On the construction and application of forceps for extracting teeth / by John Tomes.

ON THE

CONSTRUCTION AND APPLICATION

OF

FORCEPS FOR EXTRACTING TEETH.

ILLUSTRATED WITH WOOD-CUTS.

BY

JOHN TOMES,

SURGEON-DENTIST TO KING'S COLLEGE HOSPITAL.

FROM THE LONDON MEDICAL GAZETTE OF JUNE 4TH, 1841.

LONDON:

JOHN CHURCHILL,

PRINCES STREET, SOHO.

1843.

LONDON:
GEORGE WOODFALL AND SON,
ANGEL COURT, SKINNER STREET.

REMARKS

IN EXPLANATION OF THE

REPUBLICATION OF THE FOLLOWING PAPER.

I HAVE found it necessary, for self-defence, to reprint the following paper from the MEDICAL GAZETTE of June 4th, 1841, because a work has recently appeared, which is but a repetition of the matter related in that communication, repeated, however, without acknowledgment. The work is entitled, "Observations on the Extraction of Teeth, by J. Chitty Clendon," dated January, 1843, and from 15, Conduit Street, Hanover Square. Published by S. Highley, 32, Fleet Street.

The purpose of the writer of this book has been to describe a presumed new form of tooth forceps, the idea of the construction of which he would have the world believe originated with himself; and, in furtherance of the latter object, he makes the following statement: "Accident at length introduced to my notice an individual[a] who readily carried out, and, it is due to him to acknowledge, improved upon my suggestions."[b]

Now the gentleman has, in the quoted passage, fallen into a most extraordinary mistake, for which I am quite unable to account.

The succeeding part of this preface to my reprinted paper will be occupied in showing that Mr. Clendon applied to my instrument maker, Mr. Evrard, of Charles Street, Middlesex Hospital; that he there saw the forceps which I had constructed; that he was told repeatedly (as Mr. Evrard assures me) by whom they were proposed; that he ordered similar instruments to be made for himself; and, moreover, that after finding patterns ready to his hands in the shop of my instrument maker, and after being told by whom they were designed, he has chosen to describe these forceps, copied from my patterns, as instruments of his own invention.

In January, 1840, during my residence at the Middlesex Hospital as house-surgeon, I thought of having tooth forceps made upon the

[a] "*The person to whom I allude is Mr. Evrard, a Surgical Instrument Maker, near the Middlesex Hospital.*"

[b] Clendon on the Extraction of Teeth, page 34.

described plan, namely, to fit accurately to the surface of the tooth for the extraction of which they were designed.

In this and the following month my plan was carried into effect by Mr. Evrard, who, from that time, has kept sets of these instruments in his shop, which have from time to time been purchased both by dentists and surgeons.

During the same year, sets were ordered for the use of both Middlesex Hospital and King's College Hospital.

In 1841, on the 4th of June, I published, in the Medical Gazette, a description of these forceps illustrated with woodcuts. Mr. Clendon for the first time applied to Mr. Evrard on the 17th of December, 1841, nearly two years after the introduction of these instruments, and more than six months after the publication of my paper. Subsequently Mr. Clendon ordered several pairs of forceps, which were not made after his suggestions, with improvements by Mr. Evrard, but were made after the instruments Mr. Evrard had made for me; a fact proved by Mr. Clendon's engravings.

When the forceps, which he has since assumed to be his own, were shown to Mr. Clendon, he was told by whom they were proposed, and was also told that they had been described and figured; yet with this knowledge he has chosen to take upon himself the credit of the design, as is but *too* fully proved by a reference to his book, or even to the passage of which I have made an extract.

It now only remains for me to show that Mr. Chitty Clendon has described instruments identical with mine; and that he has done so, no second opinion can be held, if his book be compared with my paper from the Gazette, when it will be seen that the matter of the letter-press in each is to the same purpose, and that the figures are expressive of precisely the same instruments; except that in my communication I thought it unnecessary to give figures of those forceps required for the extraction of single-fanged teeth, whereas Mr. Clendon has of them given engravings.

