tic, one of the most readable, award-winning dental magazines in America, comes to you, doctor, as a professional courtesy of your Ticonium Laboratory.

most patients are poor students.

you can help them get better grades.
ANY "FORE" FOR TENNIS?

With more than 12 million Americans now playing tennis, the American Medical Association says that added to the twisted ankle, tennis elbow, and strained back suffered on the tennis court, eye injuries are on the increase. A hard hit ball colliding with someone at the net can produce serious eye injury if it strikes the player at the net in the orbital area. To reduce the risk they suggest that shatterproof sun-glasses be worn with special wire or plastic to reduce their stability. Zalam, prof. and chairman, dental division of Ticonium, Inc. said to me, "I just didn't feel it was all that important." When asked why she felt that way, she as well as other patients who were questioned after similar experiences, said, "It was that important why didn't the dentist himself discuss these techniques with me?"

The majority of patients are very poor students when you grade them in terms of their preventive dental care. They may show initial enthusiasm when informed that correct brushing, flossing and gum attention can actually save their teeth, their money and generally improve their physical health. But, even knowing all that information does little to motivate them to actually carry out the daily routine of preventing caries and the ultimate dental work and expenses.

While doing my research for this article, I decided to take a different angle of approach. Instead of questioning many dentists on their techniques, I decided to interview patients to try and find out why they refused to follow such sound advice as is given to them by their dentists. Advice that, after all, would ultimately be of such great benefit to them. I already knew of the professional frustration that dentists experience when attempting to educate their patients in plaque control. Many dentists have complained that this frustration adds greatly to their daily stress and they would dearly love some advice on how to light the fire under patient indifference.

"Here I am with all my marvelous new equipment, excellent dental education and a real enjoyment of my work," one young and dedicated dentist recently said to me, "and I can't get my patients to listen to me. I'm actually showing them how to stop paying me so much money. You'd think I was doing just the opposite! They simply don't respond and frankly it makes me feel irritated!"

As a teacher myself, I know that some of the elements of student disinterest and poor performance can sometimes be traced back to the instructor. Yes, Doctor, many of your patients from New York to California have complaints about your teaching methods. One lady said, "Well, his receptionist stuck me in a little room and told me to watch a movie on a television set that was there. Oh, it was cute and explained things like tooth decay and all that and the importance of good dental health. Then she came back and showed me how to use dental floss and how to brush. But, somehow I just didn't feel it was all that important."

When asked why she felt that way, she as well as other patients who were questioned after similar experiences, said, "If it was that important why didn't the dentist himself discuss these techniques with me?"

The general impression they received was that the dentist, by his absence from the instruction period, was in some sense minimizing the importance of good dental hygiene and plaque control.

Now you may feel a spurt of annoyance particularly if you have taken the time to train an assistant in the methods needed to instruct your patients. Or, you may even have a dental hygienist on your...
The Patient's Psychological State

You may wonder what happens to an obviously intelligent patient who has difficulty grasping the techniques of preventive care or understanding the reasons for this daily attention. It may have nothing to do with your presentation, delivery or usual speaking patterns. When your patient enters your office, even if he knows he will not be receiving any kind of treatment which might be painful, he still feels a sense of anxiety. This psychological state is common to all dental patients does strange things to his ability to reason and think clearly. It can influence what he hears, as well.

Once in your office, the patient feels like a child and responds like one too, even if not in an obvious fashion. He is busy emotionally defending himself from the fear of pain that he associates with dental treatments. This condition of anxiety has a person's ability to concentrate. Remember that while you are relating to the patient the meaning of his illness, he is in actuality an emotionally distracted child. He cannot give you his full attention. This is why it is a good idea to speak slowly and clearly. Ask the patient to repeat back what he has learned. Your patience may be taxed when you must go over the same material but on the other hand your patients won't tax your frustration level in the future.

There is an external negative influence that affects your patient's motivation for preventive dental care. It is so common and such a part of everyday life that hardly anyone would stop to consider it as something that is working against the dentist.

I am referring to advertising that continues to reinforce public opinion that it is the toothpaste you use rather than his instruction or the difference between no cavities and a mouth full of dental problems.

