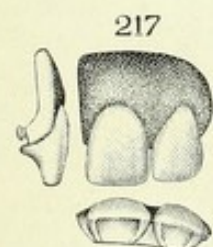
BULGING RIDGE



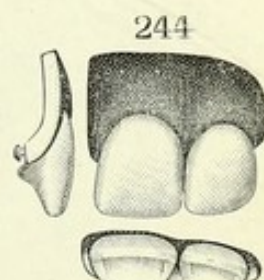
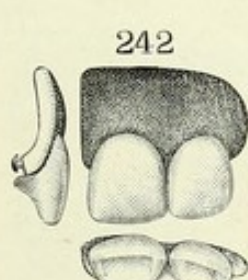
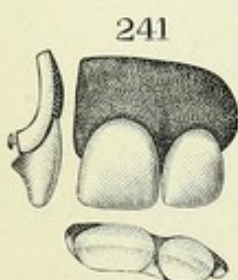
GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4, in Two Sections—(Continued)

BULGING RIDGE—(Continued)



FESTOONED GUM

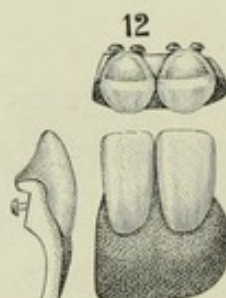
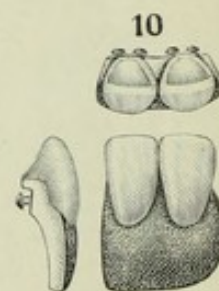
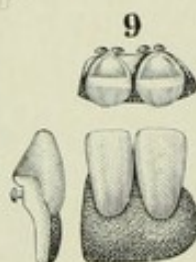
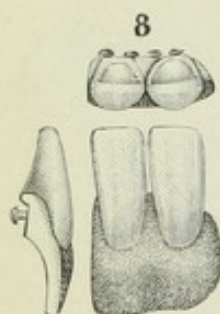
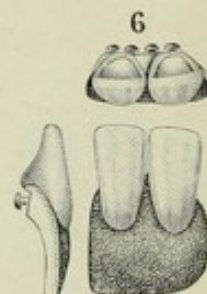
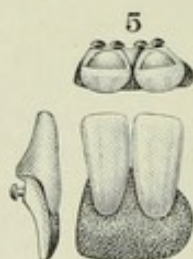
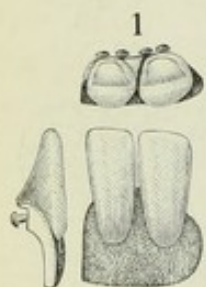


GUM SECTIONS FOR VULCANITE WORK

Partial Lower, Sets of 4, in Two Sections

The illustrations show a perspective view of the labial face of the left lower section of central and lateral with the central as arranged on the median line of the mouth so as to show its exact width, the lateral being foreshortened in width due to its perspective; an edge view of the teeth in the same relative position, giving a correct idea of the curve of that portion of the central arch; and a side view of the central, which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum.

Sold as single blocks, and in sets of 4.



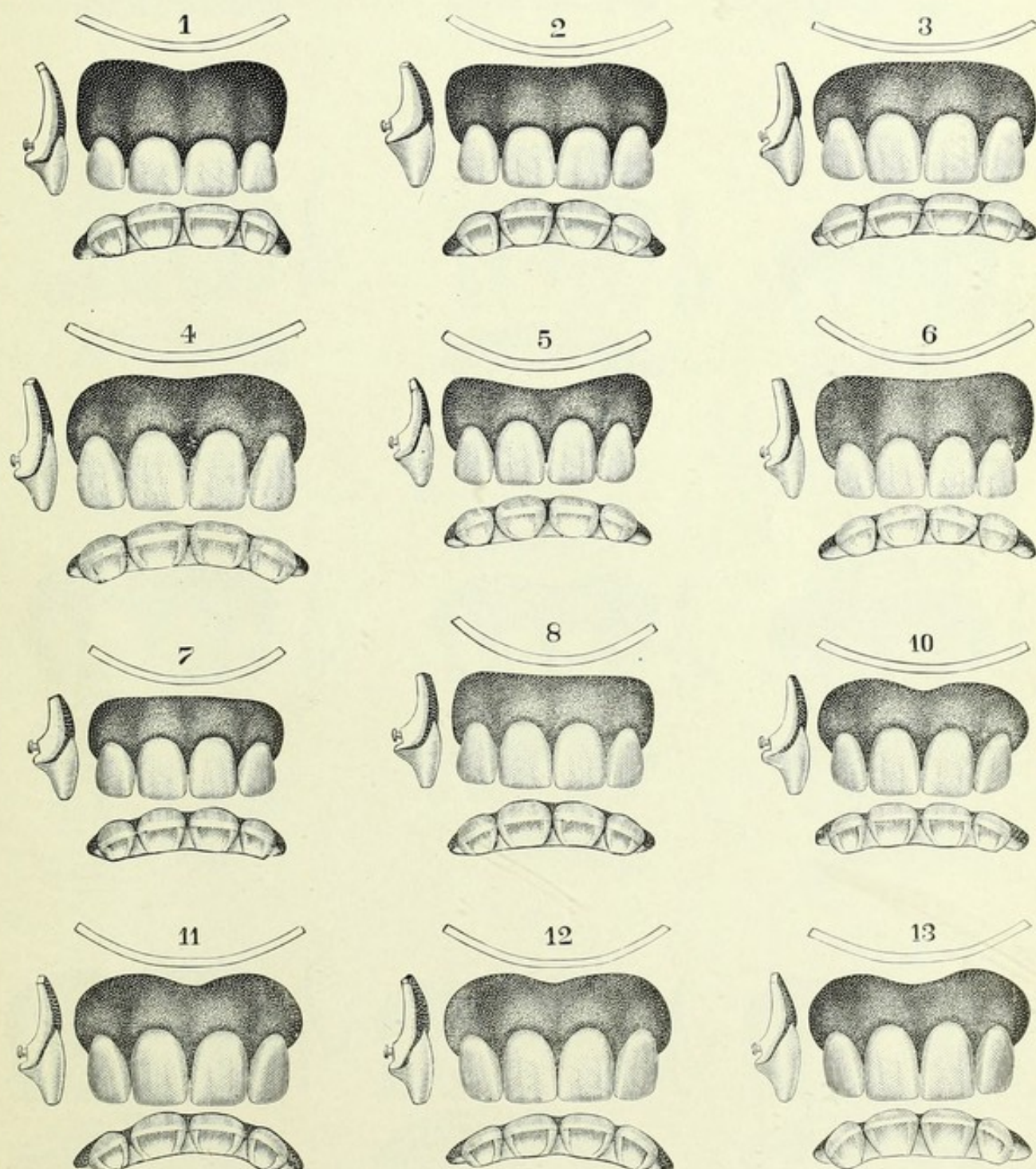


GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4, in One Section

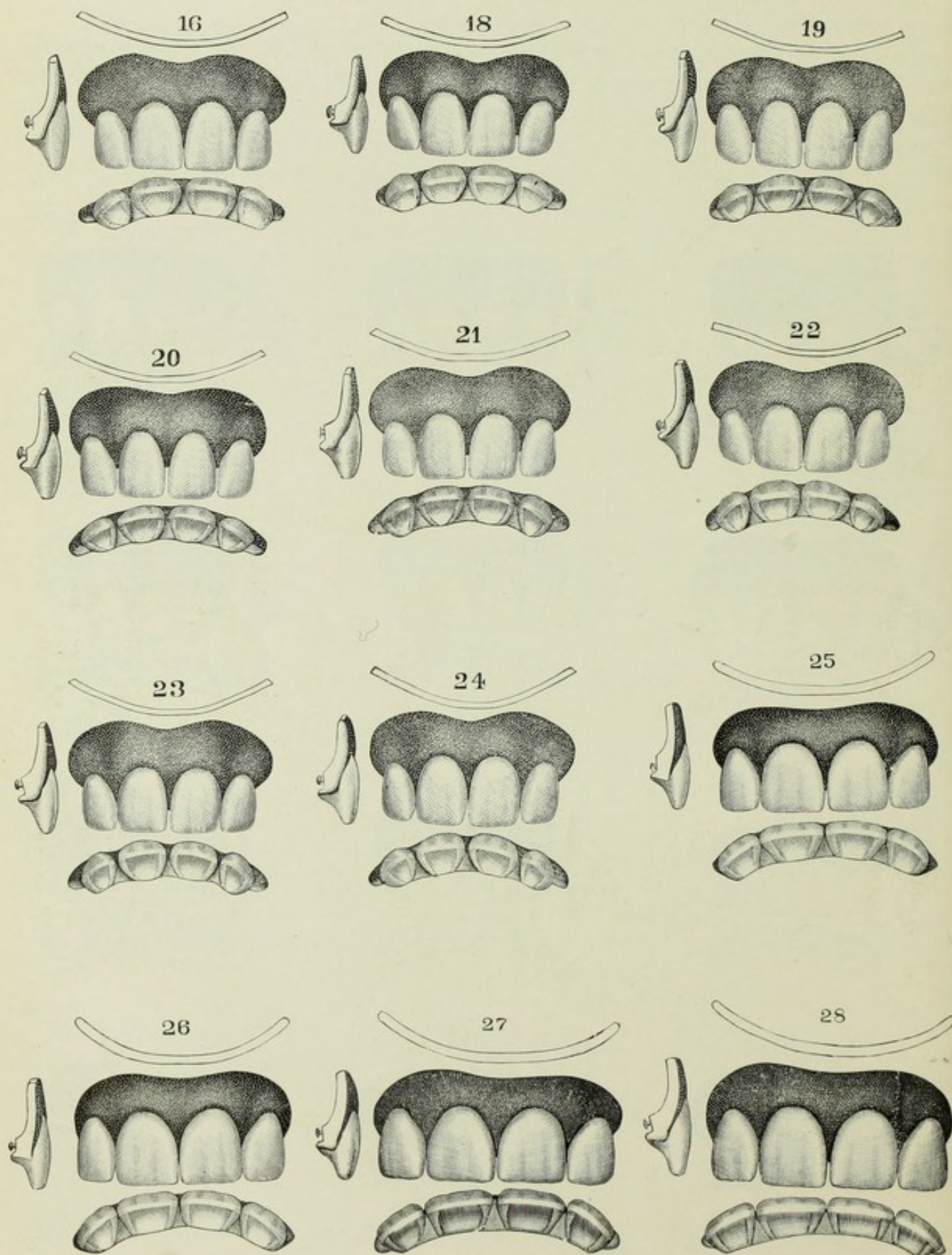
These sets of four, centrals and laterals in one section, dispense with the joint at the median line, an especial advantage where the lip is short.

The illustrations show a view of the labial face of the section; an edge view of the teeth in the same relative position, giving a correct idea of the curve of the arch; a side view which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum; and an outline view of the gum edge, denoting its thickness and curve.



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4, in One Section—(Continued)

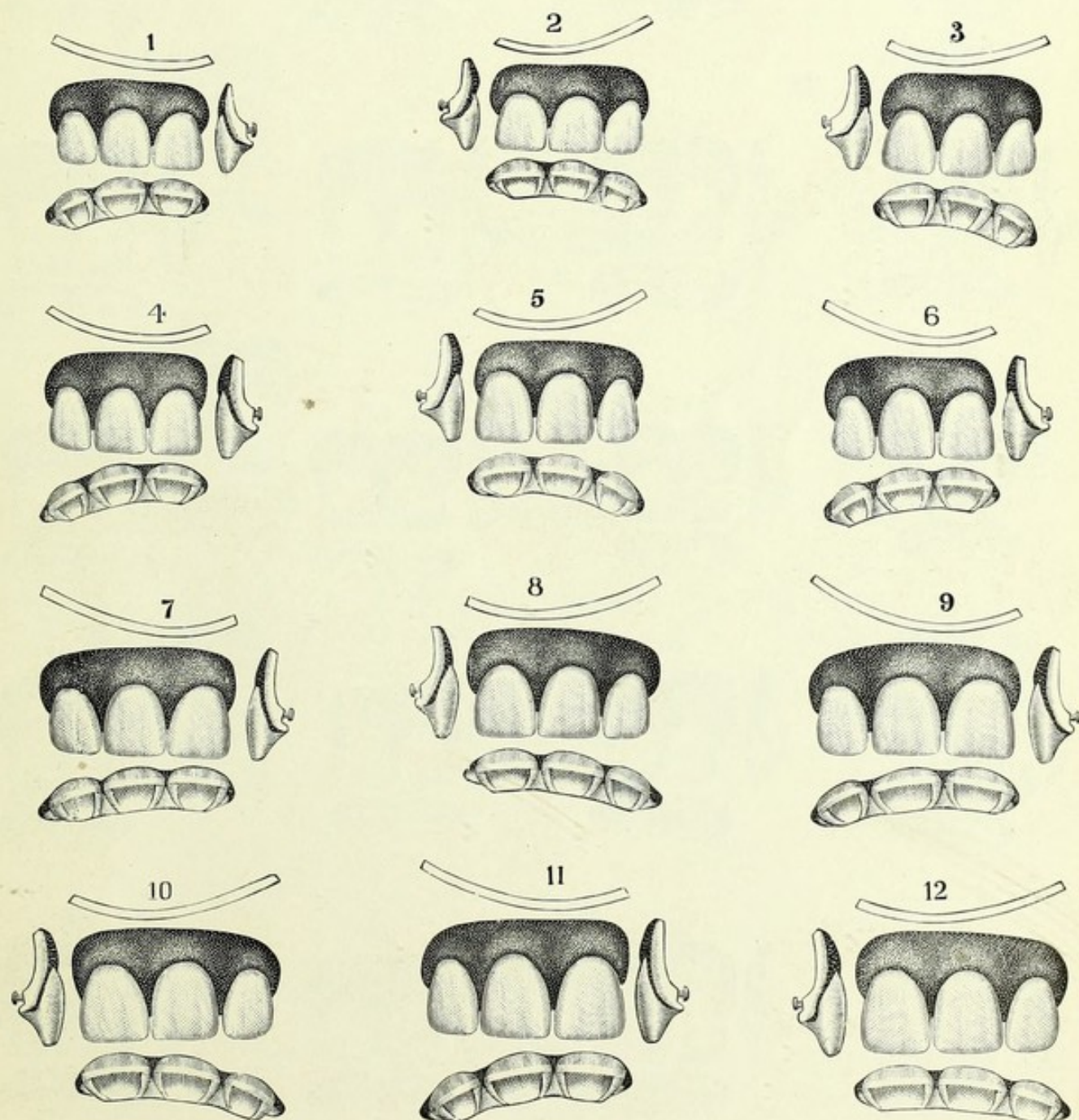


GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 3 (Centrals and Lateral), in One Section

The illustrations show a view of the labial face of the section; an edge view of the teeth in the same relative position, giving a correct idea of the curve of the arch; and a side view which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum; and an outline view of the gum edge, denoting its thickness and curve.

These Sections are in pairs. Thus No. 1 and No. 2 are alike as to the centrals, but No. 1 contains the right lateral and No. 2 the left. Nos. 3 and 4, 5 and 6, 7 and 8, 9 and 10, and 11 and 12 are also paired, the left lateral being on one and the right on the other of each pair.