That no mistakes or misconceptions through the various dates may arise, I give the following extract with which Mr. Evrard has favoured me, as taken from his order book:—

Thursday, April 6th, 1843.
35, Charles Street, Middlesex Hospital.

SIR,

Agreeable to your demand, I send you a correct copy from my order book of the various orders for tooth forceps I have received from you and other gentlemen from 1840 unto the present day.

I remain, Sir,
Your very obedient servant,
J. EVRARD.

As witness to the above statement, Mr. Evrard's Shopman,
C. LOCKER.

To J. TOMES, Esq.,
41, Mortimer Street, Cavendish Square.

Orders received from Mr. Tomes for Tooth Forceps.

1840.	
Jan. 20th.	A pair of large double jointed forceps fitted to the molar teeth of the lower jaw.
	A pair of forceps adjusted to the molar teeth of one side of the upper jaw.
Jan. 30th.	A pair of forceps adjusted to molar teeth of the upper jaw.
Feb. 8th.	A pair of forceps adjusted to the front teeth.
Feb. 17th.	Do. adjusted to molar of lower jaw.
	Do. Do. small size.
	Do. Do. pair for children.
May 4th.	A set of adjusted tooth forceps, for a friend of Mr. Tomes.
July 9th.	Seven pairs of adjusted tooth forceps.
	One pair for children.
	Two pairs for molars of the upper jaw.
	One pair for molars of the lower jaw.
	One pair for bicuspid teeth.
	One pair for incisors.
Aug. 22nd.	A set of adjusted tooth forceps, for King's College Hospital.
Oct. 22nd.	A set of adjusted tooth forceps, for Middlesex Hospital.

*** Mr. Evrard has given me an account of many more orders received by him for these forceps, but I think I have already given more than will be sufficient to establish my priority.

Orders received from Mr. Clendon, of Conduit Street, for Adjusted Tooth Forceps.

1841.	
Dec. 17th.	A pair of adjusted forceps for central incisors.
	A pair for lateral incisors.
1842.	
Jan. 5th.	Two pairs of adjusted forceps.
April	Three pairs ditto ditto.
June	Ditto ditto ditto.
Oct. 6th.	Two elevators.
Oct. 7th.	Pair of curved for cuspidati of the lower jaw.
Dec. 8th.	Two pairs of adjusted forceps for molars of the upper jaw.
1843.	
Jan. 20th.	Two pairs of adjusted forceps for molars of the upper jaw.
March 18th.	Two pairs of adjusted forceps for molars of the upper jaw.
	One pair for molars of the lower jaw.

As a consideration of the foregoing facts will not, in Mr. Clendon's opinion I presume, lead to the conclusion that he has, in his publication, departed from that strict line of honourable conduct which forms so prominent a feature in the actions of every right thinking man, I need offer no apology for giving them publicity.

In conclusion I may state, that at the time the forceps were made and brought into use, and when the paper explanatory of them was written, although I did not think the subject unimportant, yet to me it did not seem worthy of being made the matter of a separate volume.

For although instruments of similar construction were not to be found in the shops of surgical instrument-makers, or in the hands of general practitioners, it was more than probable that many who practised dental surgery possessed instruments, if not of similar construction, yet of a form which, in their hands, answered fully the required purpose. Neither should I have republished my paper at this time, and in the present form, had not the above quoted work, with its assumed originality, been issued from the press. This, however, left me no choice.

J. TOMES,
41, Mortimer Street, Cavendish Square.

April 16th, 1843.

From the London Medical Gazette of June 4th, 1841.

ON THE

CONSTRUCTION AND APPLICATION

OF

FORCEPS FOR EXTRACTING TEETH.

BY JOHN TOMES,

SURGEON-DENTIST TO KING'S COLLEGE HOSPITAL.