Advertisers Are Experts

The American public has grown up with advertisements that continually promise miracle results and these advertisements have a great influence upon human behavior. Since you, the dentist, are trying to convince your patients to change lifelong patterns of behavior and response, these advertising campaigns are tough adversaries. You can't afford to compete on a national scale, but you can affect individual patients, your patients, who come under your direct influence.

Every individual, every family has a favorite toothpaste. Just be sure to tell them that it is how you brush, not what you brush with that counts! They will probably be surprised as the media advertisements seldom mention this important fact.

Advertising companies are experts on motivation and we can learn something from them. The best advertisement that I have ever seen is now being run for safety driving. New Mexico is second, followed by Montana, Idaho, and Nevada. Can you imagine the following item found in a time capsule a hundred years from now? There is a college for frogs in Sacramento, California. Frogs are taught how to win the Calaveras County jumping contest. Tuition offers a course in "mind-control, brain-washing, physical education, massage and swimming." No kidding. And to top it all, exceptional frogs are admitted on "athletic scholarships."

The Food and Drug Administration reveals that dentures may be radioactive because of uranium used in false teeth to simulate the fluorescence of natural teeth. According to the government bureau, they emit more than the recommended levels of radiation. A 20-year report by the National Cancer Institute, which has reviewed all the statements and statistical evidence submitted or made available by the National Health Federation, has found nothing to support "assumptions and allegations with respect to a causal relationship between cancer mortality rates and fluoridated water supplies." ... A study at the University of Maryland's School of Dentistry showed that dental plaque rather than hormone changes is the preeminent cause of periodontal disease in the pregnant woman.

The following ad for dentistry which appeared in the Boston Independent Advertiser in 1749 wins our vote for the dental ad to end all ads: ... cures effectually the most stinking Breath by drawing out, and eradicating all decayed Teeth and Stumps, and burning the Gums to the Jaw Bone, without the least Pain or Confinement; and putting in their stead, an entire Set of right African Ivory Teeth ... So nicely fitted to the jaws, that People of the first Fashion may wear them, and not only the least Indency, Inconvenience or Hesitation whatever. He deals only for ready money.
by Maurice J. Teitelbaum, D.D.S.

Homer has it that the Madison Avenue crowd is planning to open up the market place to the medical profession. The Federal Trade Commission and Justice Department are said to be giving some thought to allowing physicians to advertise. There is also talk in the American Bar Association about lawyers advertising their services. If this is to be the trend of the future, then dentists will have to start to plan their own campaign for public attention and patronage.

We may not be able to compete with the obstetrician in advertising “free deliveries” but, if need be, we can still create appropriate advertising copy to tempt the consumer. For example, here are some suggestions for advertising copy you may want to consider as a guide, should the occasion arise:

**January White Sale**

For one month only. Get any composite filling at half price. Fillings limited, two to a patient. Come early while the popular shades last.

**Close Out**

If you can use a silicate filling we can give you a good buy. We have only gone out when it's dark and don't care what you say. Only go out when it's dark and don't care what you say. Only go out when it's dark and don't care what you say. Only go out when it's dark and don't care what you say. Only go out when it's dark and don’t care what you say. After these silicates are gone they will no longer be available at any price.

**Fire Sale**

Our misfortune is your gain! Last week we fired our entire staff and are able to pass the savings on to you. All dental work greatly reduced for one week only. Next week we expect to hire new help. Doors open at 8:00 A.M. So hurry down and please, form a single line.

**Spring Cleaning Sale**

Now is the time to have your teeth cleaned free with every extraction. Only the finest cleanser and imported brush bristles used. Children must be accompanied by parents. Flouride is extra.

**Unclaimed Merchandise Sale**

Recently we bought up a complete stock of odd sized teeth from a laboratory bankrupt sale. Not all forms and sizes available but all teeth are of good quality and will give you many hours of chewing pleasure. Call in if your denture teeth are worn and need replacing or if you want a new denture made. We can offer you a really big saving, especially if you only go out when it's dark and don’t care what you say. Sorry, no prices quoted on the telephone.

**Hi Ho Silver Sale**

Monday to Wednesday, three days only! Yes, we’re celebrating the 30th anniversary of the Lone Ranger by a dental floss company. It uses a picture of one of the most admired and respected American football players. It shows him in the process of flossing his teeth. The message is that this virile creature takes time to floss once a day. The advertising firm knows that most men think that it is unmanly to floss their teeth. By showing a hero in the act of flossing many men will get over their ridiculous notion. As many of your regular patients are female, you can suggest that they tape a copy of this advertisement on their bathroom mirrors as a way of motivating their husbands toward better dental hygiene.