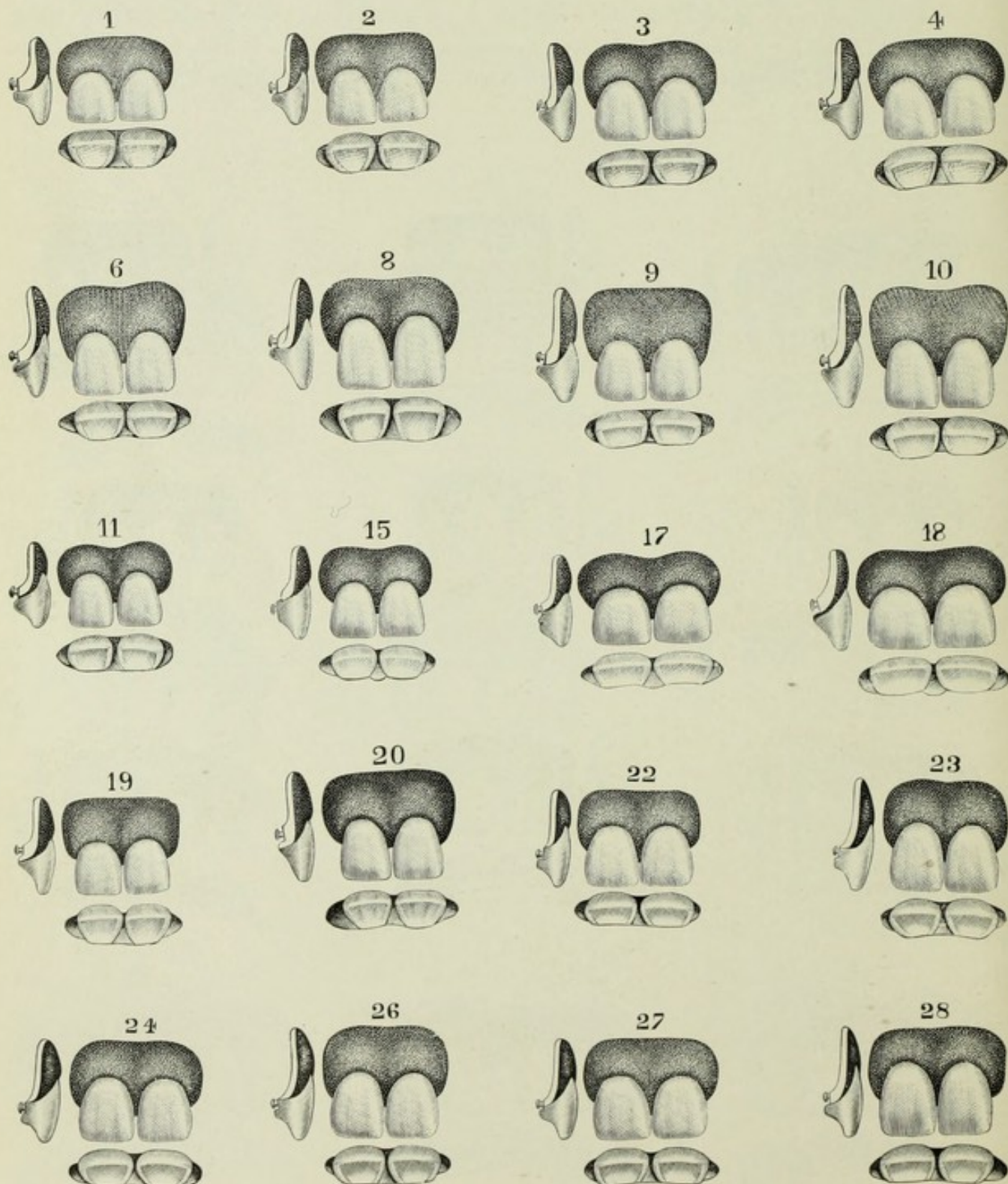




GUM SECTIONS FOR VULCANITE WORK

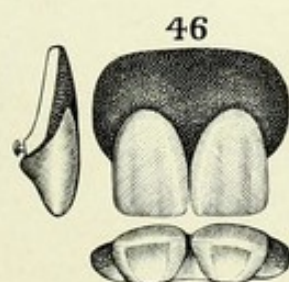
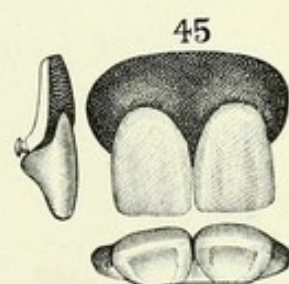
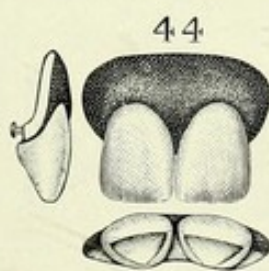
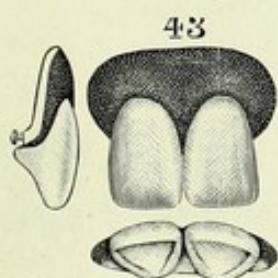
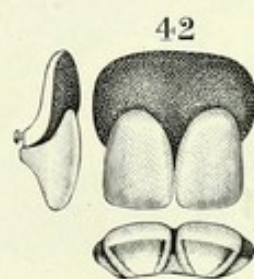
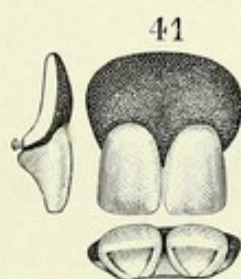
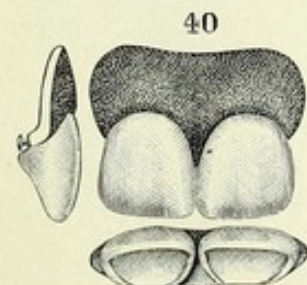
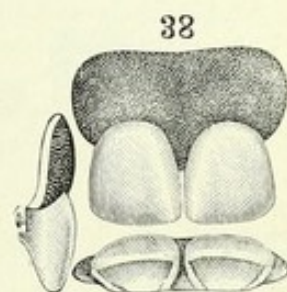
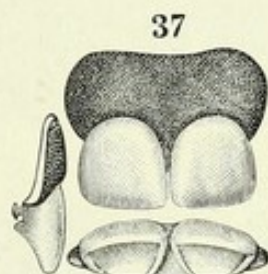
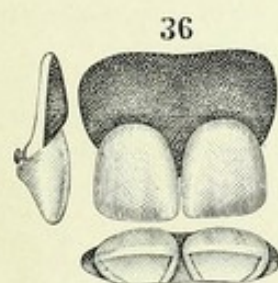
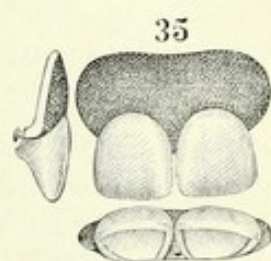
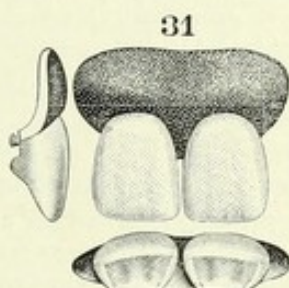
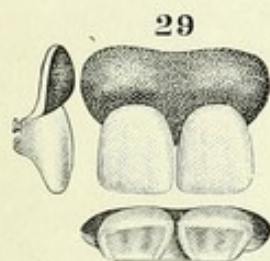
Partial Upper, Sets of 2 (Centrals), in One Section

The illustrations show a view of the labial face of the section; an edge view of the teeth in the same relative position, giving a correct idea of the curve of the arch; and a side view which presents the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum.



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 2 (Centrals), in One Section—(Continued)



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4 (Semi-Bicuspids), in Two Sections

It sometimes occurs that two or three teeth are lost from one jaw while their occluding teeth remain in position. The upper bicuspids are among the earliest teeth in the mouth to decay, and when they are gone, artificial substitutes are not usually thought of for a time until absorption takes place where the teeth have been extracted, during which time also the teeth which formerly occluded with those lost become elongated because they have no antagonists. In the case illustrated (Fig. 1) the upper bicuspids and the lower first bicuspid and first molar have been lost, while the lower second bicuspid has been considerably elongated. When an attempt is made to insert an artificial substitute under these circumstances, something different from the ordinary bicuspid is required, to permit the elongated tooth to occlude properly. There is no room for palatal cusps of the usual size, so we supply what we call Semi-Bicuspids, which have only the buccal cusps, the rubber of the base-plate being formed into shortened palatal cusps in vulcanizing, as shown in Fig. 2.

There are also Plain Semi-Bicuspids and Molars (see page 119), Plain Cuspids (see pages 150, 151), and Bicuspids and Molar Veneers (see pages 154, 155), for use in cases of this character where there has not been sufficient absorption of the alveolus to permit the use of Gum Sections.

The illustrations show a view of the buccal face; an edge view of the section in the same relative position; and a side view which indicates the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the buccal face of the tooth, and the inclination of the gum.

Sold as single blocks, and in sets of 4.

FIG. 1

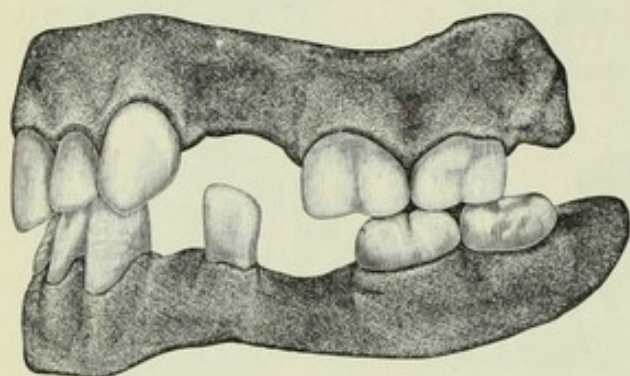
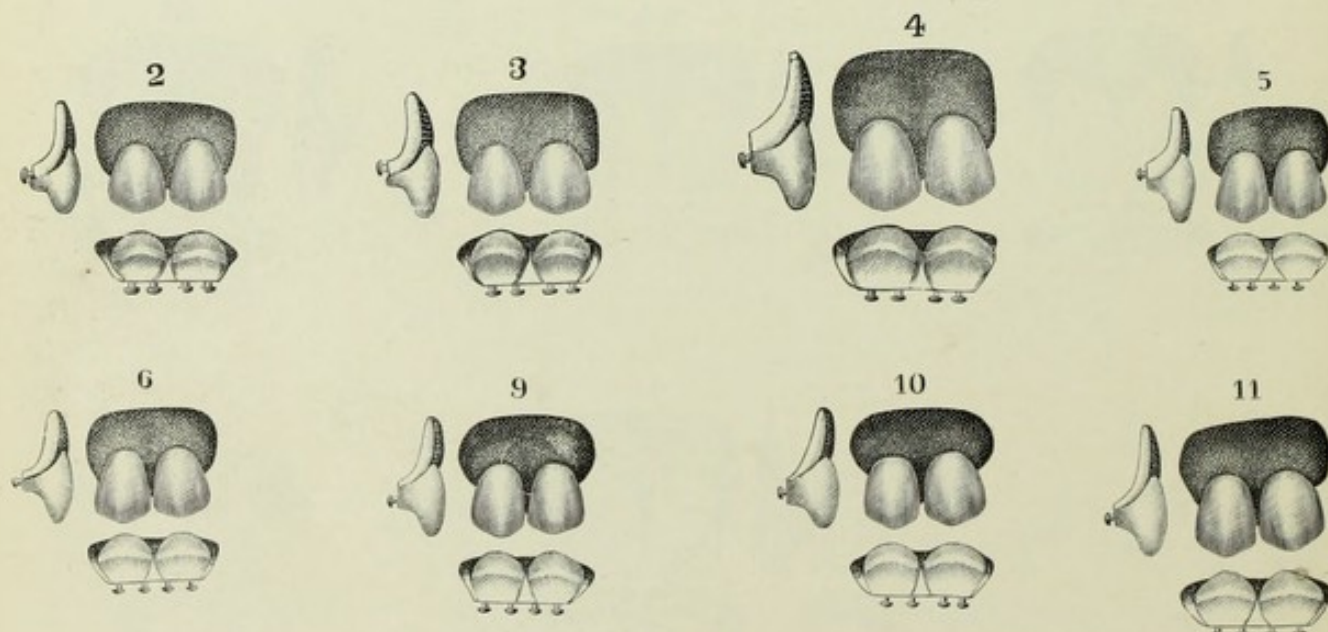
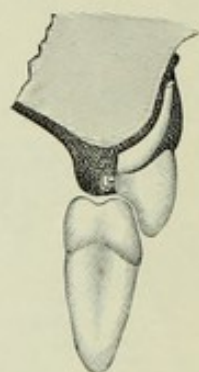


FIG. 2



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4 (Semi-Bicuspid), in Two Sections

These forms were designed to take the place of the regular bicuspid section in a full denture where an opposing bicuspid in the lower jaw has become elongated.

Made in right and left sections. Sold in sets of 4.

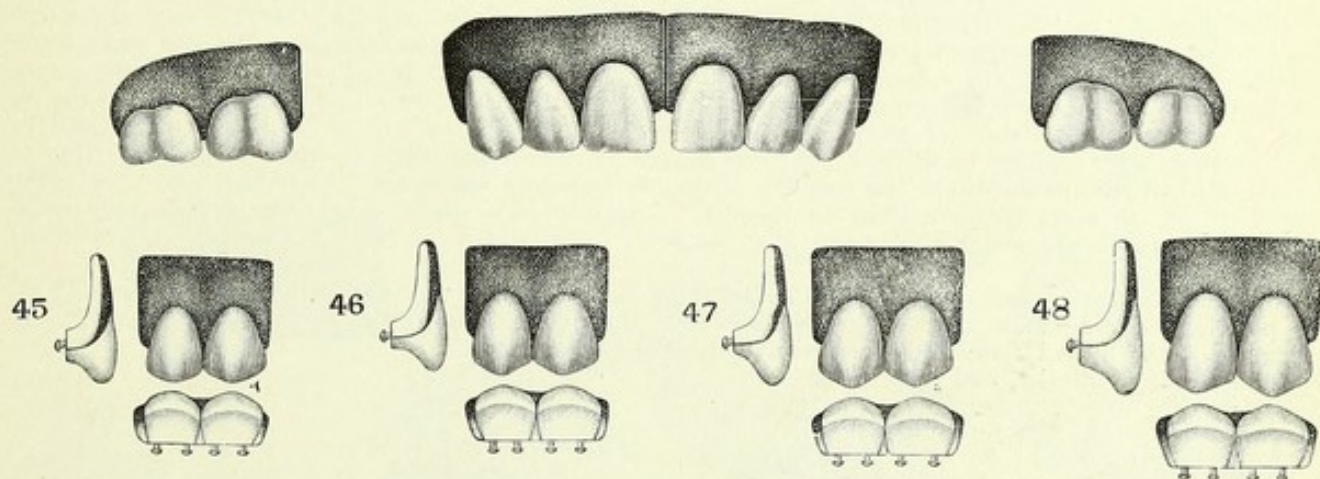
We give a list by numbers of some of the sets of full upper gum sections they match.

No. 45 will go with gum sections Nos. 28, 191.

" 46 " " " " " " 46, 57, 197.

" 47 " " " " " " 39, 93, 159.

" 48 " " " " " " 25.

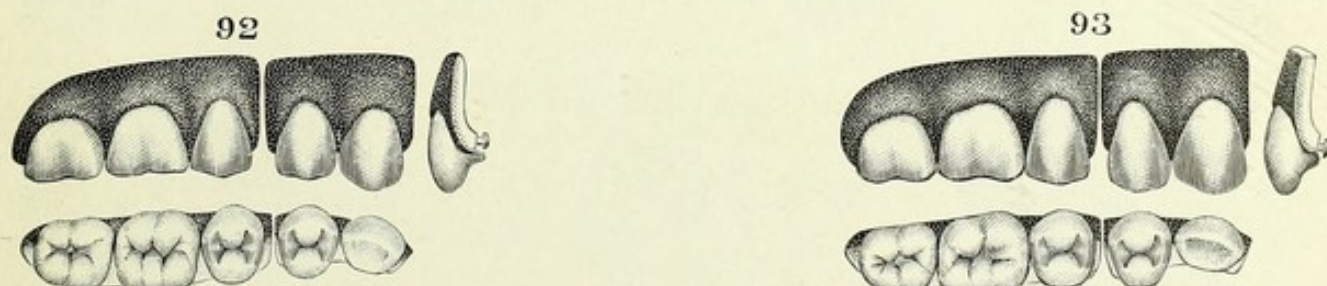


Partial Upper, Sets of 10 (Cuspids, Bicuspid, and Molars), in Four Sections

These teeth were designed for partial cases where the cuspid and first bicuspid or the second bicuspid and two molars have been lost, as offering advantages over single teeth, in reducing the number of joints and also in making a stronger piece.