Upon having my attention turned to the extraction of teeth, the instruments placed in my hands to effect this small yet necessary operation were, forceps for extracting the front teeth; the key instrument, for the removal of the back teeth; and the elevator, where neither of the former were effective. After using these for some time, I became dissatisfied with forceps as they are commonly made, and with the key, from the direction in which the force is applied.

To supply the place of what seemed to me defective instruments, forceps variously shaped were constructed, and it is the business of this paper to describe these, with their proposed advantages, as compared with the instruments in general use.

It may be well, however, first of all, to state what is required in instruments wherewith to extract teeth most effectively, and why the means commonly used are imperfect.

The indications in removing teeth are—First, to remove the whole of the offending tooth, or part of a tooth; secondly, to remove it with the least possible injury to the contiguous structures, as the gums and alveolar processes; thirdly, to give the patient the least possible amount of pain in the operation.

That method by which a tooth, or the remains of one, can be removed most certainly, quickly, and at the same time with the least amount of injury to the adjoining parts, will also remove it with the least pain.

To fulfil these indications, recourse must be had to an instrument so formed that it shall grasp the tooth alone, and by the required force applied nearly in the axis of the tooth, remove it. Such instruments are forceps; but forceps so constructed that they shall accurately fit the tooth to be extracted, and so fashioned at the jaws, nibs, or blades, that they shall readily separate the gum from the neck of the tooth, to which point they shall arrive by simply placing the extremities of the jaws at the edge of the gum, closing the handles, and at the same time pressing the instrument steadily in the direction of the tooth, till it comes in contact with the free edge of the alveolar process. As the teeth are variously shaped, so will it be necessary to have forceps of different forms; in fact, a pair fitted to each kind of tooth. By forceps so constructed most teeth may be removed in less time than by any other tooth-extracting instrument at present in use; also with less pain to the patient, and without inflicting any farther injury to the gums and aveolar processes than must necessarily result from the forcible separation of a tooth from its natural attachments.

An instrument which in its employment requires that force should be applied to the contiguous parts as well as to the tooth to be extracted, is an imperfect instrument for the required purpose; or an instrument which, by its form and mode of application, requires that greater force should be used than would be necessary for the dislodgment of the tooth, supposing that force to be applied in the most advantageous direction, is also an imperfect instrument, and but ill fitted for the purpose for which it was designed. Such, however, are the imperfections of an instrument in very general use for the extraction of teeth — the "key;" in the application of which the fulcrum is rested on the alveolar process, between which and the fulcrum the interposed gum is subjected to considerable pressure; just as much, indeed, as may be necessary for the dislocation of the tooth. By this treatment the gum is often considerably bruised, sometimes so much so as to lead to suppuration of the injured part, and always to an unpleasant degree of soreness. The force used in extracting a tooth with the key must be much greater than the actual force required to effect the operation, because the power is applied in a lateral direction, a direction in which the tooth offers great resistance, especially in molares of the lower jaw, where the lateral alveoli are strong, and composed of dense bone.

I am quite aware that there are many and eminent surgeon-dentists who use and speak very highly of the *key* instrument; and no doubt it is very much to be preferred to the forceps ordinarily kept by surgical instrument makers: forceps which are applicable to no one tooth in particular, when applied touch only at two or three points, and are quite incapable of being passed down to the neck of

the tooth, unless the gum be previously cut away, and even then very imperfectly. Forceps for extracting the molares of the upper and lower jaws are commonly kept for sale: the jaws of these are simply curved at their extremities, and each jaw alike, so that one instrument is equally applicable to molares of either side of the mouth, whether right or left. In many instances teeth may be removed by such means, but if the destined tooth be much decayed, the operation will be difficult and uncertain in its results; and whatever state the tooth may be in, there is great risk of its being crushed, from the circumstance of the pressure made through the instrument not being diffused over a large surface of the circumference of the tooth, but confined to two or three points. It is no wonder that such instruments should fall into comparative disuse, and be spoken of as suited only to break off sound teeth, or to extract loose ones. These observations apply principally to forceps for extracting the bicuspides and molares. The incisores are generally, though not always, removed with forceps, or with the elevator. The wisdom teeth are sometimes removed by the latter instrument.