It is human characteristic to dislike change even when a change of habits is a positive thing. In order to encourage your patients to change their daily brushing routine, you have to promise a reward. With a reasonable adult the gain is in the prevention of gum disease and the loss of teeth. They must be told in explicit terms just how important this is to them. You also should point out the pain that they will not have to go through as a result of daily preventive care.

All his may sound very simplistic but remember that even the most intelligent of your patients has an emotional age of a child and a child's outlook when he is sitting in your chair or office.

**Promises and Rewards**

Most adults have a lazy attitude when it comes to routine program for preventive care in medicine and dentistry. If they suffer no pain in the present from indulging in overeating, drinking, from the lack of exercise or poor dental care, they tend to assume that everything will always be fine. It is your responsibility to gently nag them out of this laziness. You can do this by holding out the promise of healthy teeth in their older years.

Children respond to direct and practical rewards. Because children are not as rigid in their habits, they are much easier to convince that daily flossing and brushing properly will save them from the drilling they all dread. They also feel important when receiving a special gift for their efforts.

You can’t give adults cards on which to put stars for that day in which they carry out good oral hygiene practices. Nor can you delight them with gifts of brushes, floss or expose tablets but you can motivate them with your personal attention and patience in explaining the benefits of preventive care. Share with them the overall attitude of professional concern about dental hygiene.

**Lost in the Dental Bowl**

For one month only. Get any composite filling at half price. Fillings limited, two to a patient. Come early while the popular shades last.

**Open House**

If you can use a silicate filling we can give you a good buy. We have only gone out when it's dark and don’t care what you say. Only go out when it's dark and don’t care what you say. Only go out when it's dark and don’t care what you say. Only go out when it's dark and don’t care what you say. After these silicates are gone they will no longer be available at any price.

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Movies, pamphlets, and trained top notch assistants are all necessary helpers in your desire to educate your patients. But, without the dentist himself and his caring supervision, the dental patient will not work for better grades!
Modernize for practice growth and increased earnings

by C. V. Ashe

Been putting off making a decision on modernizing and/or expanding the physical assets of your practice? Now may be a good time to review the appearance of practice premises and the efficiency of its equipment. Besides having a higher investment tax credit deduction directly from your income tax bill, there may be other favorable indications.

Doctor, several circumstances may contribute to making this a favorable time for you to examine your aging practice assets that may soon need to be replaced with new ones. Habit, inertia, and long familiarity with present operating equipment, office equipment, furnishings, and other physical assets of the practice may have caused you to overlook the greater earnings potential to be obtained from acquiring new replacements. Sometimes, it is economically to the advantage of a practice to replace some assets long before their useful life is nearing an end. New, much more efficient replacements are in the market that make these older assets competitively obsolete.

Some dentists may have experienced so much growth in their practice that present quarters are crowded and insufficient. Being busy, you may think often of doing something to get more space and efficiency—yet have not really applied yourself to the solution of this problem. Now may be the time to give it some serious attention which may lead to action.

Price

Replacement prices for most assets may now be lower than you can reasonably expect them to be in the foreseeable future. Price rises are uneven, due either to inflation, scarcities, or to other factors such as the production of much superior and efficient assets for a practice. For most purchases, now may be a much better time to buy, since prices generally tend to go up. However, a good many factors besides the direct cost price of an asset determine the value of modernizing practice assets in relation to its earnings. In some cases, these factors may be of much more importance than the direct cost.

Interest

When credit is needed for major purchases, a dentist may now find it easier to obtain at a more reasonable rate of interest than he may expect to get some time in the future. How fast the rate of inflation will rise is uncertain, and may or may not result in higher interest costs very soon. Some shopping around for the best credit source sometimes results in better credit terms. Interest paid on a loan for the practice is fully deductible from gross practice earnings.