The illustrations show a perspective view of the labial and buccal faces; an edge view of the teeth in the same relative position, giving a correct idea of the arch; and a side view of the cuspid, indicating the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the labial face of the tooth, and the inclination of the gum.

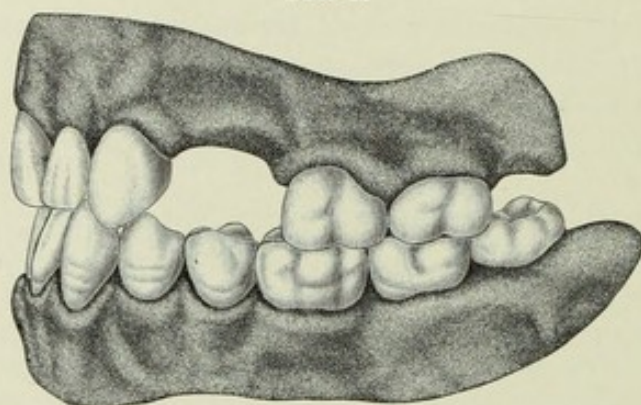
Sold as single blocks, or in sets of 4 (cuspids and first bicuspid), 6 (second bicuspid and first and second molars), and 10 (cuspids, bicuspid, and molars).



GUM SECTIONS FOR VULCANITE WORK

Partial Upper, Sets of 4 (Special Bicuspid), in Two Sections

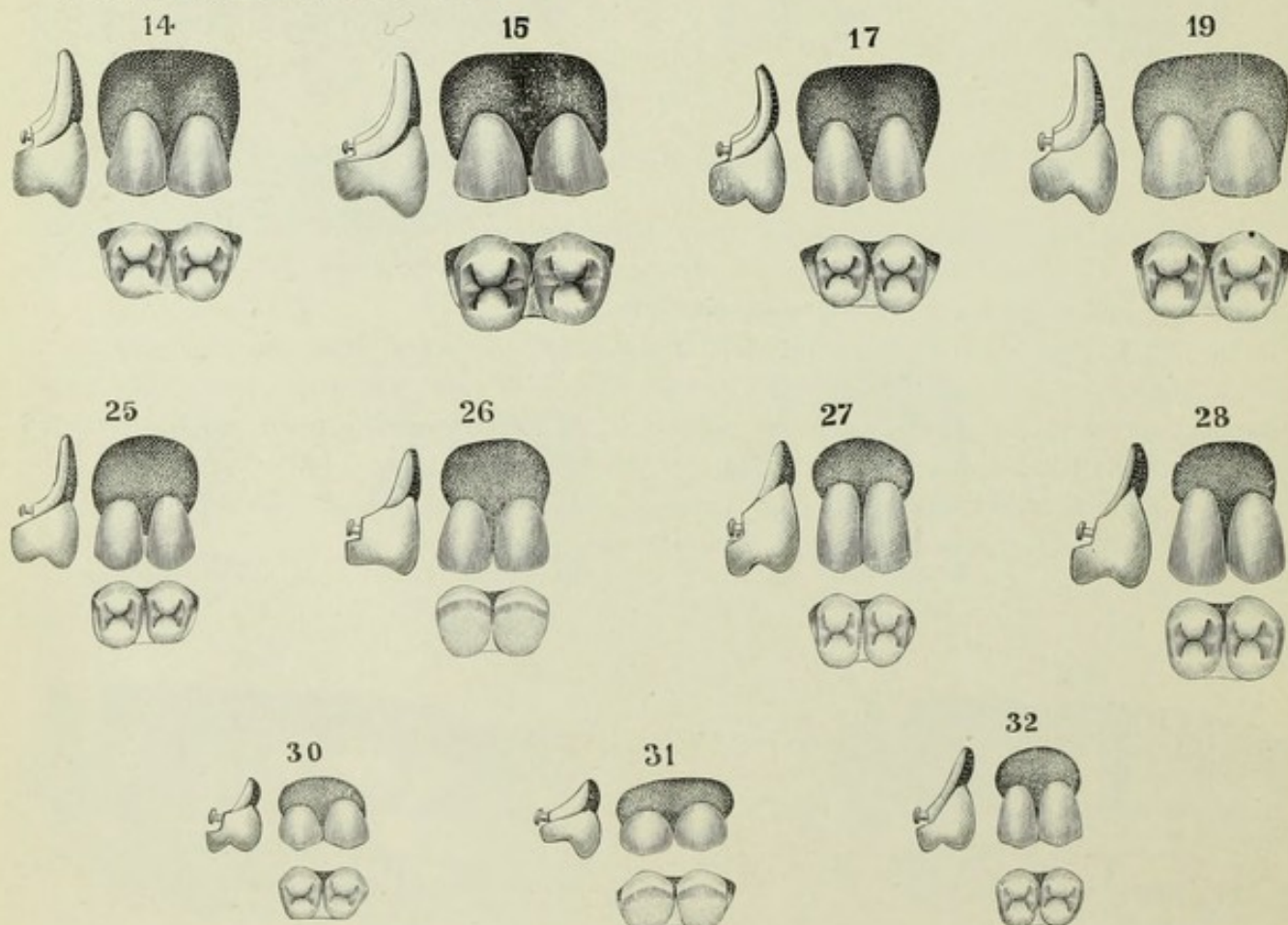
FIG. A



This line of "Special Bicuspid" was designed for partial cases only, and to be used when the closure of the jaws is normal, as in Fig. A, where considerable absorption is shown at the seat of the extracted bicuspid, while the opposing teeth are in their normal position. They differ from the bicuspid in sets of 14 in that their gum is so shaped as to require little or no grinding; those of the 14 being square-sided to permit of jointing to the other sections in the full set. Among them will be found sections wide enough to fill any required space. In others the teeth are narrow in proportion to their length, to suit cases where through the absorptive process the space has become narrowed; the molars are apt to move forward when the natural bicuspid have been extracted, unless the occlusion is such as to prevent it. Nos. 26 and 31 have the occlusal surfaces shaped to resemble the wear of mastication.

The illustrations show a view of the buccal faces and of the occluding surfaces in the same relative position; a side view indicating the thickness, the position of the pins, the length of ridge-lap, the curve of the buccal face, and the inclination of the gum.

Sold as single blocks, and in sets of 4.





GUM SECTIONS FOR VULCANITE WORK

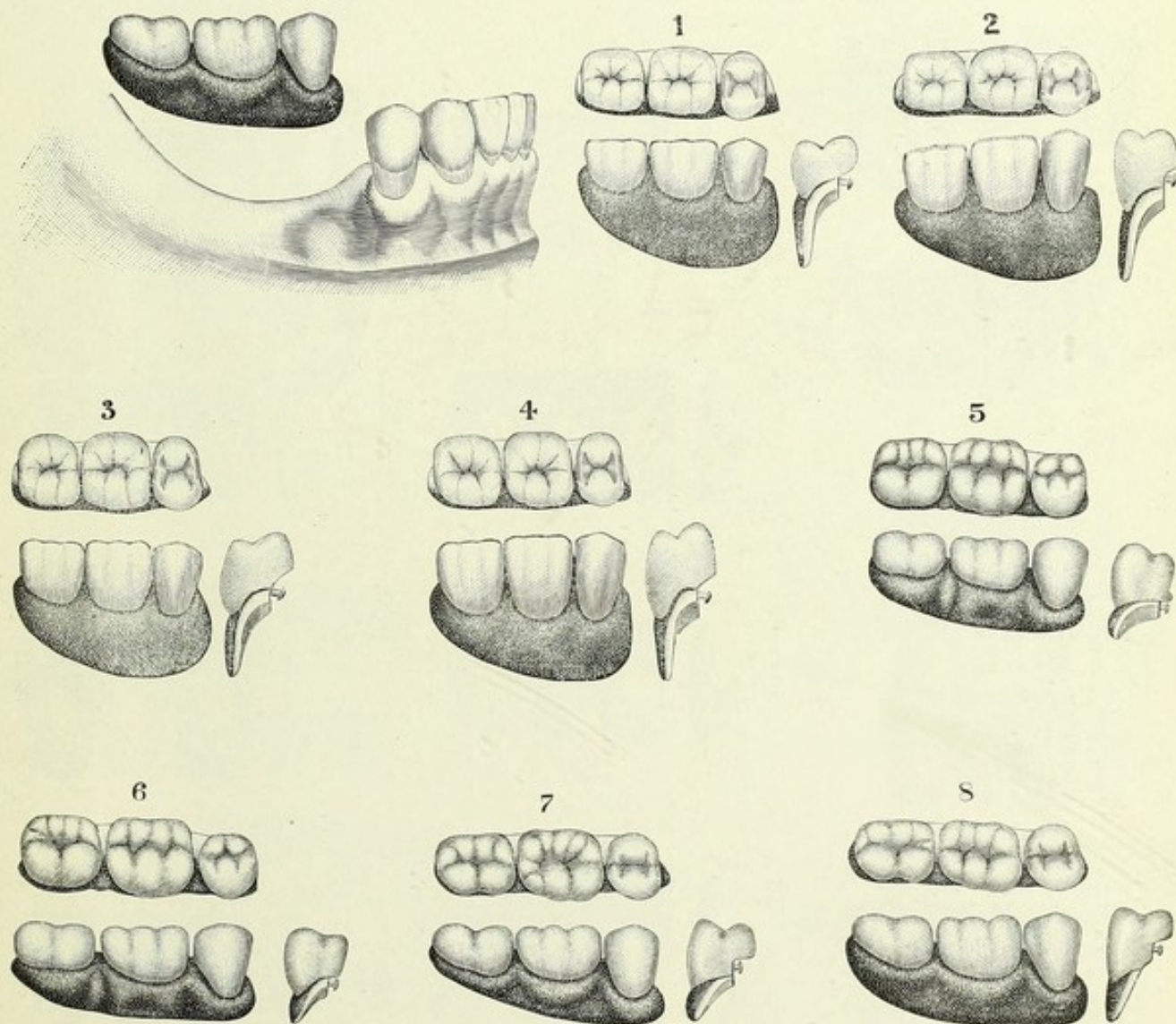
Partial Lower, Sets of 6 (One Bicuspid and Two Molars), in Two Sections

Many cases are found in which the lower molars and often the second, sometimes also the first, bicuspid have been extracted. In such cases, after complete absorption of the gums has been established, we have a condition represented by Fig. 1. To restore this portion of the jaw to usefulness in mastication, the single section Nos. 1 to 8 are well adapted. The sizes and shapes of most human jaws vary comparatively little in this locality after complete absorption of the gum, no matter how much they may have differed when in their normal condition. Consequently, a small range of forms and sizes suffices for the needs, and in probably the majority of instances but little grinding will be necessary to make a perfect fit.

The illustrations show a view of the buccal face; an edge view of the teeth in the same relative position, giving a correct idea of the curve of the arch; and a side view of the bicuspid indicating the thickness of the tooth, the position of the pins, the length of the bite and ridge-lap, the curve of the buccal face of the tooth, and the inclination of the gum.

Sold as single blocks, and in sets of 6.

FIG. 1



SINGLE GUM TEETH FOR VULCANITE WORK

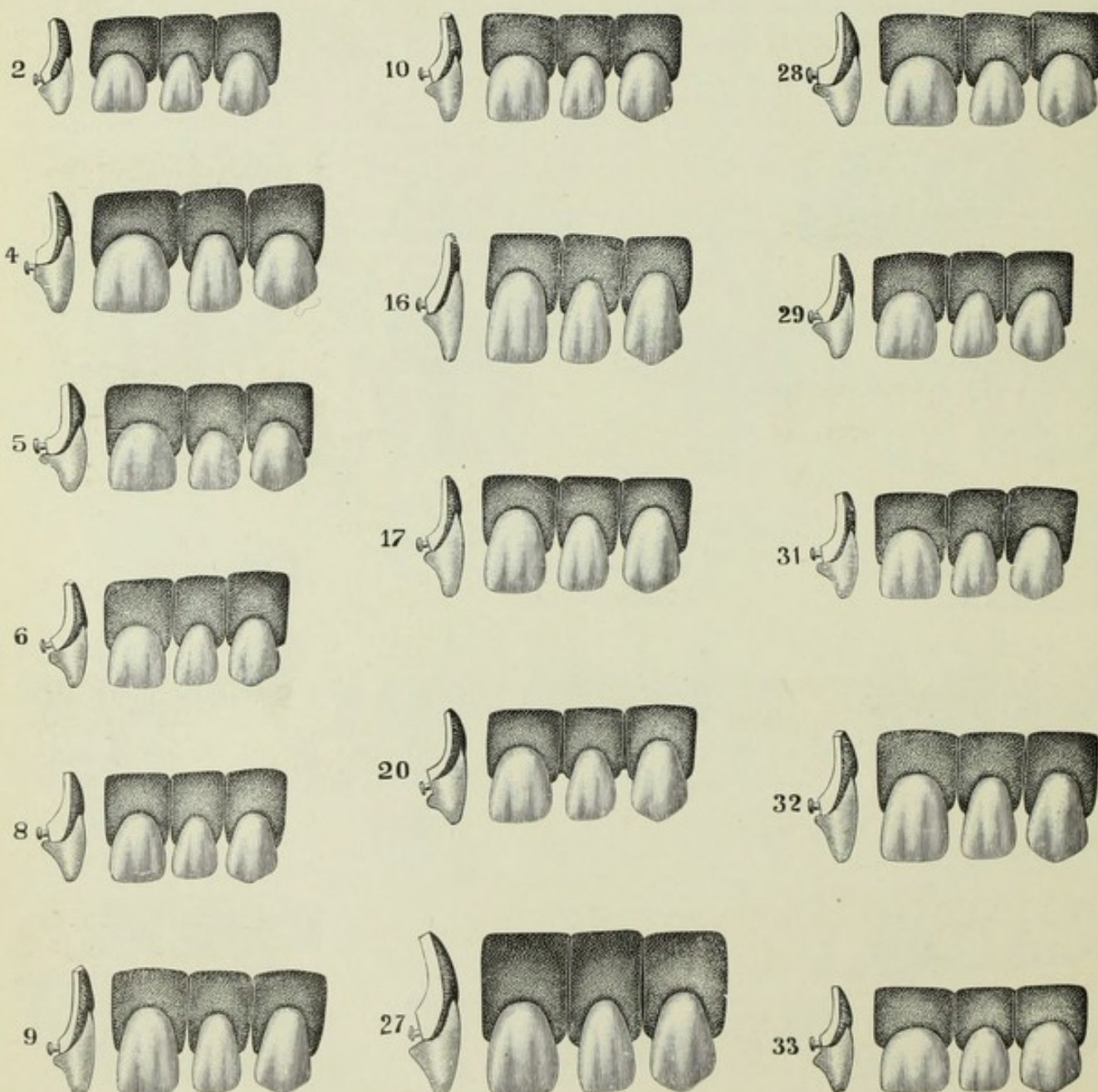
Upper, Incisors and Cuspid

Single Gum Teeth for Vulcanite Work are useful where considerable absorption of the process has occurred, more especially if there is undue exposure of the gum in laughing or talking.

The demand for this class of Teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on ORDER ONLY at the prices quoted on page 215. Teeth so made will not be returnable.