Mr. Bell recommends for the removal of the bicuspides and the anterior molares of the lower jaw, the use of *the hawk's-bill* forceps: this instrument, when well made, must be considered as amongst the best of forceps. For my own use, however, I prefer those that have straight blades or jaws, with the curve, if any be necessary, in the handles.

Dr. Flagg, of Boston, has contrived forceps for the extraction of every kind of tooth. I have not been able to obtain any of his instruments, but, from the description and plates given of them in Fitche's "System of Dental Surgery," I believe they are unlike those I have myself devised.

A work entitled "Operations on the Teeth," by Mr. Snell, contains a description, with plates, of a form of forceps used by the author for the extraction of the molares. The principal aim of the inventor was to have two points of metal coming out from the edge of each jaw of the instrument; the object of these points being to be passed between the fangs of the teeth. These forceps admit of but very limited use, as the fangs of the molares, especially the second and third, are liable to be agglutinated; which condition, in each particular instance, is known only after the tooth has been extracted; but besides this, it is a matter of some difficulty, in any case, to get these two points between the fangs; neither is the attempt unattended with suffering to the patient.

Forceps for extracting the anterior teeth are to be found everywhere, though I have not yet met with any but such as were so clumsily constructed, that to remove the stump of an incisor with them would be difficult indeed. Neither will the so-called "Shep-

pard's safety forceps" be an exception to this observation. What forceps Mr. Sheppard might have had himself I do not know; but those sold as his are next to useless: for although the principle upon which they are proposed to be made is a correct one, yet it is not carried out in the formation of the instruments.

Different shaped teeth requiring forceps shaped to them, it will be necessary to describe partially the teeth, and then the forceps individually, that the peculiar shape of each instrument may be understood. Before doing so, however, I should state that it is quite impossible for any person to extract teeth properly, whatever instrument may be used, especially if the forceps be chosen, unless the operator is perfectly acquainted with the form of each tooth, with the relative position and size of the fangs, with their direction in the alveoli, with the general form of the alveoli themselves, and the positions at which they offer the greatest and the least resistance.

I am not prepared to say that the forms of forceps which I am about to describe are possessed by myself alone, or by those who have chosen to take mine as a copy. Other practitioners, feeling the want of such, may have been led to construct similar instruments. They have not, however, to the best of my knowledge, described them; neither, as far as I can learn, are their patterns in the possession of any surgical instrument maker. Of this I am certain, that the vast majority of the practitioners who extract teeth neither have knowledge nor possession of similar instruments. I therefore offer no apology for printing an account of tooth forceps which, to my view, seem much superior to those commonly employed. Medical men, engaged in general, and especially parochial practice, are very frequently called upon to extract teeth, and by them the operation, for want of better instruments, is generally performed with the key; and not, in all instances, with the most favourable results. I have seen many cases of sloughing of the gums; and now and then exfoliation of the alveolar process. I do not mean to argue that these are the common results of using the key, but they are not very unfrequent consequences when the instrument is in the hands of an unpractised operator.

With well-made forceps no such accident can occur, if ordinary care be taken; and it is more easy to learn to use forceps with good effect than the key. I believe it requires more practice and care to use the key to good purpose, than any other instrument used to extract teeth; yet, when in the hands of a skilful operator, it is no doubt a useful instrument, and as such should not be neglected, since cases may occur in which it would be of value; though I believe such cases to be rare.

After stating some general conditions which I think inseparable from good forceps, whatever may be their particular form, I will de-

scribe those that have been planned or modified by myself; and I do so without wishing to claim any merit as an inventor, but merely as having carried out a principle admitting of general application, which has been neglected, or at least neglected to have been made public.

