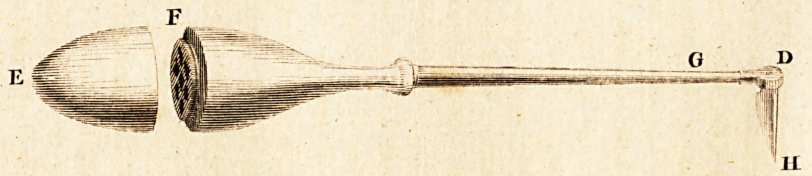
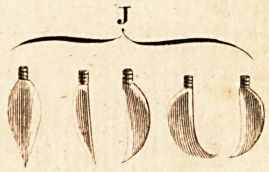
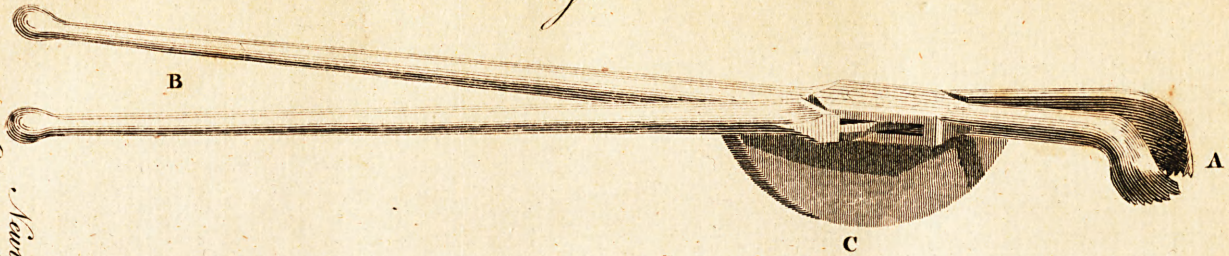


Fig. 1.



*Newly invented Instrument for the
Extraction of Teeth: By Wm. Coper. M.D.*

Remarks on the Extraction of Teeth, with a View to lessen the Danger of that Operation; and a Description of a new Instrument for Drawing Teeth; including the Account of an improved Scarificator:—Communicated by Dr. W. DYER, of Aberdeen.

[*With a Plate.*]

EVERY person conversant in the operations of surgery, knows how to extract teeth; but few, comparatively, who perform this operation, consider the danger that attends it. If I wish to draw a nail, (which having been retained for some time in a wall, and, by means of the oxygen contained in the atmosphere, converted partly into an oxyde, nearly resembles a carious tooth) I can extract it with the assistance of a common hammer, by fixing the nail between the claw; (this is easily done, as the latter adapts itself to any size, being nearly of the form of the letter V) then forcing the handle to one side, I thereby form a fulcrum on the edge of the hammer, or the side of the claw, and by the power which the long handle or lever affords, I am enabled either to extract the nail, or perhaps to break it; but should there be the least appearance of so doing, I then immediately force the handle to the other side, and on taking another hold, the nail, in all probability, will come out complete or entire. Such is precisely the case with regard to the drawing of teeth; for whenever the pull is too great to venture upon, by changing the claw of the instrument, and fixing it on the other side, the tooth being already loosened by the first attempt, a small degree of force only will be requisite to bring it to the other side, and it will then come out along with the instrument; yet never without some injury being done to the alveolar process. To be convinced that this must be the case, we need only consider the position of the hammer in pulling the nail, as it is more completely exposed to view, both instruments being perfectly similar in their application and principles. On the first attempt to pull, we find that the nail begins to bend to one side; an additional force brings it out a little, but in what direction?—not in a straight line, but a curved one, forming a segment of the circle, which would be described by placing one leg of a compass at the fulcrum, or that part where the hammer rests, and extending the other leg to the nail; then drawing a circle by means of this known radius, the nail when extracted, would exactly correspond with a part of the circumference of the circle drawn. But as the human teeth do not bend, being different in their texture from that of the metal of which the nail is composed; and as the bed or socket in which they are lodged, is likewise different from the wood in which the nail is inclosed, it is not to be wondered at, that one or other of them will give way, considering the short turn which the instrument must, from its construction, describe.