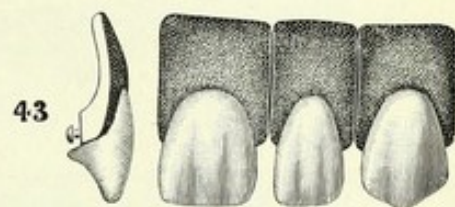
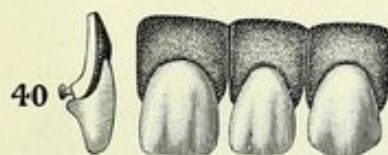
The illustrations show the labial or buccal faces of the teeth in the various forms, for the left side; also, a side view from the median approximal surface, indicating the thickness of tooth and gum, the position of the pins, the length of bite and ridge-lap, and the curve of the labial or buccal face.

Sold as single teeth and in partial sets as desired.

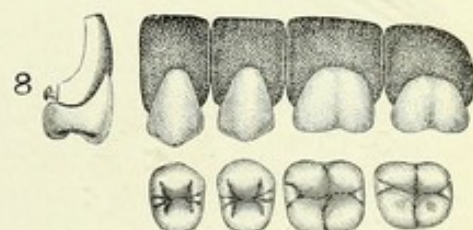
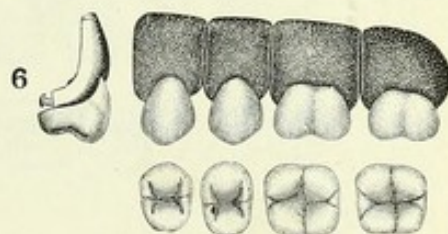
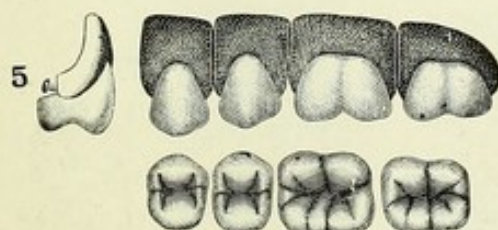
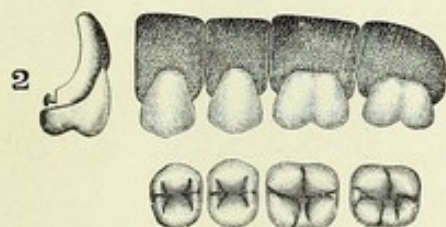


SINGLE GUM TEETH FOR VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)

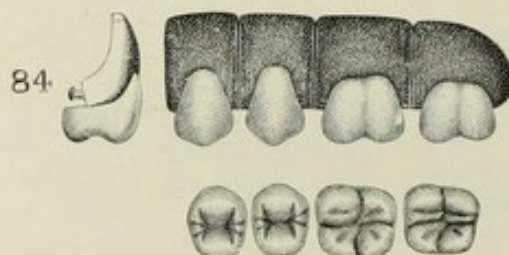
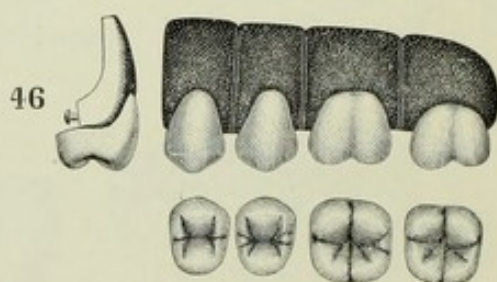
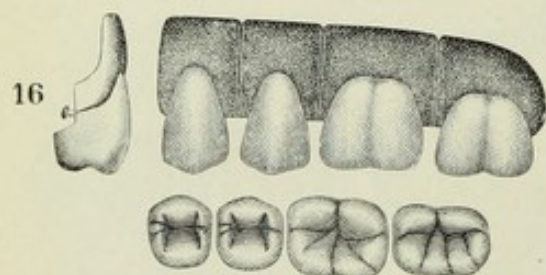
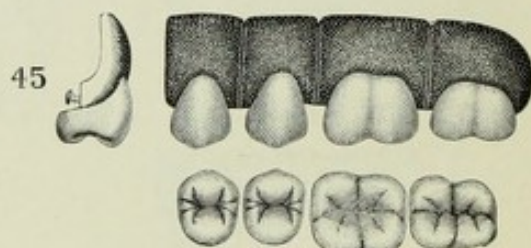
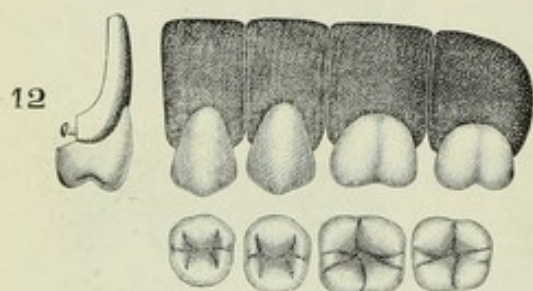
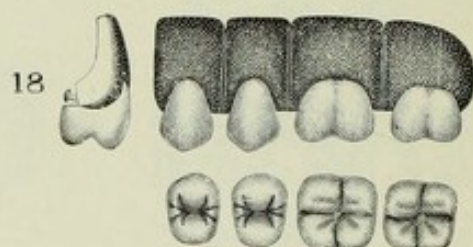
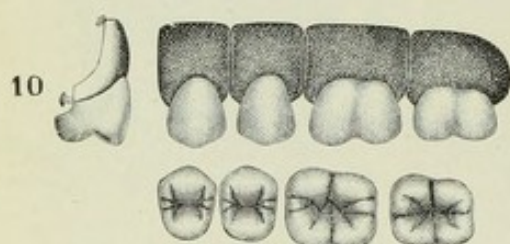
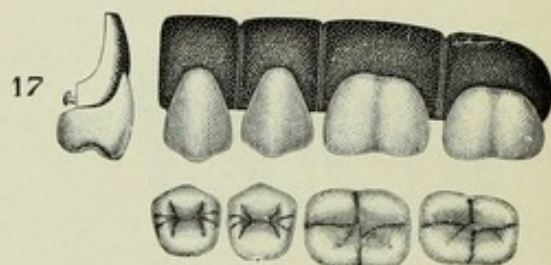
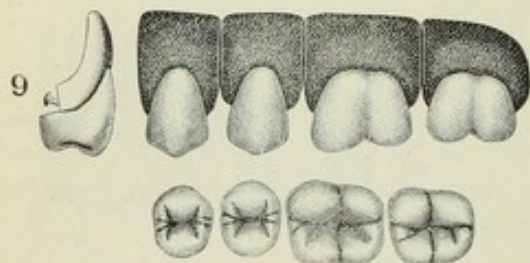


Upper, Bicuspid and Molars



SINGLE GUM TEETH FOR VULCANITE WORK

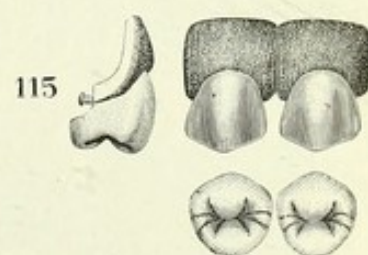
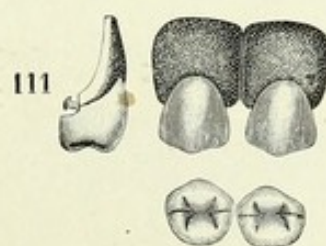
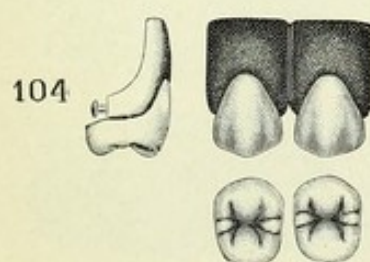
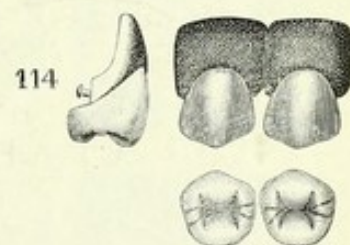
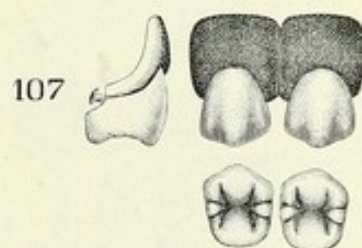
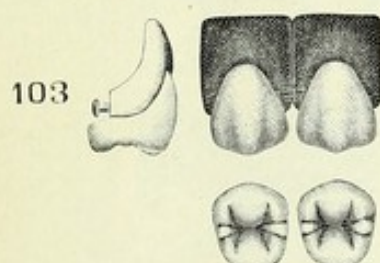
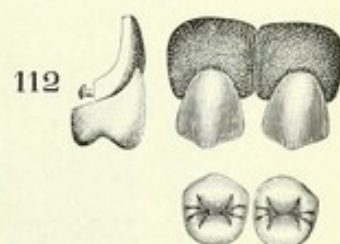
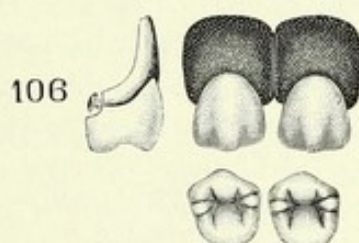
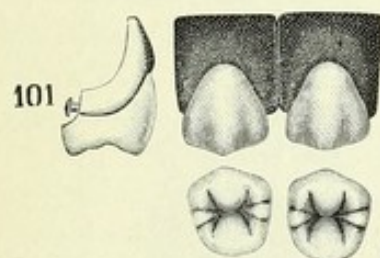
Upper, Bicuspsids and Molars—(Continued)





SINGLE GUM TEETH FOR VULCANITE WORK

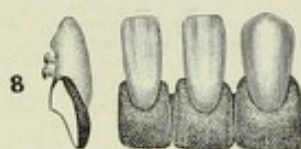
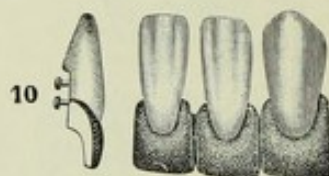
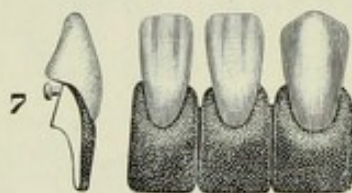
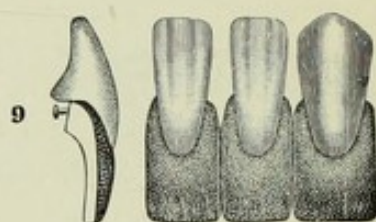
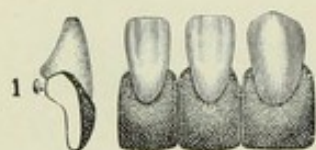
Upper, Bicuspids



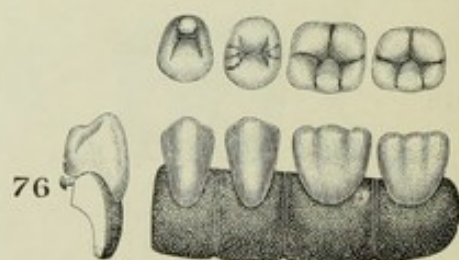
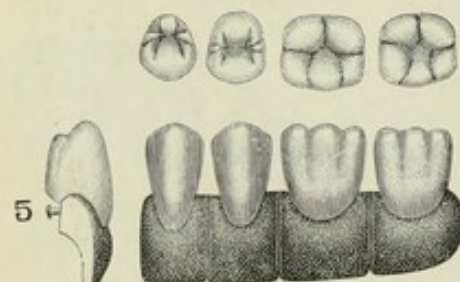
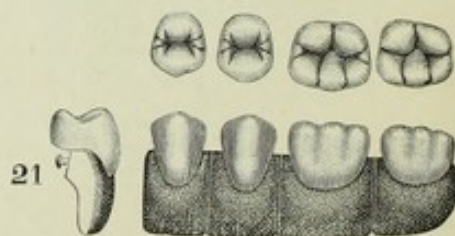
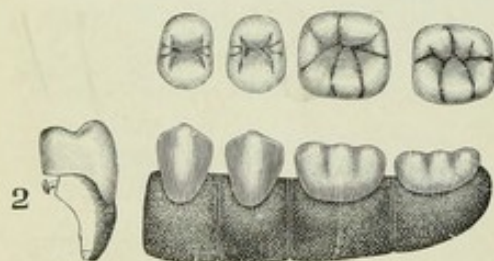


SINGLE GUM TEETH FOR VULCANITE WORK

Lower, Incisors and Cuspid



Lower, Bicuspid and Molars



SINGLE GUM TEETH FOR METAL PLATE AND VULCANITE WORK, SPECIAL

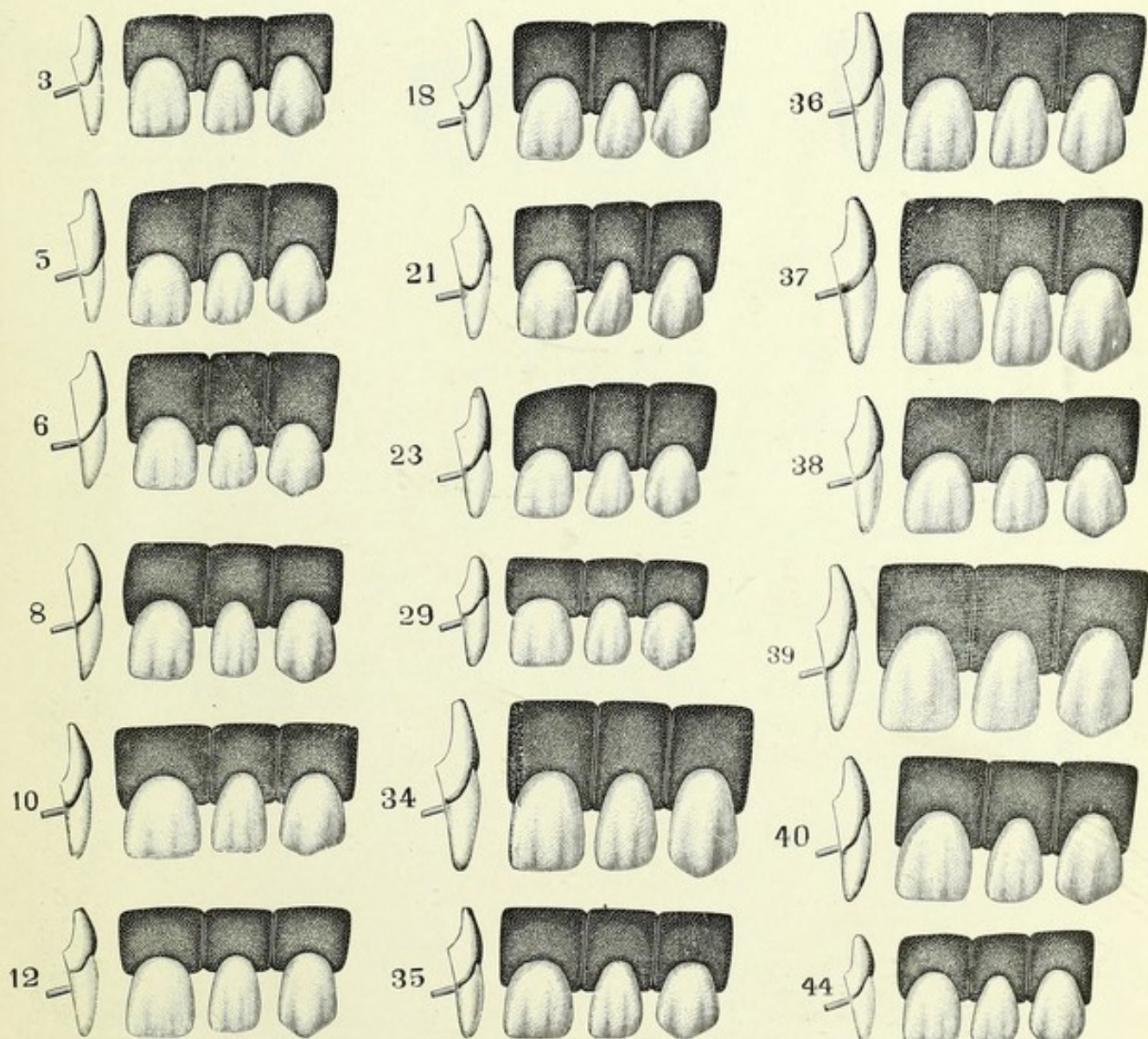
Upper, Incisors and Cuspid

These "flat-back" teeth were originally designed for Metal Plate work, being provided with short, headless pins set lengthwise of the tooth. They are also used for Vulcanite work, the pins for this use being longer, so that they may be bent into a hook shape, and set crosswise. The long cross-pin form is now principally used, owing to the fact that Metal Plate work is practiced comparatively little and for this reason we illustrate the upper incisors and cuspids with the long pins set crosswise.

