

behandeld worden, waarbij de diepte en de richting van ieder kanaal afzonderlijk met juistheid wordt bepaald.

De voorzitter brengt den heer LENNOX in warme bewoordingen den dank der vergadering en verleent thans het woord aan den heer C. WITTHAUS, te Rotterdam, die de volgende voordracht houdt:

## Left Cutting Burs.

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*Ladies and Gentlemen,*

I beg your attention only for a short time to a subject that has occupied my mind ever since I used the dental engine.

As far as I know, all the engine burs sold as yet by the dental depots, and therefore probably all that are used by dentists, are so constructed that they cut only when the wheel is turned to the right side. There is *a priori* no decisive reason why this should be so, because, if the teeth of the bur would be directed to the other side, and the engine moved accordingly, the cutting properties of the bur would be the same. Nevertheless, while our excavators for instance in some forms are made right and left cutting, all the burs sold are right cutting. Perhaps this limitation to one cutting principle is due to a want of uniformity, or to imitation, as with the coffee-mill, the barrel-organ, the corkscrew, the watch and a hundred other things of common life, the rotatory movement uses to be the same. — May be also, that the imperfection of the former spiral springs of the dental engines made the restriction to one kind

of rotation necessary — at any rate, our burs are right-cutting.

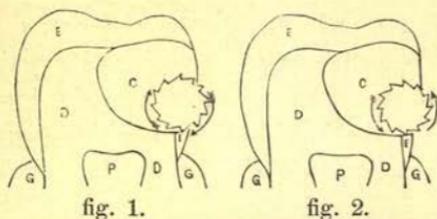
Some years experience with filling teeth, however, taught me that I wanted left-cutting burs, that there were a good many cases where the old burs failed to work satisfactorily, while those cutting to the other side could do the work all right. I had a set of the latter made by my dealer, and found all my expectations fulfilled. The left-cutting burs can do most of the work, — not all the work — done as yet by the right cutting ones, and they can do some important work that the old fashioned ones refuse to do. As the left cutting burs have proved to be a great satisfaction to me, and have helped me many a time to overcome difficulties in the preparation of a cavity or a root, or in the finishing of a filling, I feel myself obliged to make the faculties of left cutting burs known to the profession.

Dr. BLACK, of JACSONVILLE, begins his excellent treatise on "The management of enamel margins", in the Dental Cosmos 1891, with the words: There is perhaps no subject more important to the operative dentist than the management of enamel margins, a statement which, I am sure, every experienced dentist will confirm. Now there are chiefly two kinds of instruments that will best do the mechanical work of treating the enamel margins before filling: *Sharp* enamel chisels and excavators and *sharp* burs. In some large cavities a fine corundum stone moved by the engine also will do good work. For the rough work of cleaving the enamel for removing relatively large pieces the enamel chisel is unsurpassed. For the finer work of smoothening the margins and adapting them to the required form of the cavity, making allowance to the direction of the enamel prisms and the groves of evolution, very sharp excavators are convenient in many cases. But almost all

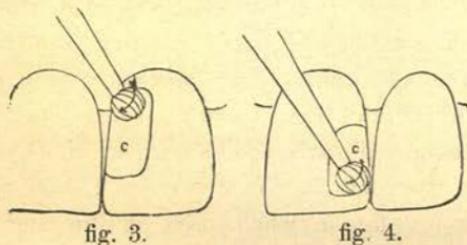
the work alluded to can also be done by burs, and these are indeed to be preferred for most of the finer work, and especially for such cavities as are more or less difficult to be reached and to be overseen, because the chisel and the excavator require a much larger sphere of movement than the bur. Really the bur, so effective for removing carious dentine and for shaping the cavity, is in most of the cases used also for the management of the enamel margins.

For the details of the work of managing the enamel margins the profession is deeply indebted to Dr. BLACK, to whose unsurpassed treatise I must refer you. For my purpose it may suffice to state, that the enamel margin must be smooth, that its angle may not be too acute, and that the outer surface of the tooth, surrounding the filling, must keep its integrity and smoothness, and may not be mutilated by the bur or the chisel. The angle of the outer surface and the cavity must approach a right one, and be rather sharp.