All forceps whatever should embrace the tooth they are used to extract at its neck; the neck being that part which is between the termination of the enamel and the free edge of the alveoli, and which is covered by gum. In order to arrive at this part of the tooth without difficulty, or unnecessary pain to the patient, the jaws must present an inclined plane, terminating in an edge. The external surface of the jaws of forceps, when closed, should present something like a cone, or parts of several cones, with the apex or apices cut off; and a perpendicular section should present an inclined plane, terminating in an edge, but more or less curved, as may be suitable to the particular instrument. The length from the joint to the edge of the jaws should on no account be greater than will be necessary to allow sufficient space for the reception of the crown and neck of the tooth, so that no strength may be lost.

The fangs of all teeth having a general conical form, forceps, when well made and applied, should be but as a lengthening of the cone towards its base. For removing teeth which are not decayed down to the gums, the ends of the jaws should be square; but when nothing but the fang remains of a tooth, rounded ends are the more convenient, as with that shape they are readily introduced between the fang and inclosing alveolus. Instruments for extracting stumps should be made altogether lighter, the jaws thin and sharp at their convex ends, so that they may be made to cut rather than tear the membrane connecting the fang with the adjoining tissues.

Forceps should be constructed and used upon the principle of lengthening the tooth for the extraction of which they are intended; thus enabling the operator to move it from side to side, or rotate it if the fang be single, and of a shape admitting of such motion.

After these lateral movements have been produced, the tooth may, unless the fangs have some peculiar position or shape, be raised in a perpendicular direction, leaving as little injury from its removal as the operation can admit.

FORCEPS FOR THE EXTRACTION OF THE INCISORES, CUSPIDATI, AND BICUSPIDES.

A section through the neck of an incisor of the upper jaw will show that the anterior is larger, and forms part of a greater circle, than the posterior surface. Now the end to be attained in the application of forceps is to apply them over as large a surface as possible, thereby avoiding the chance of fracturing the tooth by the pressure of the instrument. To extract these teeth, therefore, the jaw to be ap-

plied to the posterior surface must have a smaller curve than that for the anterior. An average tooth, in this as well as in other cases, when new instruments are required, should be selected and given to the forceps maker, and he should be instructed to make the jaws to fit the neck of the tooth exactly, leaving sufficient room for the crown of the tooth to be free from pressure, but not more than will be necessary to clear the enamel. When the forceps are closed upon the tooth they should embrace not only the anterior and posterior, but a part of the lateral surface also. The lateral incisores require forceps made upon the same principles, but somewhat less in size. These are liable to greater variation in external dimensions than any other teeth. Sometimes they are very small indeed, at other times they are almost as large as the neighbouring teeth. It will be advantageous therefore to have different sizes of instruments from which to select.

The incisores of the lower are smaller than those of the upper maxilla, and much more compressed laterally. Forceps for the extraction of these teeth will require to have the jaw which is to be applied to the posterior smaller than that for the anterior surface of the neck. The jaws of the instrument should be straight; but it will be found convenient to have the handles curved, so as to avoid the upper maxilla, when the mouth cannot be opened wide. The cuspidati require for each a pair of forceps made upon the same plan as those for the removal of the incisores, except that they must be larger and rather stronger. Those for the cuspidati of the lower jaw, should, like forceps for the incisores of the lower jaw, have the handles slightly bent. Sometimes these teeth are very small, in which case forceps adapted to the adjoining teeth may serve for their removal.