The demand for those with short pins set lengthwise has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on ORDER ONLY at the prices quoted on page 215. Teeth so made will not be returnable.

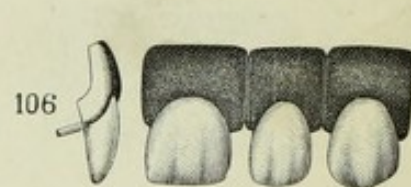
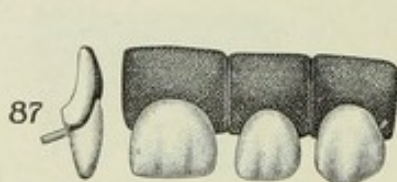
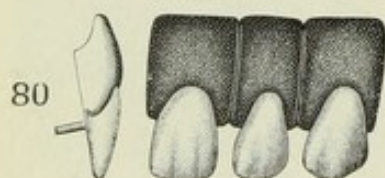
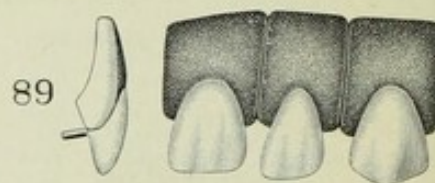
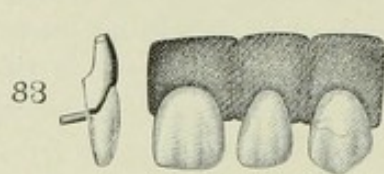
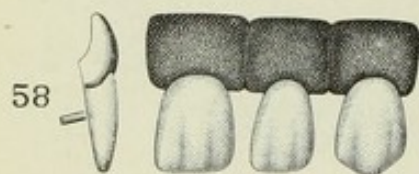
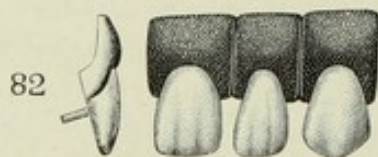
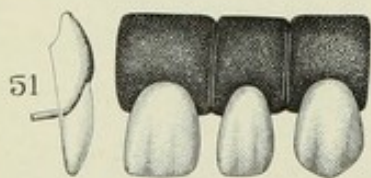
The illustrations show the labial faces of the teeth in the various forms for the left side; also a side view from the median approximal surface, indicating the thickness of tooth and gum, the position of the pins, the length of the ridge-lap, and the curve of the labial face.

Sold as single teeth, and in all partial sets.



SINGLE GUM TEETH FOR METAL PLATE AND VULCANITE WORK

Upper, Incisors and Cuspid—(Continued)



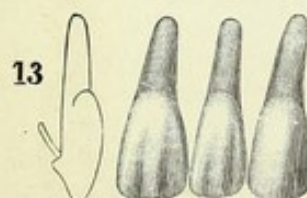
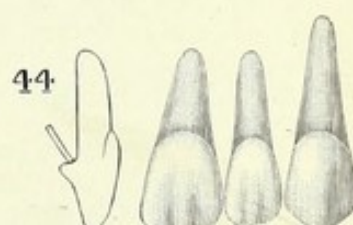
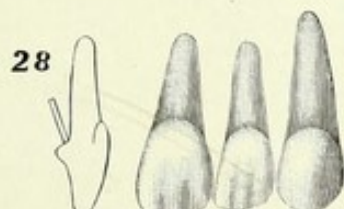
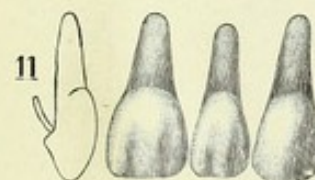
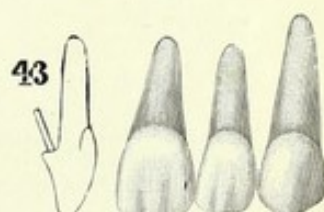
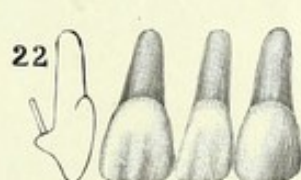
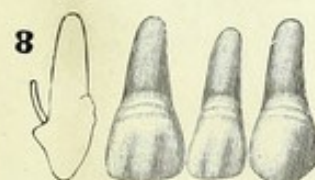
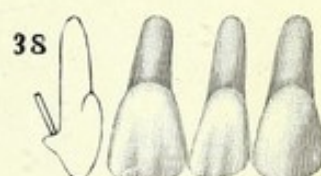
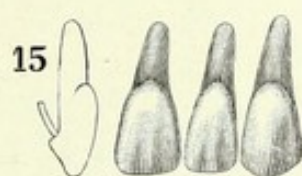
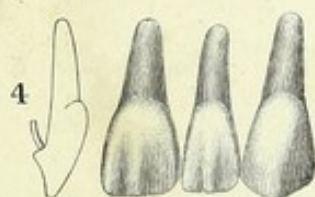
PLAIN TEETH FOR CONTINUOUS GUM WORK

Upper, Incisors and Cuspid

The demand for this class of Teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on ORDER ONLY at the prices quoted on page 215. Teeth so made will not be returnable.

The illustrations of upper incisors and cuspids show the labial faces of the teeth for the left side; an outline view of the central from the median approximal surface, indicating the thickness of the tooth, the length of the bite and of the ridge-lap, and the curve of the labial face.

Sold in full uppers and lowers matched, as well as in partial sets and single teeth.

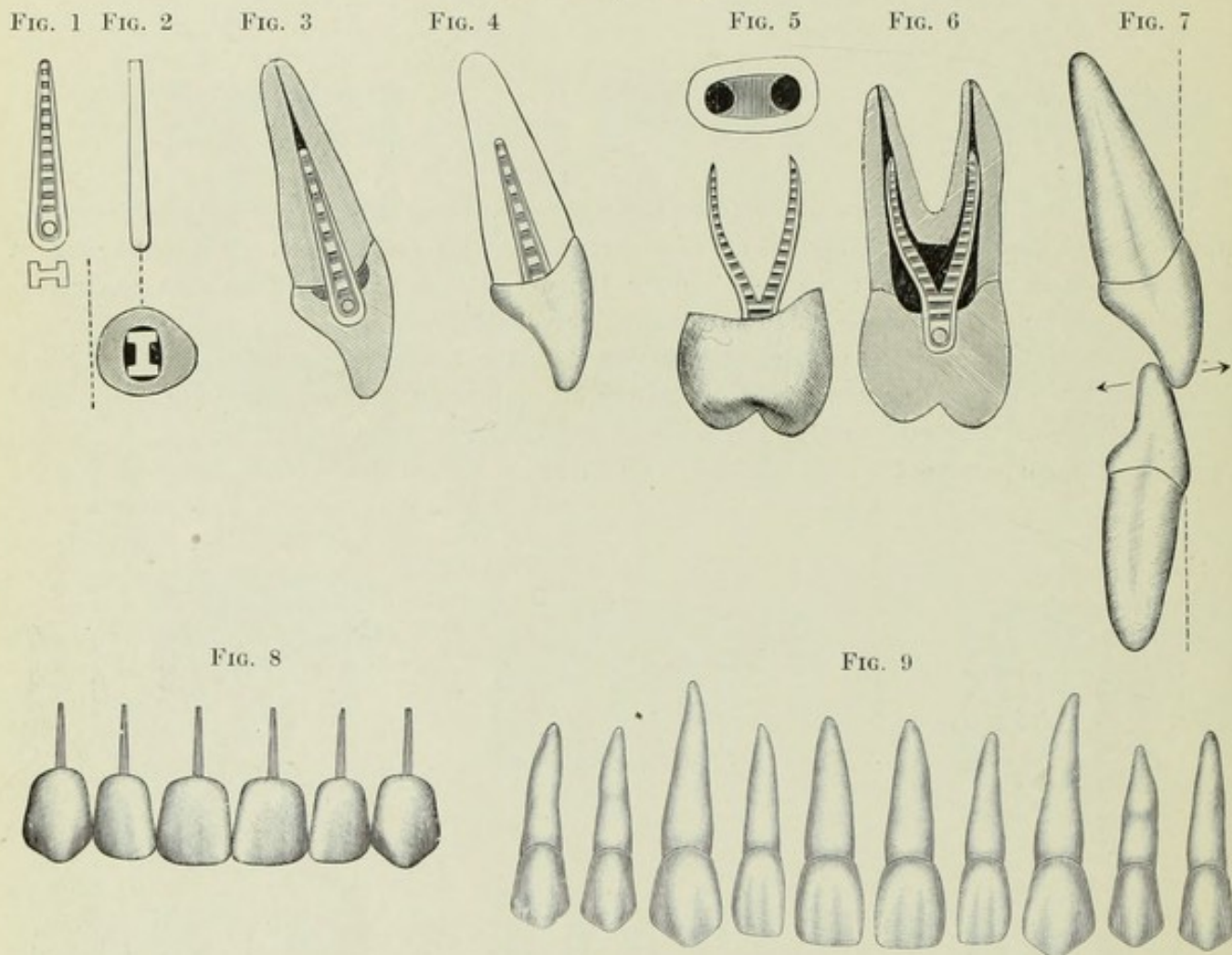


Miniature Set



IMPROVED LOGAN TOOTH-CROWNS

Patented April 19, 1898



- FIG. 1. Enlarged platinum pin, side and sectional views.
 FIG. 2. Enlarged platinum pin, edge view, and sectional view in position in incisor root.
 FIG. 3. Enlarged sectional view of incisor root with Logan Crown in position, showing cup for retaining material.
 FIG. 4. Enlarged incisor crown in position, fitted to root, which is cut away to expose pin.
 FIG. 5. Enlarged bicuspid crown, with pin split for bifurcated root; end view of root, showing openings to canals.
 FIG. 6. Enlarged sectional view of bicuspid crown in position on bifurcated root.
 FIG. 7. Enlarged view of mounted incisor crowns in occlusion.
 FIG. 8. Set of six Logan Crowns, natural size.
 FIG. 9. Logan Crowns, mounted on natural roots.

The Superiority of the Logan Crown

There are **three important facts** to be considered in the selection of a porcelain crown for the operation of crowning a root.

The first and **most important is durability**, for if the crown possess all other features and lack the strength necessary to the function of mastication, it will be useless.

The second is **the artistic feature**, for it is important not only that the operation shall be durable, but that the result shall approximate nature's own.

The third is **simplicity**, for where time and labor are a consideration, the simpler the operation of successfully fitting and mounting the crown on the root the more the patient will be spared of pain and endurance, and the more the dentist's time and labor will be conserved.

We claim these points for the Logan Crown. Its superiority is unquestioned. Because of the general recognition of its advantages it has practically superseded all other porcelain crowns.

A Description

A little study of the characteristics and capabilities of the Logan Crown will demonstrate its value. It is an all-porcelain crown provided with a strong serrated platinum post properly tapered to fit the canal of the natural tooth. The crown is cupped out around the post to form a recess for the cement or other attaching medium. The narrow rim of porcelain which surrounds the cup greatly facilitates the work of grinding and perfecting the adaptation of the crown to the root.

Durability

The durability of the Logan Crown is assured by these features :

The crown and its non-corrodible anchor-post are practically one piece, the porcelain being fused around the large end of the post, the continuous flanges of which afford a firmer attachment than can be obtained in any other way.

The post is of the regular I-beam form, tapering from the crown end, thus placing the most metal where the greatest strength is required.

This tapering form of the post not only facilitates the mounting of the crown, but the wedge-shaped grooves made by its flat ribs give the cement a better retaining hold upon it. When the post is cemented in the root, the cement forms two solid wedges between the flanges on either side, making it impossible to pull the post out while the cement remains.

The post is so placed, with the flanges to the labial and lingual faces, as to oppose the greatest resistance against the greatest strain (as indicated by the arrows in the illustration (Fig. 7) showing the wedge-like action of occlusion).

The oblong shape of the post prevents its rotation in the root, its four corners engaging with the walls of the enlarged canal in such wise as to assure immobility. (See Fig. 2.)

The recess in the base will contain a sufficient quantity of cement or other retaining material to make a perfectly fluid-tight joint between crown and root. This is important in prolonging the life of the operation.

The carrying of the cement into the base of the crown adds materially to the strength of the operation. The line of leverage is brought nearer to the point upon which the biting force is applied, because of the considerable body of cement instead of a thin disk used in ordinary crowning. This reinforcement of cement greatly lessens the liability to fracture.

The hollowed-out base also assures the strength of the attachment of the post to the crown. Because the insertion of the post in the porcelain is beyond the cup, the attachment remains the same, no matter how much the edge of the cup is ground away in fitting. There is no diminishing of the depth of the insertion, as is the case in crowns having a plain or convex neck-end, with the inevitable weakening of the hold of the crown upon the pin by grinding.

Artistic

The Logan Crown is superior in that it permits of an artistic operation.

Being an all-porcelain crown it meets the objection made by many leading practitioners, to the use of metals in the mouth, because of their unsightly appearance.

When properly fitted and mounted upon the root, it is impossible after the gum has assumed its normal position by coming down over the joint, to detect its artificiality, even when the mouth is fully open. Besides, the porcelain surface on the lingual face is decidedly more agreeable to the tongue than metal.

The tissues of the mouth seem to take more kindly to a porcelain surface than to a metallic, and the gum will come back to its normal position sooner than when metal is used.

The assortment of these crowns, comprising 39 molds of incisors and cuspids and 16 molds of bicuspids, affords a wide range for selection, the molds being constructed on the lines of the natural teeth, not only as to labial, lingual, and buccal faces, but as to the form of the root surface and the position and angle of the post.

Simplicity

The simplicity of the Logan Crown is evident in the fact that it is practically a complete crown when bought by the dentist. It requires no fitting and cementing or soldering to attach pin and crown, as is the case with all-porcelain crowns in which pin and crown are separate. The work therefore is simplified and the risk of breakage, incident to soldering, eliminated.

To put it another way: The operator, instead of having two joints to make has but one, the other having already been made secure by the manufacturer, who has also provided every facility for assuring the security of the one to be made.

The leading operators, in preparing a root surface, invariably bevel the root on its labial side to permit of the lapping of the labial face of the crown at its cervical border over the beveled root, thus giving an artistic as well as entirely satisfactory fit at the gum margin. They recognize that a crown fitted in any other way will not only present an inartistic appearance, but will be apt to irritate the gum tissue.

The Logan Crown is constructed to meet this idea, and the surface of the crown which comes in contact with the root is designed as nearly ideal as we can make it, requiring little grinding to fit the average root in the normal state.

The cup shaped base of the crown enables the operator to more readily grind and fit the crown to the root than when the base is solid or convex in form, inasmuch as only a thin wall is to be ground instead of a solid mass from the outer surface to the post.

Adaptability

Through its own inherent excellence of forms and the number of different molds which are available for selection, the Logan Crown is almost universally adaptable. The only cases to which it cannot be applied are those in which the shut of the jaws is extremely short, and those in which there is marked recession of the gum. There is also an occasional instance where the root to be crowned is too small and frail to receive the full-size Logan post. This can usually be remedied by filing down the post to suit.