Investment Tax Credit

If a new practice asset qualifies for the investment tax credit of 10 percent, this can be deducted dollar for dollar directly from your income tax bill. Instead of the regular seven percent rate, the 10 percent rate of credit will be in effect until December 31, 1980. This will lower costs, the particular amount depending on the useful life of the asset and the purchase price. The percentage of the cost on which the credit can be claimed, based on the years of useful life of an asset that is acquired, breaks down as follows:

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<thead>
<tr>
<th>Years of Useful Life</th>
<th>Cost or Basis</th>
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<td>More than 5 years</td>
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<td>More than 5 years</td>
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<td>7 years or more</td>
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If you are contemplating a major replacement and/or expansion that involves making a large investment tax credit for purchases of a $100,000 investment, instead of the regular limit of $50,000. This is also available until December 31, 1980. If you are married and filing a separate return, you can claim $50,000 instead of the regular $25,000, unless one spouse acquired no qualified used property.

A corporate taxpayer can claim an 11 percent credit, provided the extra 1 percent is contributed to an employee stock ownership plan funded by transfers of employee securities.


Here is another classic — but at the opposite end of the age spectrum. The increase in both the numbers of the aged and the interest in them makes this an important book for the practitioner who will increasingly have large numbers of the aged and the interest in them makes this an important book for the practitioner who will increasingly have large numbers of patients and should learn to deal with them by understanding them and their problems. Butler is the new head of the National Institute of Aging and one of America's great authorities in this field. Fortunately, he is a psychiatrist who possesses the ability to write, the broad and sensitive knowledge, and the understanding. It all makes for a unique volume in this growing field and one which every practitioner should be familiar with. Another must for your library!

The Mystery Story, edited by John Ball, 402 pp., ill., $10.95, University of California, San Diego, 1976.

This branch of G. C. is exploring mystery stories as one of the significant forms of our literature, and this is the pilot book in a new Mystery Library project which will bring many of the classics in this field back into print before long. The Mystery Story is an exploration of this genre by a combination of great writers and critics in this field, such as Hillary Wright, Michael Gilbert, Professor Francis Nevins, Allen J. Hubin (founder and Editor of The Armchair Detective, the top scholarly journal in this field), and others. This is a unique, outstanding volume — for all mystery buffs.

Muder for Your Pleasure: The Whodunits . . . . Masterpieces of Murder (Dodd, Mead, $9.95) by Agatha Christie is a compilation of four of the great murder classics which helped to make that English woman the "Queen of Crime" for half a century. Here are four greats, from 1926 — The Murder of Roger Ackroyd — to 1948 and Witness for the Prosecution. There are also And Then There Were None and Death on the Nile. It's impossible to conceive of a better sampling of Agatha Christie's work. It's obvious how the great writing in this genre wears well, how it stands up in the face of the fact that it obviously was set in a world 30 years ago and yet this can not affect its gripping quality and the enjoyment. A great and welcome classic!

It is only those of us who recall the pre-antibiotic days that can fully appreciate the difference penicillin made.

I myself recall that the first patient I saw died of an ordinary garden-variety pericoronitis. I was fresh out of dental school (in 1939) when a physician asked me to see one of his patients — confined to bed with congestive heart failure, the result of rheumatic fever and resulting heart damage, (a steadily developing and degenerating condition which could have been prevented or at least kept under control with modern antibiotic therapy). She developed a pericoronitis and was too many to enumerate.

Yet the FDA would probably not even allow penicillin to be used on patients today — particularly if guinea pigs were used as the experimental animals instead of mice, for the guinea pig reacts badly to the drug. But there is much mythology corrected in the David Wilson book — as that a spore of penicillin came fortuitously floating in through an open window to land on a culture plate of staphylococci. For Fleming's height, shortness would have made it difficult for him to reach the window to open it, it was an unusually chilly month, and no careful re-searcher would want outside breezes to foul up his careful bacteriological studies. Here then is a fresh look at the whole penicillin story — the strange mys-tery drug itself, the quirks of London hospital design, and the very British climate, all of which com-bined and converged to make the frustrating mystery that is penicillin.

David Wilson, science correspondent of the BBC, has done a monumental job in dredging up everything there is to tell about the discovery, development, and final success that is penicillin. There's an intriguing picture of Fleming himself, his almost unbelievably primitive hospital and why he went no further once he had his miracle drug. Here, too, is a story of how a Rube Goldberg kind of production setup was finally needed and used — milk churns, clay vessels, library shelves — while Nazi air raids were shaking the whole area.