The bicuspides will be extracted with instruments similar to those already described, except that there will be a little difference in the jaws, which must be accurately fitted to the neck of the tooth. These teeth are not very frequently liable to much variety in size, so that an instrument which is well adapted to an ordinary bicuspis tooth will apply itself to almost all. I have forceps in which the jaws are bent at right angles with the handles, and opening laterally, for the extraction of bicuspides of the inferior maxilla. But they do not answer so well as straight instruments, it being less convenient to apply the necessary force, and more difficult to regulate its direction. In extracting teeth which have their fangs laterally compressed, and are placed in a row with other teeth of like-shaped fangs, the only available movement will be at right angles with the row, and in the direction of the greatest diameter of the fangs. This may be obtained whether the forceps be straight or rectangular; but with an instrument of the latter shape the movement must be an attempt at rotation with a motion upwards. The centre of the rotatory movement will be either at the extremity of the jaw of the instrument, to-

wards which the hand is turned, or else in a line with the handles of the instrument and wrist. Force applied in this manner would seem to be given at great disadvantage, and much expended on the alveolus; there inflicting injury, which, although in the vast majority of cases is scarcely complained of by the patient, prevents the mouth from so speedily recovering from the operation.

FORCEPS FOR EXTRACTING THE MOLARES.

The molares of the superior maxilla have three fangs—two external, one internal. Of the two external fangs, the anterior is the largest, and is placed in a plane external to the posterior fang, which is shorter as well as smaller. The third, the internal fang, is thicker and of greater length than either of the others, and is situated opposite to the posterior external fang, and the space between that and the anterior external fang. The divergence of the fangs takes place at the point where the tooth becomes concealed in the alveolus, leaving the neck with a form such as would result from the agglutination of the fangs, having the described relative position. At this point the forceps should be applied for the removal of the tooth. Instruments, for it will require two, one for each side, right and left, must be made upon the same general principles as those already described. The jaw for the external surface of the tooth must have two grooves—the anterior the larger, the posterior smaller, and upon a plane internal to the anterior groove. The jaw for the interior surface must have but one groove, and that fitted to the base of the internal fang. From the position of the molares of the superior maxillæ, the jaws of the instruments for their extraction must necessarily be bent at an angle with the handles. This angle should not be less than is absolutely necessary, for the more the instrument deviates from straightness the greater is the difficulty of using it. The angle in my own instruments is not less than 135 degrees, and I think they would be better were it even larger. The handles should have a general curve in the opposite direction to the jaws. The molares of the superior maxilla have the two external fangs parallel to each other in their direction in the alveoli. The internal, which is not only the largest but the longest also, diverges from the two preceding fangs, and passes upwards and inwards towards the internal wall of the antrum, and is inclosed in tolerably dense bone. The external alveoli are composed of thin and porous bone. In removing these teeth, then, the tooth being firmly grasped at its neck, the first motion should be slightly inwards to disengage the fangs from the external alveoli. The force should then be directed downwards and outwards in the direction of the internal fang. If these precautions be observed, no difficulty will be found in removing the superior molares, and the operation will be completed not only in less time but with less pain than would have arisen had the key instrument been used. The

first and second molares of the superior maxilla are so nearly alike in size and shape, that an instrument well fitted to one will serve equally well for the removal of the other.

FIG. 1. FIG. 2. FIG. 3. FIG. 4.