The nearly universal adaptability of the Logan is evidenced by the facility with which it lends itself to different methods of working. It can be mounted with band or cap or without, and whatever method is used, the result is a strong, durable, satisfactory crown.

When a Logan Crown is to be mounted on a bicuspid with bifurcated root, all that is necessary is to split the post (Figs. 5 and 6).

Selection

Proper selection has an important bearing upon the fitting and mounting of Logan Crowns just as in other porcelain teeth. The number and variety of molds of these crowns shown on pages following afford ample opportunity for the wise exercise of this faculty.

Taking advantage of this opportunity for selection, and considering the ease and security with which it can be mounted, there is no doubt that **the Logan is the cheapest crown at the service of the dentist.**

The illustrations show the labial or buccal faces of the teeth in the various forms for the left side, and the thickness of the pins; a side view indicating the thickness of the tooth and the width of the pin; an end view giving the size of the neck the diameter of the countersink, the thickness of wall surrounding the countersink, and the position of the pin. There is also shown a view of the occlusal surfaces of the bicuspid.

Sold as single crowns, and in sets of 2 (centrals, laterals, or cuspids), 4 (centrals and laterals), 6 (centrals, laterals, and cuspids), and 4 (bicuspid).

IMPROVED LOGAN TOOTH-CROWNS

Upper, Incisors and Cuspid

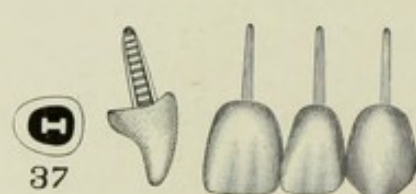
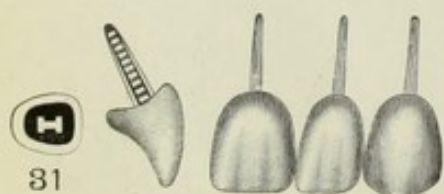
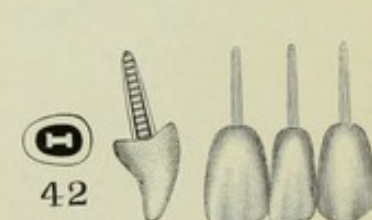
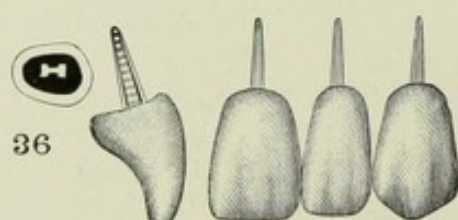
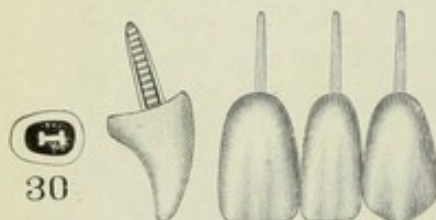
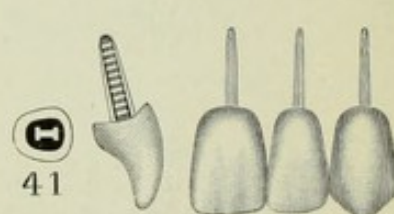
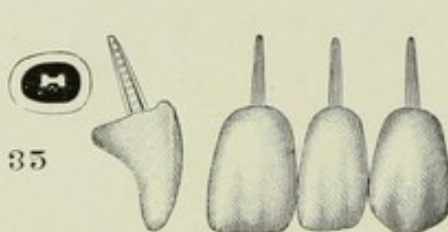
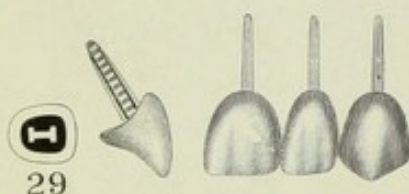
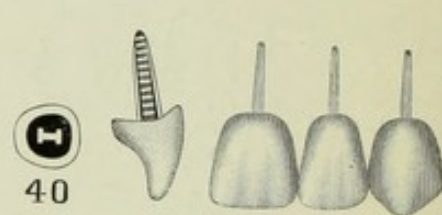
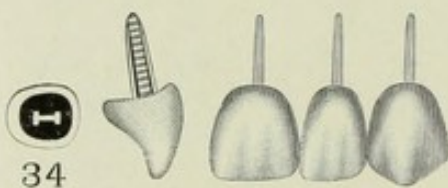
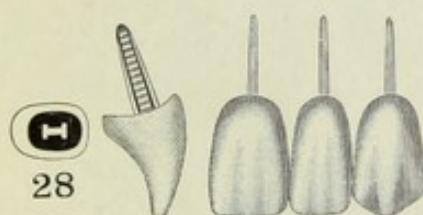
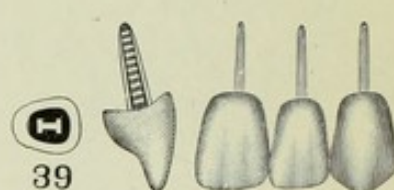
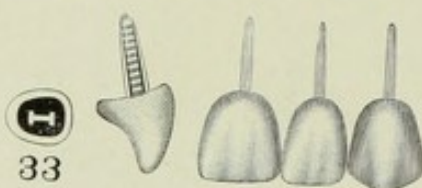
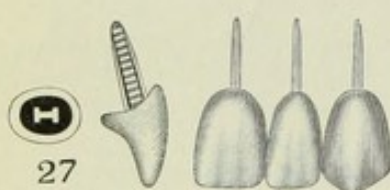
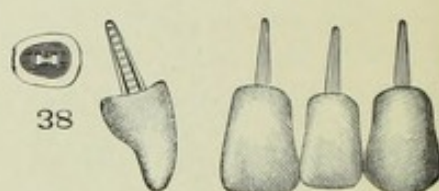
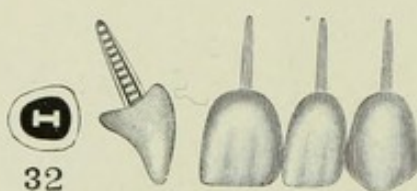
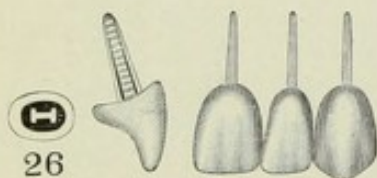
Patented April 19, 1898



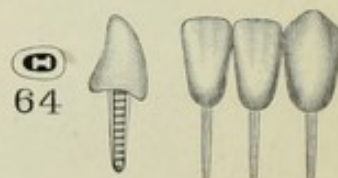
IMPROVED LOGAN TOOTH-CROWNS

Upper, Incisors and Cuspid—(Continued)

Patented April 19, 1898



Lower, Incisors and Cuspid

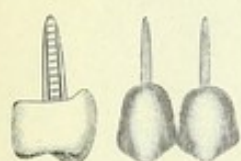


IMPROVED LOGAN TOOTH-CROWNS

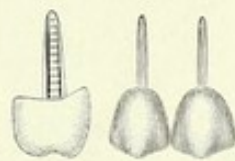
Upper, Bicuspid, Sets of 4

Patented April 19, 1898

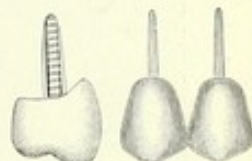
Logan Crown bicuspid are made with single pin only; for bifurcated roots, the dentist splits the pin as shown in Figs. 5 and 6, page 202.



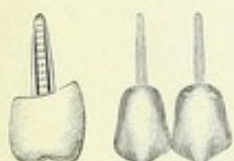
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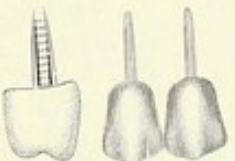
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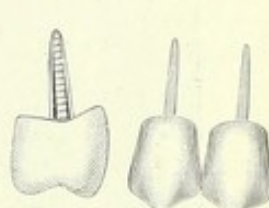
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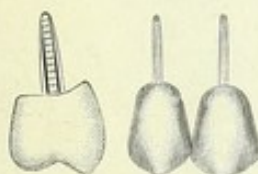
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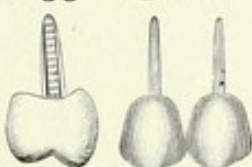
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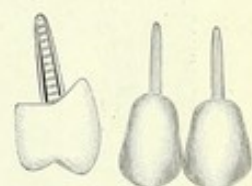
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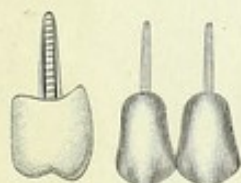
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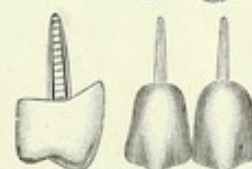
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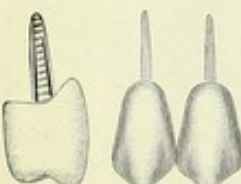
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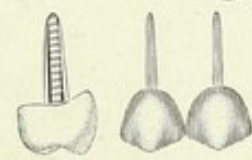
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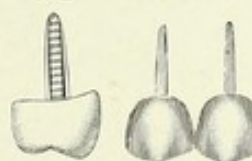
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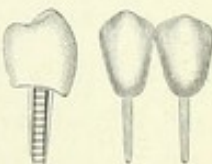
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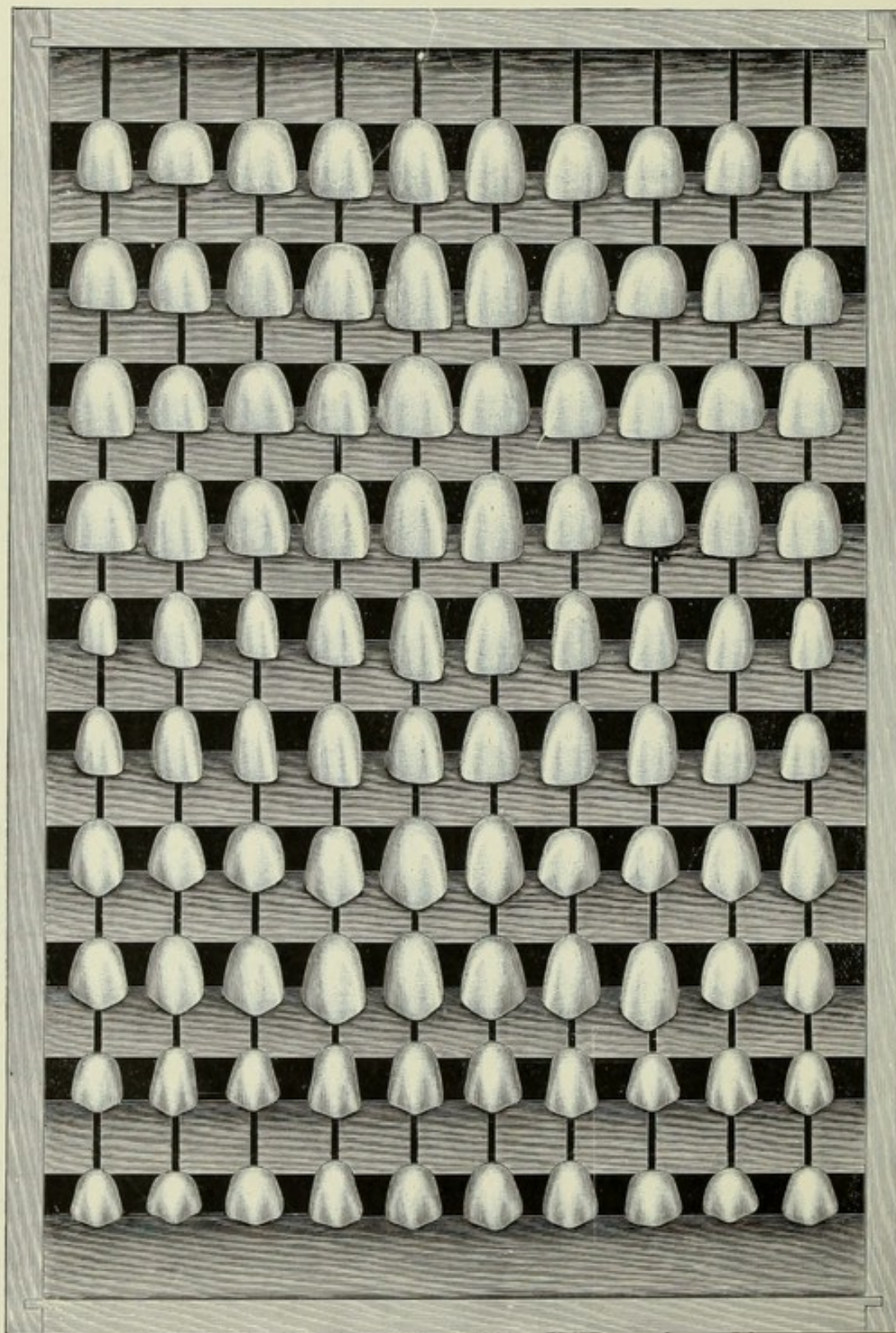
74

Lower Bicuspid

65



100-CROWN TRAY FOR LOGAN CROWNS



Free with every purchase of 100 Logan Crowns

We also give a similar tray with 100 Detached-post Crowns.

Carries the Crowns so that no one interferes with any other. Every one easy to see and easy to get at.

THE S. S. WHITE DETACHED-POST CROWN

Patented April 19, 1898

The S. S. White Detached-post Crown, first brought out in the summer of 1905, was devised to meet the needs of those practitioners who prefer to have the crown separate from the post, by giving them a crown as nearly like the Logan as is possible in the separate post form. They claim that they thus secure greater adaptability and save time in grinding, which they regard as more than a set-off to the additional labor of attaching the crown to the post.

Large use of the S. S. White Detached-post Crown has demonstrated the truth of our claim on its first introduction, that it is *by long odds the best separate-post crown* ever brought out.

It has all the excellence of the regular Logan in naturalness of shape, in form and strength of post, in ease of grinding and fitting, with whatever advantage the detachability of the post confers.

The crowns are made in certain of our most popular Logan molds, as illustrated on pages 210 and 211. They have consequently the beautiful shapes which have made the Logan famous; the narrow necks and thin rim of porcelain to be ground which makes fitting easy; the cup for the reception of the cement, which strengthens the attachment. They differ in having a socket for the post opening from the bottom of the cup. The socket affords ample room for adjustment, and its walls are rough to afford a better hold for the cement.

Now, as to the post. The root end is of the familiar tapering I-bar type, *à la Logan*, with its flanged edges and ribbed body, opposing the greatest strength to the greatest strain, and permitting the preparation of the root with the least loss of useful root substance. The crown end, which is separated from the root end by a circular shoulder to rest in the cup of the base, is round in its general shape, with two groove-like reduced portions. These reduced portions are flattened on four sides, showing in section, the appearance of a square with rounded corners. The conformation of this end of the post thus provides against both endwise and rotary movement in the crown, when fixed in position.

They are made of a Silver-platinum Alloy, whose value in the setting of crowns has been approved by many years of extended use. Two sizes are made as shown. For bifurcated roots we supply a split post in both sizes, or the dentist himself can easily split the regular post by means of a circular or mechanical saw. Owing to the stiffness of the Silver-platinum metal, care must be exercised in bending the sections of the posts after they have been separated.

It is always advisable before bending a crown-post, either as a whole or when split, to anneal it.

We also make a platinum post in size No. 1 which will only be sent when ordered.