It's a fascinating tale with a wealth of important information for those in the medical and allied profes-sions who've learned to rely so heavily on penicillin and the antibiotics which followed it. I have myself written on the newer generations of semi-synthetic penicillins. In the course of this I interviewed many who on this side of the Atlantic were involved in the development of penicillin to the point where it could be produced in the quantities needed for the urgent World War II demands — and the American story is somewhat different from the British view of the picture, as Wilson presents it. However, it's the old tale of the blind men and the elephant — each one describ-ing only what he feels and coming away with an entirely different picture. But it's only with these differ-ent views that one can piece together the total reality. Rene Dubos, for example, is regarded by many as the spark that first deliberately sought for, developed, and then proved the efficiency of antibiotics with his Gram in 1932 and it is believed to have inspired the rediscovery of penicillin. But in any case, David Wilson here provided a superb detec-tive story of medicine and science. It's an important book and well worth reading!

Depreciation

In addition to the credit, there will be depreciation charges that are income tax deductible from gross prac-tice earnings. How much a dentist's income tax bill will be reduced this year will depend upon his tax bracket and his choice of depreciation methods.

If it is to his advantage to claim a very large deduc-tion in the year of purchase and use, he can shorten the useful life claimed, claim an additional 20 percent first-year deduction on items that qualify, and use the double-declining balance method of depreciation. At the other extreme, there may be no tax advantage in taking very large deductions in the first year of pur-chase. Then, deductions can be spread over a longer number of years, and a slow method of depreciation used. In between these extremes are many variations of choice of method that can be applied to an indi-vidual dentist's own situation.

Other Costs in Relation to Earnings

Besides repair costs, a good many less obvious costs of continuing to use aging assets may be ignored or not effectively analyzed. However, these costs are real and can be a hidden drain on earnings. Of course, for some assets the decision for replacement is easy. The old asset can clearly be either beyond repair, repair may be too costly, or be so obsolete in relation to newer and more efficient equipment that replacement is con-sidered a must.

The decision for replacing other assets often has to be analyzed carefully to come up with the most economically feasible answer for practice earnings.

New equipment and/or expansion should be expected to earn its keep and show a profit. But this may also need to be estimated on the basis of the less obvious costs of using old assets versus the expected gain from using new ones. Costs of using the aging assets may be substantial, even though it may not be possible to exactly estimate the amount. A look at an aging, run-down section of a city that has been neglected for years will give a dramatic illustration of this point. Along with this estimate of costs, there should also be the estimate of how much replacement and/or expan-sion will be expected to increase earnings.

Some operatories, equipment, office equipment, and furnishings for the practice may be fully depreciated, or have only a minimal amount of depreciation left for deductions that reduce the income tax bill. They may still be useful with certain repairs or refurbishing, but yet fall far short of favorable comparison with new assets used in more modern dental practices. The time when they definitely must be replaced may be un-certain, but it is likely to be in the very near future.

Repair costs of aging operatories and other equip-ment may be mounting. Repairs are fully deductible from practice gross income in the year paid. But, some other costs that are not so obvious will simply result in loss of earnings. If a dentist loses time because of repairs, this is a fairly obvious cost also. When equipment compares unfavorably with more modern dental offices, a loss of some patients could result. If repairs cause some patients to have to change their appointments to a later date, this can cause irritation and possible loss of patients.

Replacements of near obsolete office machines may be too costly, or be so obsolete in relation to newer and more efficient equipment that replacement is con-sidered a must.

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8 Ways to Get Cooperation from your Staff

If there are misunderstandings, lack of respect or poor communication between the dentist and his aides, things can go awry not only in office procedures but at the chair as well.

Misunderstandings are usually the result of poor communication. To keep the lines of communication open and clear between you and your aides, the following points can help you:

1. Establish the ground rules for assistance at the chair or for the reception desk at the onset. The duties of your assistant should be clear and understood even before her very first time at your side.

2. Be sure that the terminology used is the one you want used and not the one that your assistant may have learned at a previous job.

3. Keep your verbal instructions brief and uncomplicated. Covering too many details can lead to confusion.

4. When the day's work appears to depart from the normal routine, take some time before your first appointment to brief your assistant. If necessary, put your instructions in writing so that there can be no misunderstanding about your requirements.