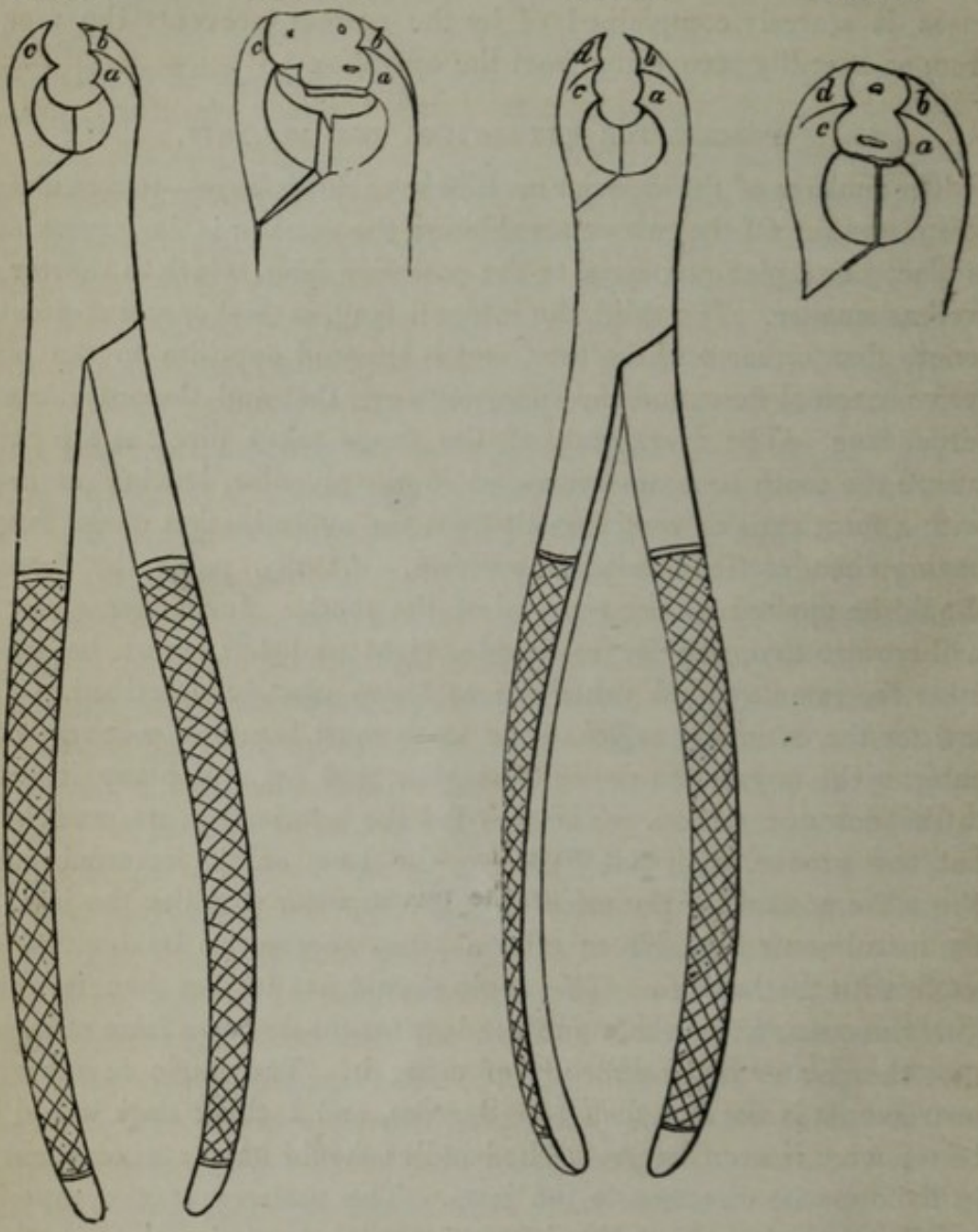

FIG. 1. Forceps for the extraction of molares of the right superior maxilla.

a, the anterior groove, and *b*, the posterior groove, to receive the convexities of the external surface of the neck of the tooth.

c, the groove for the reception of the base of the internal fang.

FIG. 2. The same forceps, with a section of the neck of a molaris from the right superior maxilla in the grasp. The letters refer to the same parts as in the preceding figure.

FIG. 3. Forceps for extracting molares of the right side of the inferior maxillæ.

a and *b*, anterior and posterior groove for the external surface of the neck of the tooth.

c and *d*, anterior and posterior groove for the reception of the convexities of the inner surface of the neck of the tooth.

FIG. 4. The same instrument as seen in fig. 3, but with a section through the neck of an inferior molaris from the right side in the grasp. The letters indicate the same parts as in fig. 3.

The third molaris or dens sapientiæ of the upper jaw, though the fangs are often united into one conical mass, yet the shape of the neck of the tooth is so like those of the preceding teeth, that an instrument which is suited for the removal of the anterior molares is often quite well adapted for the removal of the wisdom teeth. The dentes sapientiæ are, however, sometimes much smaller than the other molares; in which case a smaller instrument might be required, but that, when of small size, they are for the most part removed by the application of so slight a force that any instrument, which can apply itself at all, will serve for their removal.