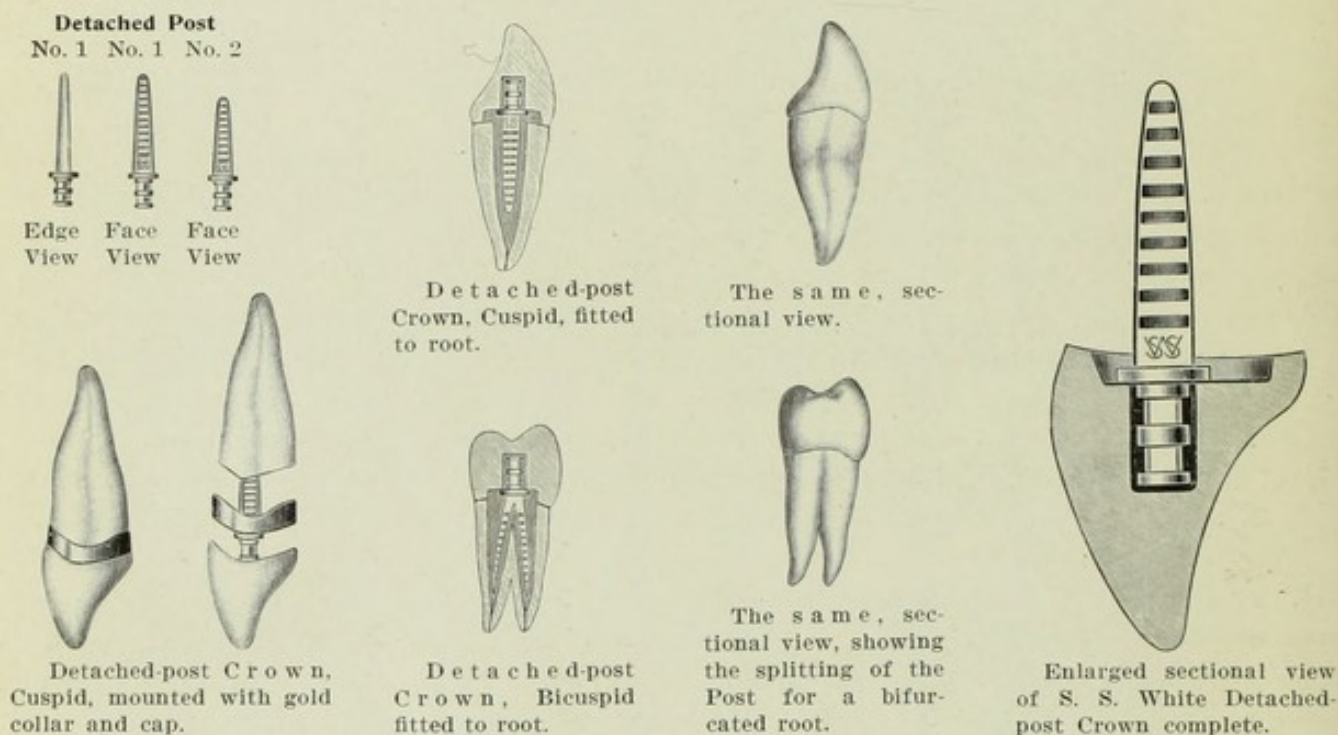
The Silver-platinum Post can be used in connection with 16 or 18-k solder. For all operations in which any solder higher than 18-k is used we recommend the Platinum Post.

The Silver-platinum Post is not suitable where the fusing of porcelain is required.

The Detached-post Crown can be set with collar or without. However it is set, we are confident the results will be satisfactory.

THE S. S. WHITE DETACHED-POST CROWN

Patented April 19, 1898

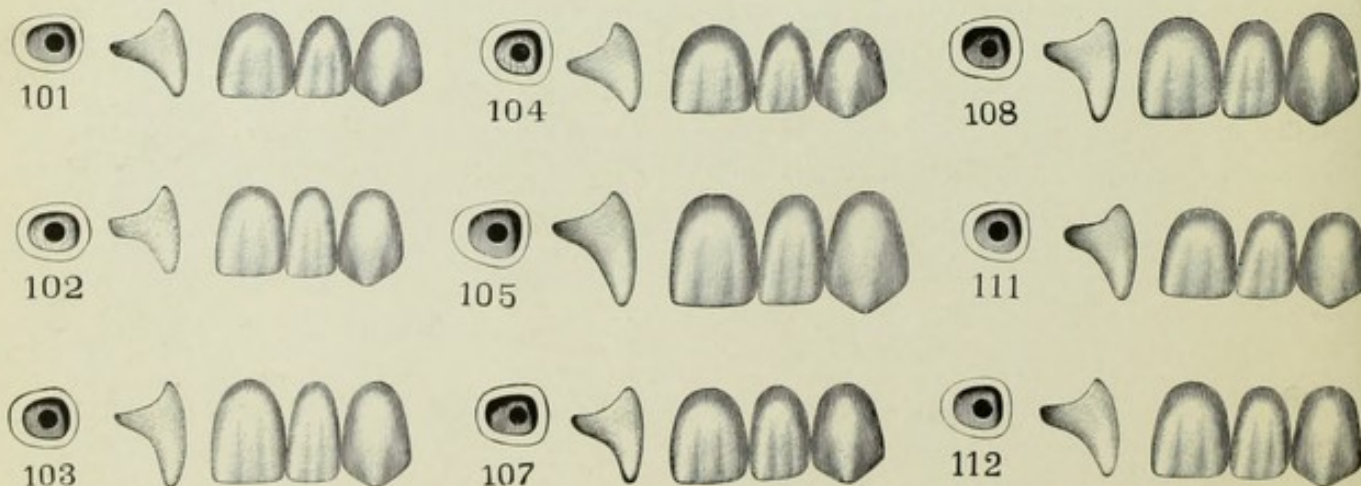


The illustrations show the labial or buccal faces of the crowns for the left sides; a side view indicating the thickness of the crowns; and an end view giving the size of the neck, the diameter of the countersink (cup), the thickness of the wall surrounding the countersink, and the location and diameter of the socket for the post. There is also shown a view of the occlusal surfaces of the bicuspid.

Sold as simple crowns, in sets of 2, 4, and 6 (incisors and cuspids), and 4 (bicuspid).

A wood Tray, fitted to carry 100 Detached-post Crowns, given free with every purchase of 100 Crowns. This Tray is similar, in all respects except the device for holding the Crowns, to our well-known Logan Crown Tray shown on page 208.

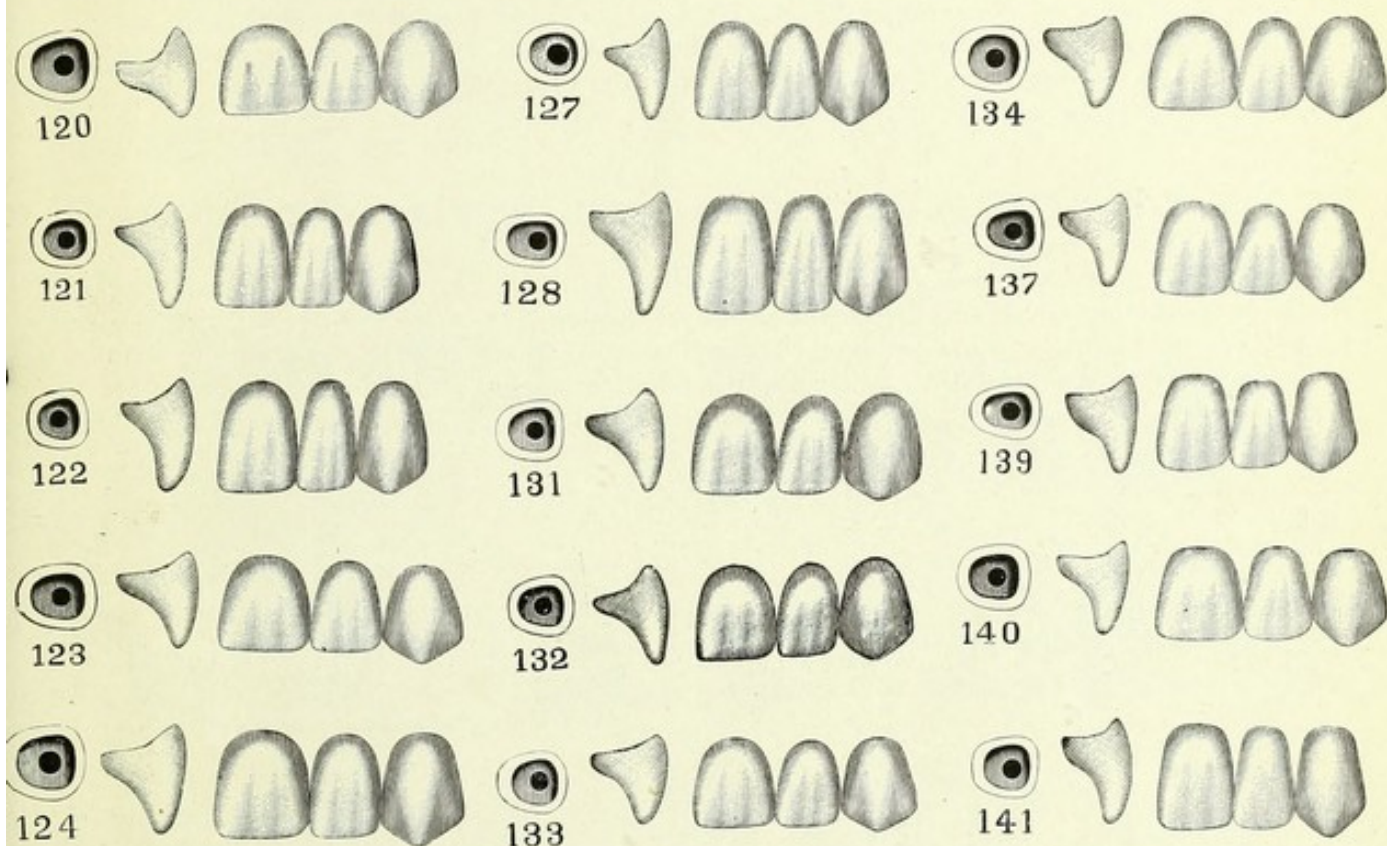
Incisors and Cuspids



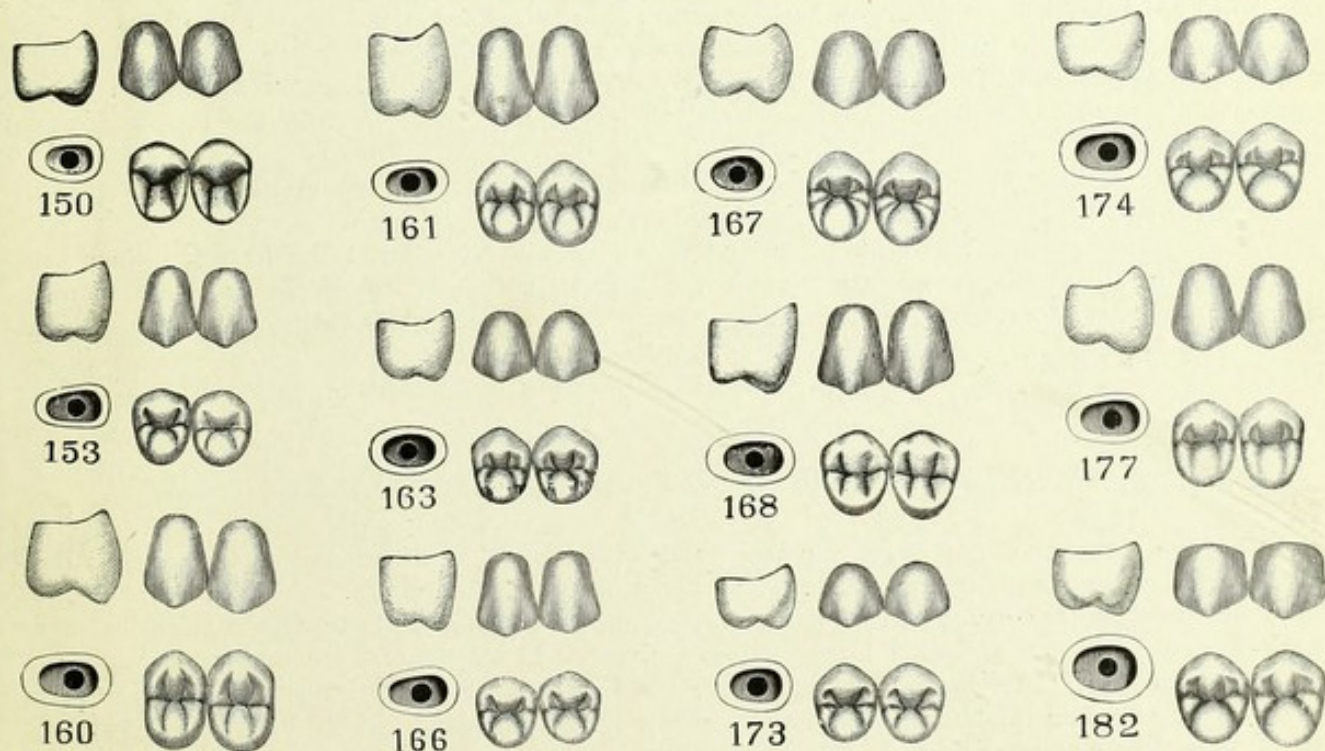
THE S. S. WHITE DETACHED-POST CROWN

Upper, Incisors and Cuspid—(Continued)

Patented April 19, 1898



Upper, Bicuspids, Sets of 4



THE S. S. WHITE PORCELAIN TEETH IN REMOVABLE WORK

Several special devices for porcelain crowns and facings which should be individually removable have been offered to the profession. So far, however, none of these have shown any advantages over certain forms of our regular stock teeth, with which better and more satisfactory work can be done. Our Plain Long-pin (Flat-back) Teeth for facings can be readily mounted removably, as can also our Detached-post Crown and Diatorics, either as single crowns or in bridges.

One immeasurable advantage which these forms of ours offer is the wide range of selection in shapes and shades which they afford. Almost any tooth can be matched in them.

We describe below methods of mounting these teeth removably.

THE S. S. WHITE PLAIN LONG-PIN TEETH AS REMOVABLE FACINGS

Make your abutments in any of the usual methods, select and grind the facings, make backings, oil the backs of the facings and the pins, and wax all up together on the model, allowing the pins to project through the holes in the backings. Try in the mouth; when satisfactory, replace on the model, and remove the facings carefully. In the holes left by the pins, set carbon points cut from the lead of an ordinary pencil, as near the diameter of the tooth pins as possible, and projecting out of the fac-

FIG. 1

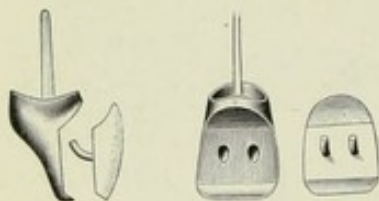


FIG. 2

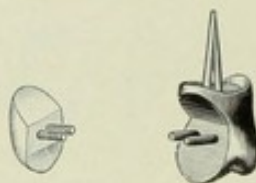
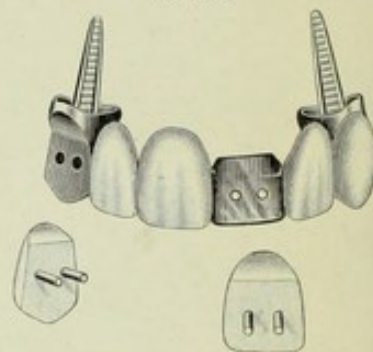


FIG. 3



ing side of the backing say an eighth of an inch. (Just prior to the final investment, with a camel-hair brush coat the facing side of the backing with the investment material mixed thin.) If the piece is to be completed by the casting process, attach sprue or sprues, and invest in the casting ring; if to be completed by soldering, invest in the usual way. After the piece is cold, bur out the carbon points, roughen the pins of the facings and set with cement. The pins can be fixed by the Bryant process, if preferred.

Where the backing is thin, the pins should be bent slightly toward the heel of the crown so as to insure the full hold of the pin.

Fig. 1 gives views of a removable plain long-pin facing with pins bent to secure a hold in a thin backing. With Fig. 2, which shows a plain long-pin tooth with pins roughened or screw-threaded, and a backing ready to receive the facing when the carbon points have been drilled out, it gives a good idea of the entire process.

Fig. 3 shows a bridge with removable facings made of plain long-pin teeth.