5. Never conclude your discussions about certain needs from your aides without asking, "Are there any questions?" In fact, encourage questions, not only for clarification, but to make your staff feel that they are part of the "dental team" and not merely employees.

6. Timing is important. Don't saddle your assistant with extra tasks or additional details when she is already up to her elbows in work. Poor timing in cases of this sort breeds confusion and resentment.

7. Before you can expect your aides to understand your instructions you must be clear, in your own mind, just what it is you want of them.

8. Don't get stingy with compliments. All of us respond better when we feel we are performing satisfactorily and when we feel our efforts are appreciated.

Personal respect in the office between the dentist and his aides is important in eliminating any misunderstandings and establishing good performance. Respect that is earned by a professional attitude and accomplishment is more meaningful than routine respect between employer and employee.

Gingival tissue is usually not enough to cause noticeable damage from abrasion or frictional heat.

Where the margin is deeply subgingival, it may be necessary to hold the tissue away from the finishing bur with a flat-bladed plastic instrument or retraction cord. Some situations will require removal of the excess soft tissue.

Beveling accessible margins remote from the gingival

A 135° cavo-surface angle can be established on occlusal, buccal or lingual surfaces, using either the tip or the side of the conical end bur (fig. 13).

Finishing approximal margins

The long taper bur is suitable for finishing embrasure margins of box preparations for amalgam or cast gold restorations. The fine tip can be introduced where access is limited by the adjacent tooth, and (fig. 4A) illustrates the ease of finishing the approximal margin of an inlay cavity. The bur is held at an angle of 45° to the long axis of the tooth, to allow good visibility during the planing of the embrasure margin.

For inlay cavities, the margin is subsequently finished with the bur held vertically to eliminate any possible undercut. The adjacent tooth is not touched by the long taper bur, and thus damage is avoided.

The same bur is used to finish the approximal cervical margin at its junctions with the buccal and lingual cavity walls. In this situation, it is important not to allow the bur to abrade the variable wall and produce an undercut (fig. 4B). Other parts of the cervical margin should not be finished with this bur because it cuts more slowly and its tip has no support to prevent movement gingivally. The finer tip is also more likely to give an irregular margin.

The cutting speed and efficiency of the finishing burs

Although the finishing burs are best suited to the rotation speeds of ultra-speed air turbine handpieces, they can also be used at lower speeds, although with some loss of efficiency and positive control due to the greater pressures needed for cutting. To some extent, this reduced efficiency can be offset by scraping a diamond bur along the abrasive surfaces of the finishing bur to produce very fine longitudinal "scratch blades" (fig. 13). These enhance cutting efficiency without noticeable loss of the other characteristics.

Acknowledgements

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References

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A high speed method for finishing cavity margins

A method of obtaining consistently smooth and suitably shaped cavity margins for both amalgam and cast gold restorations has been described. It requires the use of three finishing burs of simple design which can be made of the chairside from standard end-cutting burs, using an air turbine handpiece and a diamond fissure bur. This method for finishing cavity margins has advantages over others because of its simplicity and the high standard of finish achieved.

by D. L. Baker, B.D.S., and Ivan Curson, M.D.S., F.D.S.*

A variety of clinical methods has been advocated and used to finish cavity margins. Each has disadvantages and the persistence of a wide choice of techniques suggests that no one method has distinct advantages over the others. Grieve (1968) investigated the roughness of cavity margins found that the best finish was achieved with tungsten-carbide, plain cut, fissure burs on the embrasure walls and recommended a gingival margin trimmer on the cervical margin. Allan (1968) found that embrasure margins finished with a chisel were comparable with those achieved using spiral plain cut fissure burs at high speed. Boyle and Knight (1970) compared embrasure cavity margins finished with burs and chisels.

The best finish was achieved using plain cut tungsten-carbide burs, on the side of the approximal box where the cutting blades rotated into the cavity. On the opposite wall, where the cutting blades rotated out of the cavity, the surface enamel prisms fractured and left a rough cavity margin. Subsequently, Boyle (1970, 1972, 1973) demonstrated with scanning electron microscopy that a smooth, bladeless tungsten-carbide bur in an air turbine handpiece produced a high quality finish on enamel margins. He stated that the tungsten-carbide 'stone' was the finest high-speed finishing tool so far developed.