Now the best means to reach these results is to take a sharp bur of the required form — a wheel or a bud form f. i. — lead it to the cavity in the direction of the enamel prisms, and cut along the margins with a slight touch, respecting all the details of the case. But the minority of the cavities can we so reach as to treat all the margins in this manner. In most of the cases, the margins of the cavity can only be treated by approaching the bur in an oblique direction, inclining it more or less until it is almost parallel with the outer surface of the decayed side of the tooth. This is especially true with approximal cavities, and just here the accurate preparation of the margins is of the highest importance, and it is here that the right cutting burs very frequently fail and must be substituted by left cutting ones.



In fig. 1 is shown the diagram of a right cutting bur, cutting the enamel on the outer edge of a cavity. Now, unless in this case the bur is held with extreme firmness, it will turn over the margin of the cavity, glide along the outer surface of the enamel, mutilating it, and proceed in the direction of the arrow until it finds some resistance or is withdrawn. There is no such danger, if the bur be a leftcutting one, and the engine wheel turned to the other side. A glance on fig. 2 will demonstrate this more clearly than my words can describe it. Nor can this be unknown to any attentive operator. Take f. i. a case like



in fig. 3. It must be acknowledged that it is extremely difficult here to hold the right cutting bur as firm as to prevent its overleaping the gingival margin of the cavity, doing much harm here by scratching along the sound surface of the enamel and by hurting the gums. With a left cutting bur this danger is avoided, it having the tendency to approach the bottom of the cavity rather than to catch the outer corner. The disagreeable event of the bur taking the direction alluded to, which is so tedious by the ensuing hemorrhage of the gums, cannot be rare, as I have frequently heard dentists recommend to place a wood wedge between the teeth not only for separating them, but also in order to prevent the bur jumping into the gums. A proper preparation of the cavity can only

be done with sharp burs, and the sharper the bur, the greater is its tendency to leap over the margins as described. The smoothening of the enamel margins must be done by slight touchings with the bur, leading it with a very delicate feeling, and this is impossible when the bur is held with great firmness.

In the case of fig. 3 a left cutting bur can be led along the gingival margin of the cavity with great delicacy and without any danger of its leaping over the angle of the enamel.

In fig. 4 there is a similar case. While a left cutting bur can be used with perfect ease, it is almost impossible here to hold the right cutting bur with such firmness as to prevent its leaping over the margin of the cavity, squeezing itself in between the remainder of the approximal surfaces of the two incisors, and mutilating the integrity of the enamel by deep scratches. I need not here describe the importance of the smoothness and strength of sound enamel surrounding a filling, this being known to every dentist.

In a cavity on the buccal surface of an upper right or a lower left molar, the old fashioned bur, as shown in fig. 5, when used on the gingival margin of the cavity, will always tend to take its fatal way to the gums. Here the use of the left cutting bur is indicated, and so it is in the same cavities

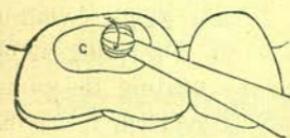


fig. 5.

on the left upper and right lower molars, along the margin of the cavity nearest to the masticating surface of the tooth.

The use of the left cutting bur can in a good many cases do away with that of the angle handpiece, and this decidedly is an advantage, because the handpiece bur is far more difficult to be conducted and held to the place than the simple bur, the latter leaving us a better aspect of

the tooth too, than the thick angle handpiece. Very frequently also the pressure of the tongue or of the cheek make the proper employment of the angle-handpiece impossible, and in these cases, as f. i. with buccal cavities in third molars, the left cutting bur will be found a great relief.

With bicuspid, most of the cavities are found at the approximal surfaces; if the denture be regularly looked for by the dentist, the decay will be found before the masticating surface has given way. Now it is generally recommended to open the cavity from the masticating surface, thus giving free access to it, and a good survey. This cutting away of sound tissue must I think be avoided wherever possible, because by it the tooth is materially weakened, and the filling exposed to the deteriorating influence of the act of mastication. Loosening of the filling, breaking down of the walls, even complete splitting of the crown are rather frequently the fatal consequences of the opening of the masticating surface. Secondary decay also will often be found on the gingival border of the filling, as a good survey and therefore a proper preparation of this part of the cavity from the masticating surface is rather difficult.