Let us suppose the claw placed (either outside or inside) upon the tooth, with the point of it as near to the gum as possible, the rest or fulcrum also being placed on the opposite side, as near to the jaw as may be without resting upon it, then by taking hold of the handle of the instrument in the right hand, we give it a twist, which we shall suppose brings it out, yet so that one or other of the circumstances already mentioned will take place, viz. the tooth broke and part of the fang retained in the cavity, and if so, the former complaints very often will continue, and sometimes increase beyond endurance, or if the tooth be whole, a considerable splinter of the alveolar process will be brought out along with it.

These inconveniences, not to mention the great pain and dangerous consequences that frequently ensue, have not passed unnoticed by professional men, in every country where the key instrument has been in use—an instrument too well known to require a description here, as no person capable of judging of its imperfections can be ignorant of its construction. The instrument used a century ago for the same purpose does not materially differ from the one at present in use; it no doubt has undergone a variety of forms, but the principle remains the same. Among the numerous attempts to improve it, the only one, not materially different from the old instrument, and which merits particular notice, is that proposed by Mr. SAVIGNY, surgical instrument maker, in London, and described in the 7th volume of “*Medical Facts and Observations*.” That gentleman has certainly heard many complaints, and is himself well qualified to judge of the imperfections of the old instrument, but the improvement which he wishes to introduce, (consisting of a small cylinder or bolster on the end of the instrument, placed on the tooth as near to the process as possible, the claw being fixed to the circumference of this cylinder) by no means performs what he intends or says, viz. “the extraction of the tooth in nearly a perpendicular direction”.

A trial of the instrument is scarcely necessary to prove this; a simple inspection of the plate may suffice to convince us that the end proposed is not here attained, and also that his instrument is not materially different from the common one, either in its direction, or power of action. In a late publication (the “*Philosophical Magazine*”) I read with great satisfaction the announcement of a description and plate of a new German key for extracting teeth, in hopes that it would effectually supersede any attempt of mine towards improvement, or at least, that I should receive from it such additional information as would enable me perhaps to improve my own; but now, after having examined the plate and read the description, I am concerned to find that not one improvement is even attempted. An instrument exactly similar to the one here mentioned, I have not only seen many years ago

used

used by others, but I have also actually used myself—perhaps it may be new to its recommender; it can scarcely be so, however, to an experienced medical practitioner. He says, “the improvements introduced into this instrument are such as, I hope, will be found to remedy the defects complained of in all former ones; and the facility with which a tooth can be drawn by its means, will, I am sure, render its adoption in practice universal, as soon as it shall be generally known.” In opposition to which I am sorry to observe, that the imperfections of this instrument have been too long known and felt, not to enable us to decide whether it correspond in efficient practice to the encomiums he is pleased to bestow on it. It is scarcely necessary to mention, that the only advantage which this instrument possesses over those in common use, is the short time that is required in changing the claw from one side of the tooth to the other; but this is not always necessary, and it is only an additional expence to the price of the instrument, without producing any advantage equivalent thereto. The principal objection to it, and the disagreeable consequences that ensue from the use of all other instruments, which have been contrived for extracting teeth, is certainly the following; the short lateral turn or curve which the instrument describes when in action:—But how is this to be remedied? We can easily find out imperfections, and yet the means hitherto employed for the removal of them have not been attended with that success, which the importance of the object deserved. All who have considered the common key instrument, or indeed any one with which we have been yet made acquainted, will agree, that the sudden turn, described by the tooth or instrument while extracting, occasions most of the inconveniences attending the operation: when this is known, the practitioner will naturally say to himself, the main thing required is to pull the tooth in a perpendicular direction, or rather in the direction of its axis; but when again we come to consider how this is to be done, a question occurs, what instrument can be used, which will have sufficient power, and yet be applicable in so confined a situation? The solution of this seems insurmountable.

Several ingenious men have attempted to master the difficulty, but none, as I know, have been successful, and although I am inclined to think that, what I have to propose will answer the intended purpose, perhaps I may be deceived; and if I should, it affords me some consolation to reflect that in this respect I am not singular: and I sincerely wish and hope that the hint may be, by some person of ingenuity, applied with more advantage and neatness to the purpose intended.