THE S. S. WHITE DETACHED-POST CROWN AS A JACKET CROWN

Grind the crown or stump down to a peg-shape, with a shoulder all around at the gingival line, and make a matrix of platinum for it just as for a carved jacket crown. Select a detached-post crown and re-shape the cavity with gem, carborundum or diamond points to approximate the shape of the dressed stump, but somewhat larger. Place the matrix in position, fill the enlarged crown cavity with moist porcelain (High-fusing), set the crown in place and press home; remove the whole, clean off excess of porcelain, and fuse. If necessary, again apply porcelain and re-fuse. When properly fitted, remove the matrix and cement the crown to place.

The S. S. White Diatorics and Detached-post Crowns Mounted Removably

Select proper teeth and grind to place, leaving them slightly shorter to allow for thickness of gold capping. From No. 36 pure gold, swage caps for each tooth, and if desired put pin through each and solder to cap. Trim to proper length labially and lingually. The caps may be cast if desired.

With abutments in position arrange the dummies with their gold caps in proper alignment with a little wax. Carefully remove teeth from their position in the gold caps, leaving the latter undisturbed in the mouth. Then take the impression of these and the abutments in investment material and remove the whole piece from the mouth. Boil out wax, and solder caps and abutments together.

FIG. 4

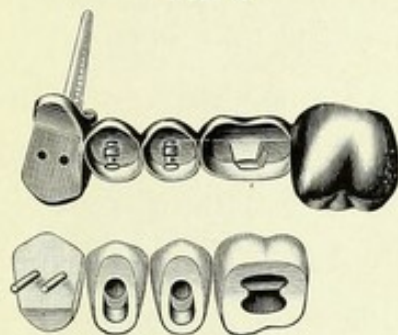


FIG. 5

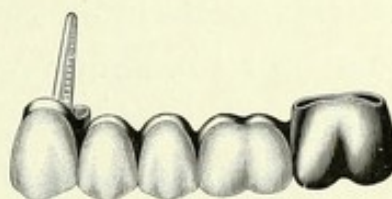


Fig. 4 is a bridge with removable teeth, including a plain long-pin facing, two detached-post crowns, and a diatoric tooth. Fig. 5 shows how perfectly these forms blend in the completed bridge.

In case any repair is necessary simply select the duplicate of the broken tooth, grind to place and cement without removing from the mouth.

THE OUTLOOK CLEARED

WHEN the base-metal pin was first introduced we investigated it thoroughly and broadly. As a result we took the position that, as all base-metals were subject to corrosion from the oral fluids, none of them could be safely used by the dental profession as attachments for porcelain teeth. We predicted that the mistake of such use would be shown in due time. Consistently with these views, we refused to put a base-metal pin tooth upon the market. Our views and our stand were justified and our prediction verified by the many letters received from dentists who had used base-metal pin teeth, but having realized their mistake through practical experience, abandoned them.

Our position with regard to base-metal pins was taken because of our conviction that their use could only result in lowering the standard of dentistry. Had we taken a commercial view, as others did, we could in common with them have made a royally big profit, as was shown by our statement in the *Dental Cosmos* for June 1908, page 2 of the advertisements.

Far be it from us to rejoice over the mistakes of others, but we do rejoice that our stand in behalf of better dentistry has been so signally sustained. These men who have turned their backs on the base-metal pin delusion have had the experience and *they know*. Their knowledge, gained in the school of experience, justifies what we have said from the beginning: "There is only one metal which can be safely used for tooth-pins, and that metal is Platinum."

THE S. S. WHITE DENTAL MANUFACTURING CO.

PRICES IN EFFECT MAY 15, 1912

	Each
Plain Teeth, Headed Pins	
Plain Vulcanite	\$0.20
Plain Teeth, Long Pins	
Plain Plate	}
Plain Veneers, Bicuspid and Molars	
Plain Saddle-back, Bicuspid and Molars	
	.26
Gum Teeth, Long Pins	
Gum Plate .....	.28
Gum Teeth, Headed Pins	
Gum Vulcanite Sections .....	.24
Miscellaneous	
Diatric, Bicuspid and Molars .....	.04
"Combination Sets," 14	1.52
"Combination Sets," 28	3.04
"Combination Sets," 28 { Plain Long Pin Upper Fronts } { " Vulcanite Lower "	3.40
Diatric Gum Sections, Bicuspid and Molars .....	.08
Crowns	
Logan	1.00
S. S. White Detached-Post, complete .....	.37
Crowns, only .....	.25
Silver-Platinum Posts, only .....	.12
Clasp-Gold Posts .....	.50
S. S. White Detached-Post Crowns, Tray of 100	20.00
Silver-Platinum Posts, lots of 50 or more .....	.10
NOTE.—These retail prices cannot be included in a retail quantity rate, but are subject to cash discount.	
Miniature Sets . . . . .	.60
Cavities Drilled in Teeth . . . . .	.25
The S. S. White Detachable Shade Guide	2.50
Detachable Shade Teeth . . . . .	.10

S. S. White Porcelain Teeth

Quantity Rates

To purchasers of teeth in quantities we make the following allowances:

- (a) On lots of not less than \$27.78, 10% = \$25.00 net.
- (b) On lots of not less than 117.64, 15% = 100.00 net.
- (c) On lots of not less than 375.00, 20% = 300.00 net.

For a concrete example, take Plain Vulcanite Teeth,—Retail per tooth, \$0.20.

(a) \$25.00 net	per tooth \$0.18
(b) 100.00 "	" " .17
(c) 300.00 "	" " .16

These net figures, at which teeth will be charged in the specified quantities, are subject to our regular cash discounts, which are: Amounts \$5.00 to \$24.99, 3 per cent.; \$25.00 to \$99.99, 5 per cent.; \$100.00 or over, 10 per cent.

All other classes of teeth, except those made on special orders, in like proportion.

It should be understood that these Quantity Rates are available for assorted lots as well as for lots confined to a single class.

Special Teeth on Order

The demand for the following classes of Teeth has become so limited that we have discontinued the investment of capital in keeping up an assortment of molds and shades. When the present limited stock is disposed of we will supply these teeth on order only at the prices quoted below. Teeth so made will not be returnable.

	Each
Plain Plate, Short Pin	\$0.28
Countersunk Pin .....	.28
Single Gum Vulcanite .....	.28
Gum Plate, Short Pin .....	.28
Continuous Gum .....	.28
Hand Stained .....	.40
Smokers' { Plain Vulcanite .....	.40
{ Plain Long Pin .....	.52

THE S. S. WHITE DENTAL MFG. CO.

PRICES OF S. S. WHITE PORCELAIN TEETH

SUBJECT TO CHANGE WITHOUT NOTICE

Plain Teeth, Headed Pins		Each
Plain Vulcanite		\$0.20
Plain Teeth, Long Pins		
Plain Plate .....		.26
Plain Veneers, Bicuspids and Molars .....		.26
Plain Saddle-back, Bicuspids and Molars .....		.26
Gum Teeth, Long Pins		
Gum Plate .....		.28
Gum Teeth, Headed Pins		
Gum Vulcanite Sections .....		.24
Miscellaneous		
Diatrices, Bicuspids and Molars .....		.04
Combination Sets, 14		1.52
Combination Sets, 28		3.04
Crowns		
Logan Crowns .....		.90
S. S. W. Detached-post Crowns, Complete .....		.32
Crowns only .....		.20
Posts only .....		.12
Miniature Sets .....		.60
Cavities Drilled in Teeth .....		.25
The S. S. White Detachable-tooth Shade Guide		2.50
Detachable Shade Teeth10
Special Teeth on Order		

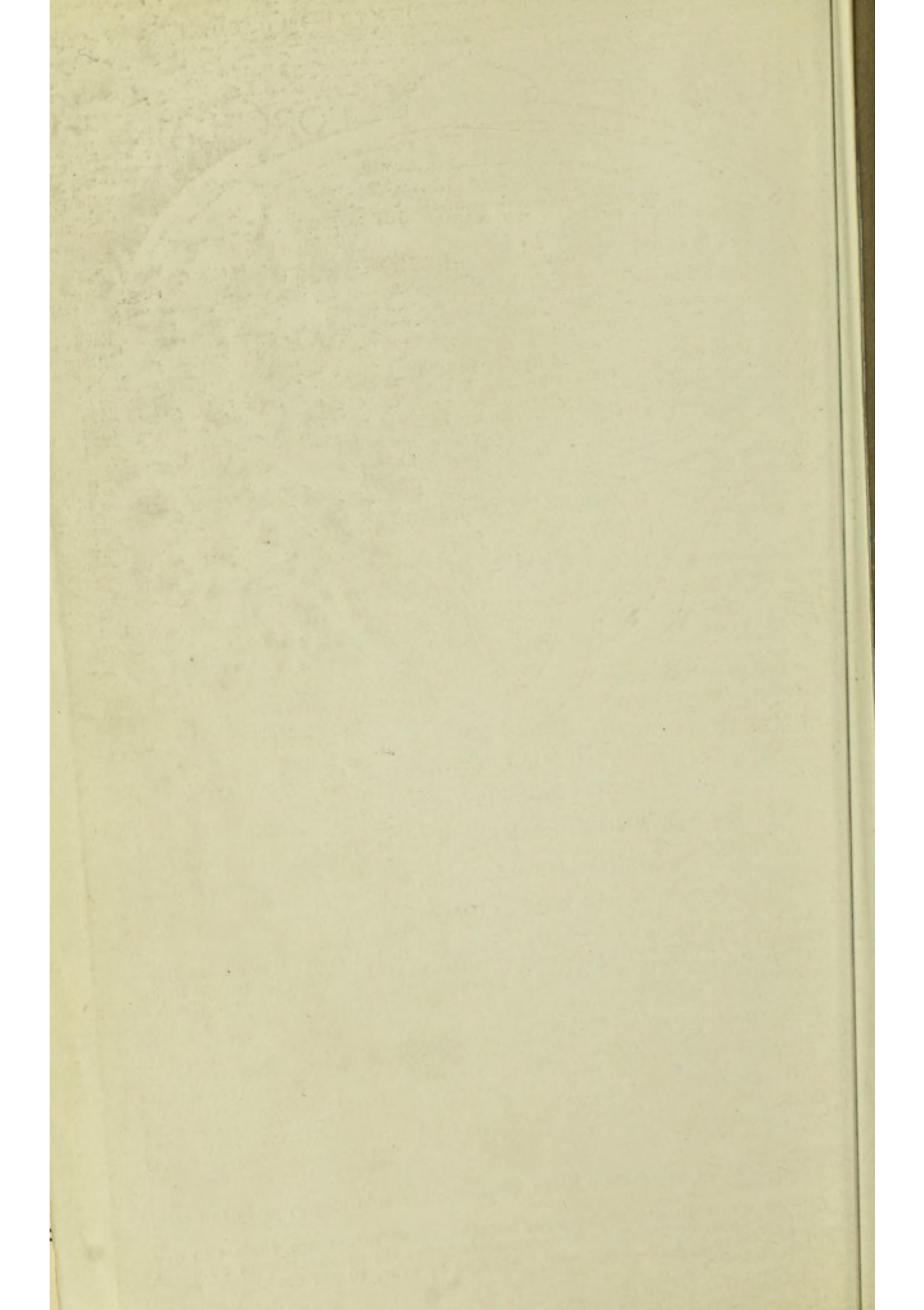
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	Each
Plain Plate, Short Pin	\$0.28
Countersunk Pin28
Single-gum Vulcanite28
Gum Plate, Short Pin .....	.28
Continuous Gum .....	.28
Hand Stained .....	.40
Smokers' { Plain Vulcanite .....	.40
" Long Pin .....	.52

The retail prices are the same for a given class whether sold singly, or in full sets, or in any of the partial sets.

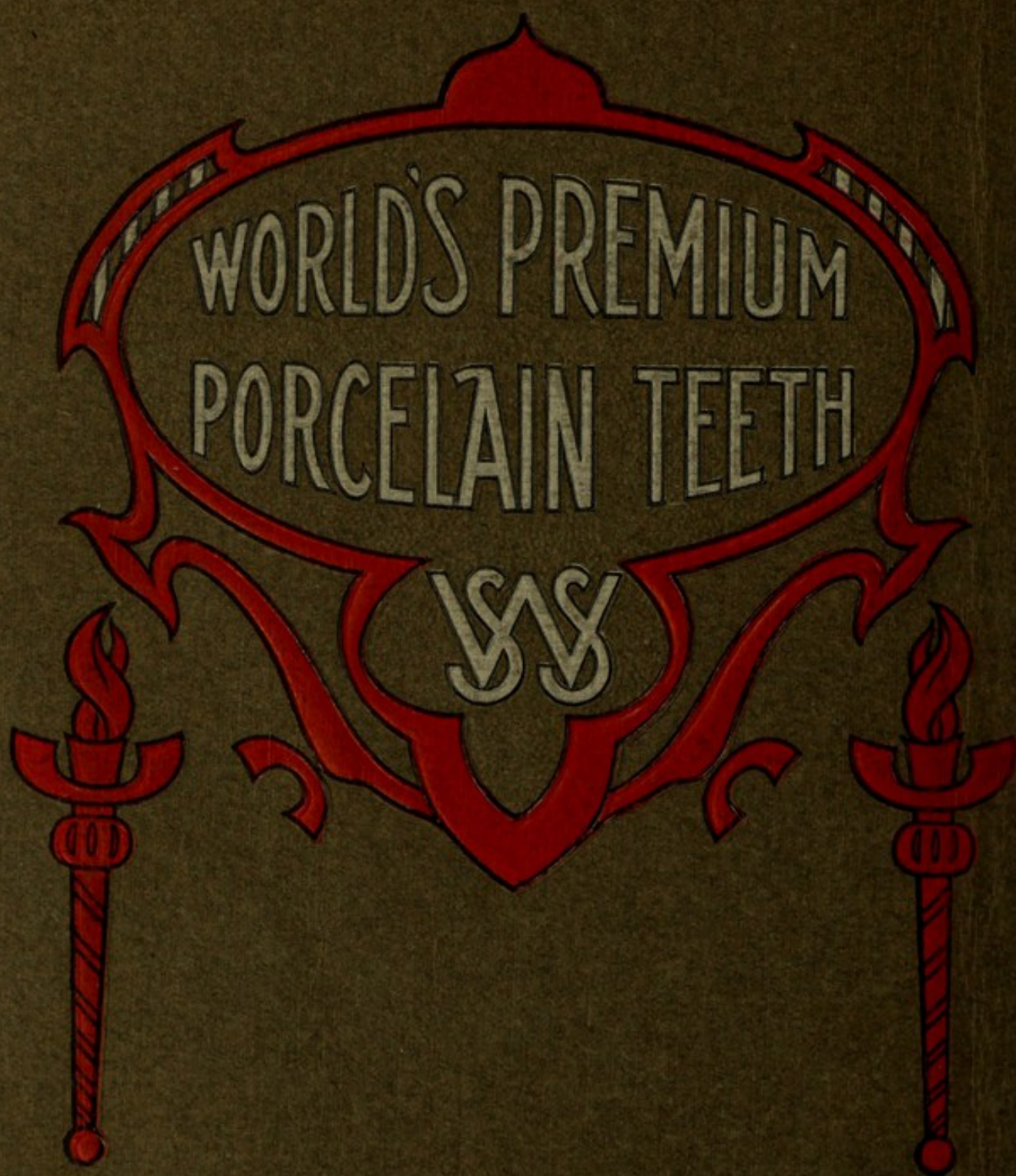
All quantity rates on teeth are withdrawn, but the retail prices are subject to our regular discount for spot cash, according to amount, as follows: On amounts from \$5.00 to \$24.99, 3 per cent.; \$25.00 to \$99.99, 5 per cent.; \$100.00 or over, 10 per cent.







THE
W. & W.
DENIAL MFG. CO.



THE
S.S. WHITE
DENTAL MFG. CO.