In the present investigation, it was found, at an early stage, that tungsten-carbide burs for an air turbine handpiece could be ground smooth against a diamond bur and shaped in a variety of ways, quickly and simply at the chairside. Only three designs of bur were needed to finish cavity margins of either amalgam or gold inlay cavities with cavo-surface angles of approximately 90° or 135°.

Boyns (1973) assessed cervical margins achieved with a bur made to one of these designs. He found that the quality of margin achieved with this bur was superior to that achieved with newly-sharpened* Drs. Baker and Curson are with the Department of Conservative Dentistry, Royal Dental Hospital of London, School of Dental Surgery, Leicester Square, London WC2H 7J.

Cavo-Surface Angles Amalgam restorations

Ideally, cavities for this material require a 90° cavo-surface angle.

Cast gold restorations

In this situation, the cavo-surface angle of 135° was chosen for the following reasons:

1. It can be easily identified, to facilitate precise
Fig. 3: The conical end of the finishing bur (B) is used to produce a cavo-surface angle of 135° at the gingival margin. Finishing of the wax pattern and the casting.

(2) The conical end of the finishing bur is used to produce a cavo-surface angle of 135° at the gingival margin. Finishing of the wax pattern and the casting.

Fig. 4: A, the tip of the long taper bur (L) is used to finish a buccal embrasure margin (BEM) where access is limited by the close proximity of the adjacent tooth (AT). In this case a cavo-surface angle of 135° is produced; B, the tip of the long taper bur (L) is held as shown to finish the junction between the embrasure wall (EW) and the bevelled cervical margin (CM).

The tip of a tungsten-carbide end cutting bur (Jet 957) was modified to 45° (Fig. 2A). The conical end is used to convert a 90° cavo-surface angle to a 135° cavo-surface angle (Fig. 3). The bur is held against the 90° margin and used with a planing action to give the 135° cavo-surface angle. This bur is suitable for all the margins of cavities for cast gold restorations, with the exception of the embrasure margins. Here, access is restricted, and a different bur design is needed.

Long taper bur

This second design was also based on the Jet 957 end-cutting tungsten-carbide bur, and in this case the bur was modified to a straight-sided taper from the pointed tip to the shank (Fig. 2B). The fine tip of this long taper bur can be used to finish the buccal and lingual embrasure walls of approximal boxes with either a 90° or a 135° cavo-surface angle (Fig. 4A).

It is also used to finish the junction of the embrasure margins with the cervical margin (Fig. 4B).

Fig. 5: The flat end bur (F) can be used to finish a 90° cervical margin (CM) without touching the adjacent tooth (AT) diameter of one mm. It is important that the air turbine handpiece should run concentrically.

The end-cutting burs are run in the handpiece with cooling spray and their blades are ground away by holding them at right angles against the diamond bur. The resulting blanks are then modified to produce the different shapes.

Conical end bur

The blank is run against the diamond bur to give a 45° conical end (Fig. 6). Relatively deep scratches are produced by the diamond particles on the tungsten-carbide blank. Shallower scratches are left if a lighter load is used towards the end of the milling operation. The metal plating on the sides of the bur is also ground away to expose the abrasive surface beneath.

Long taper bur

This bur is produced using a similar technique (Fig. 7).

Flat end bur

This is simply a blank with a slightly rounded angle between the side and end (Fig. 8).

The abrasive action of the three finishing burs prepared in this way is due to the very fine tungsten-carbide particles exposed on the surfaces. These particles could be expected to produce scratches on the tooth, but they are very small relative to the scratches left by a diamond bur and are unlikely to be of any clinical importance (Fig. 9).

Using the Tungsten-Carbide Finishing Bur

General use of the finishing burrs

Plain cut spiral tungsten-carbide fissure burs hold normal to the tooth surface leave margins which are not improved by further finishing (Boyde and Knight, 1970). All other enamel walls can be finished with the burs described here. The ends and sides of any of them may be used to finish margins, the choice of bur depending on access and the cavo-surface angle required. In addition, small extensions of outline may be achieved.

The burs may be used to produce some internal features in cavity preparations. These include gingival, axial and incisal grooves, and axio-pulpal line angle bevels. In addition, the fine tip of the long