We have already considered the inconveniences attending the use of the key instrument as commonly applied, by its sudden turning the tooth to one side

side; what we have now to consider is, whether it be possible to extract it in the direction of its axis, or in a perpendicular direction, and in what way? If we again consider how the hammer is employed in extracting a nail in another direction, we shall at once conclude, that another instrument, or at least one constructed on different principles, will be requisite for that purpose. If I wish to pull the nail in a more perpendicular direction, fix it first in the claw, then by causing the end or solid part of the hammer to rest upon the wall, I do not force it to one side, but pull exactly in the direction of the claw, by which means the nail is raised nearly in a perpendicular direction, or rather in the direction of a segment of the circle formed by the point of the claw of the hammer where the nail rests, taking the solid part or other end of it, where the fulcrum is, for the centre. In nearly a similar way, would I propose teeth to be extracted; the instrument, however, for this purpose will be best understood from the annexed drawing.

A B represents the instrument nearly of its proper size, and resembles in a great measure the common stump forceps; attached to the forceps at C is a semi-circular piece of wood or metal, the under part of which is stuffed and covered with leather: this semi-circular piece is so constructed that it may be slipped off at pleasure, and a larger or smaller one adapted, as the case may require; whenever this instrument is to be used, it is requisite, in the first place, to observe that there be no vacancy between the tooth to be extracted and the front teeth; then, having previously well separated the gum from the tooth, the point of the instrument is to be applied on each side of the tooth as low down, and taking as firm a hold of it, as possible; then by depressing the handle, at the same time taking care not to lose hold of the tooth, the semi-circular piece rests upon the anterior teeth, and forms a fulcrum, yet it produces a very different effect at the point of the instrument, which a common prop would do; for by means of it, the tooth when raised, describes, not the circle which would be formed by taking the distance between the point of the instrument and the fulcrum, but one that is of a much larger radius; which of course comes nearer the direction wanted, the perpendicular. I am well aware, that one great objection will be offered to the use of this instrument, and that is, in cases where one, two, or three teeth are wanting, and where there is nothing to rest upon but the gum; even in such cases, this inconvenience may be easily obviated by having a flat piece of metal with a small handle attached to the side; this flat piece being stuffed in the under side and covered with leather, should be placed upon the gum; then the semi-circle of the instrument rests upon it as upon the teeth, and in this way the instrument may be used with as much facility in the one case as in the other-

The force necessary to draw a tooth is not so great as one would be apt to imagine, provided the cords (if I may be allowed so to call the gum) be completely separated from the tooth, which by the bye is seldom done by any operators.—Indeed, most persons that are in the practice of extracting teeth, complain of the difficulty of dividing the gum from the tooth completely; and a very eminent writer on this subject says, “It is a common practice to divide the gum from the tooth before it is drawn, which is attended with very little advantage, because at best it can only be *imperfectly done* ;” and he adds, “But if such a separation, as can be made, saves any pain in the whole of the operation, I should certainly recommend it, and at least in some cases, it might prevent the gum from being torn.”—Now what I wish to advance on this subject is to endeavour to point out a method of performing this part of the operation *completely* ; for the author above quoted certainly does not mean to affirm that it is useless, but only that the method at present in use does not answer the intention. If we examine any of the scarificators commonly used for the purpose, we shall soon be convinced, that they cannot answer the end fully, and we shall find also that they are so constructed as not to admit of being applied exactly round the tooth: for, with all the care which we can possibly exert to go round the convexity of the tooth, still there will be some part which cannot be come at. But, by substituting the following simple scarificator, I hope all these defects will be completely remedied. D. E. Fig. 2. represents the instrument I propose, of its proper size; the handle at F. unscrews, and in it is contained three, four, or six blades, or scarificators, any one of which may be applied at pleasure; for by unscrewing the stem at G. out of the knob K. the blade H. also unscrews, and another of a different form may be substituted, and can be made *dead* fast in any direction by means of the screw at G. so that it may be exactly adapted to the curvation of the tooth, and of course the gum separated more completely than by any former scarificator. I. represents blades of different forms; one form being found, on some occasions, more convenient than another, and as any of them will fit the screw at D. they may be made fast in any direction, by means of the screw in the point of the stem at G.—K. represents the small button or end-piece unscrewed from the stem, and without a blade.

Aberdeen,

W. DYER.

Jan. 25th, 1799.

* MR. JOHN HUNTER “On the Diseases of the Teeth,” p. 90.