The molares of the inferior maxilla having two fangs, and these being situated, with respect to each other, directly anterior and posterior, give the neck of the tooth formed by their junction a central groove upon the external and internal surfaces; and as these are the surfaces to be grasped by the forceps, the jaws of the instrument must have a corresponding form. Of the fangs, the anterior is in each direction the larger, being both broader and thicker than the posterior fang. These teeth stand rather obliquely; while the external lateral surface, being larger than the internal, gives a line passing through the centre of the neck of the tooth from without inwards, a direction slightly backwards as well as inwards. From this conformation it becomes necessary to have forceps for each side, right and left. The jaw of the instrument to be applied to the inner side of the neck of the tooth must be rather posterior as well as smaller than that for the outer side; since the inner surface of the tooth is on a plane somewhat posterior to the outer surface. The jaws of the instrument must be bent at an angle of not less than 135. The handles straight, or nearly so. I saw a pair of forceps something upon this plan, except that one pair only was made, and that equally applicable for the extraction of molares of the lower jaw of either side; the grooves in the jaws being exactly opposite to each other, and of equal size. The jaws were also bent at a right angle with the handles.

The dentes sapientiæ of the inferior maxilla, if situated on a plane with the anterior molares, may be removed with the same instruments: for although the fangs are often united in a mass of conical shape, yet the grooves on the outer and inner surfaces are marked. These teeth are, however, not unfrequently situated in the angle formed by the junction of the lateral and ascending rami of the jaw; in which case the forceps for their extraction should be shaped at the edge so as to fit into the so-formed angle, and made also with the jaw for the inner side of the tooth longer than that for the outer side, since in such cases the inner sides of the alveoli are on a lower level than the outer.

In removing molares of the lower jaw, the blades of the instrument

should be carefully thrust down to the free edge of the alveoli, which part of the operation is easily effected, in consequence of the decreasing size of the teeth from the crown to the fangs; little more is needed, indeed, than, after placing the blades at the edge of the gum, to close the instrument. Having obtained firm hold of the neck of the tooth, the first motion should be inwards, by which the tooth is detached from the external plate of the alveoli: this being done, the tooth should be forced outwards and upwards, and so removed. The fangs of these teeth have, however, not unfrequently a curve backwards; if, therefore, a tooth of this kind offers considerable resistance when its extraction is attempted, the movement, after the tooth has been forced laterally, should not be perpendicular, but in a curved direction similar to the inclination of the fangs.

Teeth are not exempt from irregularities of form, which, however, are principally found in the fangs; one fang is divided into two at its apex, or is bent at its termination; yet even these varieties do not materially affect the shape of the neck of the teeth, which part is so uniformly the same, that it is rare to find a tooth to the surface of which the described forceps will not apply themselves with tolerable and sufficient exactness. There are teeth, however, which deviate so much from the regular form, that no forceps, unless made for each particular tooth, would be well suited for its extraction, but that such teeth are generally small, and offer little resistance when their removal is attempted.

In writing on the subject of forceps for extracting teeth, I might have quoted more authorities and have given many extracts from works on dental surgery. It has not, however, been my purpose to write a history, but merely to describe certain forms of instruments which seem best adapted for general use.

The foregoing description will be rendered more intelligible by referring to the figures with the explanation, at least as far as the forceps for the molares are concerned. I have not thought it necessary to give figures of the instruments for the removal of the front teeth.

The instruments themselves may be seen at Mr. Evrard's, of Charles Street, Middlesex Hospital, who has taken much pains and bestowed good workmanship on the making of forceps for extracting teeth.

41, Mortimer Street, Cavendish Square,
May 19th, 1841.

G. Woodfall and Son, Printers, Angel Court, Skinner Street, London.