After an ample separation, the approximal cavities of the bicuspid can be made accessible from the buccal side, and ought to be treated from this side or from the palatal side, unless the enamel near the masticating surface be extremely thin, or there be caries in the fissures. Entering from the buccal side, the cavities can with comparative ease be prepared with small burs, and an amalgam filling, laid this way and properly finished gives a far better chance for the preservation of the tooth than a gold filling including the masticating surface, however dexterously the latter may be laid. For the preparation of these cavities on the approximal surfaces of the bicuspid and first molars, entering from

the buccal side, the left cutting bur can, I think, not be missed, as everyone who has tried to make these fillings and has experienced the annoyance of the bur hurting the gums, will readily confirm.

I have here called the attention to only a few instances where the left-cutting bur can be of service, but there are a good many more cases where its use is indicated, especially the large shallow cavities with thin walls in the second and third molars. At any place where the right cutting bur shows the tendency to leap over a sharp margin, and so to take a direction not desired, the left cutting bur will work satisfactorily. It must of course not be used in the opposite cases, where itself can catch a margin, but this is obvious to anyone who understands the reasons why it was created.

The wellknown wheelformed engine root files of Rauh ought also to be right and left cutting; a glance on fig. 6 and 7 will convince even him who never used them, that these

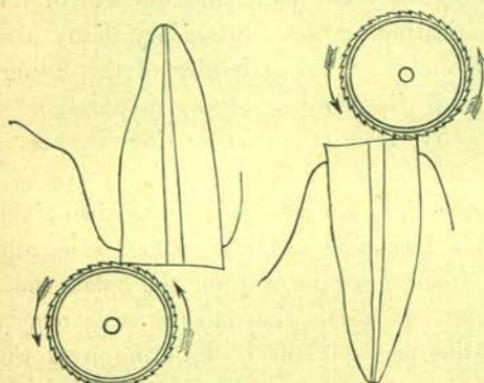


fig. 6.

fig. 7.

excellent root files, when used on the palatal side of upper roots and on the front side of lower roots, must be left-cutting, as the right-cutting ones would here be sure to catch the margin of the root and hurt the gums

severely, as many dentist will have experienced.

The left cutting principle can be applied to finishing burs too. In fig. 8 is shown the diagram of a gold filling in a molar tooth, being finished by a right cutting bur. When the margin of the gold filling is rather thin, as

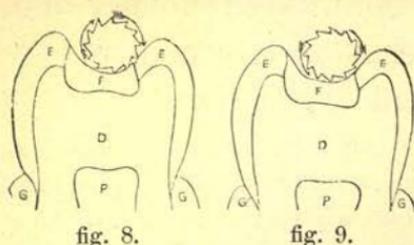


fig. 8.

fig. 9.

must frequently be the case, the teeth of the finishing bur will tend to tear the gold — which is rather a tough material — away from the margins of the cavity, thus doing to the filling the greatest

harm. This cannot be unknown to the profession, as, where corundum and wood points, as well as paper disks are used for polishing, the operator will, as I had several times the occasion to observe, turn the wheel the other side where necessary, thronging as it were the gold to the margins. The left cutting finishing bur will be found convenient for the same purpose, as a glance on fig. 9 will demonstrate, and it can do away with the fatal dark lines, as yet observed on one side of large central fillings finished only with right cutting finishers.

I have suggested the manufacture of left cutting burs to a worldknown firm of dental supplies, and I trust that in a short time they will be within the reach of everyone of you. I hope that you will give them a trial and that they will give you as much satisfaction as they did to me.

De Hr. CUNNINGHAM uit Cambridge betuigt zijn instemming met de bezwaren, door den heer W. tegen de rechtssnijdende boren geopperd, vooral wat betreft het afglijden van den cervikalen rand der caviteiten.

De Hr. RHODES brengt den heer WITTHAUS hulde voor zijn voordracht en raadt hem aan het behandelde te publiceeren. De heer W. zegt, dat het in het Tijdschrift voor Tandheelkunde zal verschijnen.

De heer CUNNINGHAM neemt nu het woord over: