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"What higher aim can man attain,
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A PUBLICATION OF

The Ceylon University Dental Students Association

Edited by

Sivomani Seneviratne

UNIVERSITY OF CEYLON — FACULTY OF MEDICINE

JANUARY 1964

MAIDEN ISSUE 1964

COVER : STŪPA OF BĀRHŪT

(Early Indian Sculpture - Middle of the 2nd Century B. C.)

Unknown scene depicting the drawing out of a tooth of a man, by Apes with the assistance of an Elephant, accompanied by one playing a wind instrument, while still another Soothes the suffering patient.

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MIRROR & PROBE

(CEYLON DENTAL JOURNAL)

UNIVERSITY OF CEYLON — FACULTY OF MEDICINE

MAIDEN ISSUE **JANUARY 1964**

Editorial

FOR several years the Ceylon Dental Students Association has been urged by its keen and enthusiastic members, to assume a more directive interest in the development of dental education and to that end we have taken a notably forward step in bringing out this maiden issue of the "Mirror and Probe" The dawn of probably, a new era is anticipated in the wake of this venture of ours, as we attach considerable faith in the Dental Pofession to lend us a supporting hand in achieving this ambition.

No doubt it is a lamentable fact that no such thing called a journal existed in the past, and that ours should have to assume this unique place, in the annals of Dentistry in this country. No apologies are necessary as it is the stark truth. However, a glimpse at the brighter side of the question reveals much hope for at least a start has been made.

Every Dental Surgeon in full practice today realises the desirability of maintaining contact with the various educational institutions, as a definite source of aid in keeping with the advancement of the various phases of Dental practice. The confining character of the practice of Dentistry and its demands upon the time and attention of the young dental surgeon, tend to divert him, from his student day resolutions to keep up with the advances of the profession and he soon begins to loose step in the various lines of activity. It is not long, however before he realises the desirability and need of some sort of communication and it is this journal that may come to the rescue in offering him a source of contact, that will keep him refreshed as it were.

The salient purpose of the journal, need not be dealt with in length, since every member of the student body as well as the Profession, quite readily appreciate its usefulness. Here is a common ground, where student, teacher and Professional men alike could, for instance make known their views on subjects of common interest. We must bear in mind, that the ability to publish is not only confined to persons of academic bent, but also to all others, be it student or practitioner, who has something to contribute in however small a measure. Perhaps a brief clinical case, which in one's opinion is noteworthy; may be a rare thing, or may be not. Anyhow we should not discard the probability of someone else having the unusual interest in this apparantly unimportant case. Furthermore the student himself acquires a degree of mental agility by his efforts to sit down and write an article or report a clinical observation.

So let us get to the point without further ado and announce how glad we would be to invite all members of this Profession, as well as others, who are eager to give readily to the success of the journal, to do so now, unhesitatingly.

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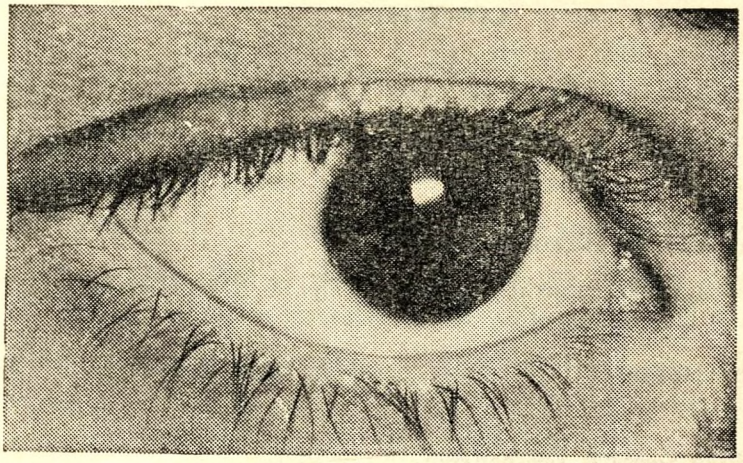

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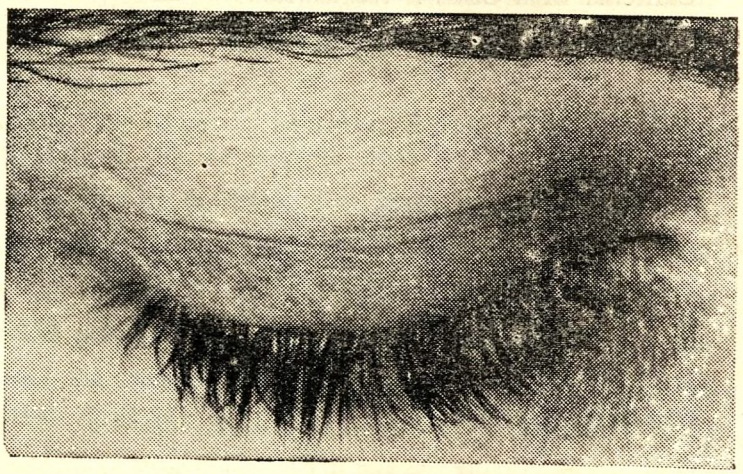

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The History and Socio-economic Aspects of the Problem of Periodontal Diseases.

by

S. B. DISSANAYAKE

Professor of Dental Surgery

From prehistoric times man appears to have suffered from pathological conditions involving the teeth. Carious lesions of the teeth have been clearly recognised from very early times but lesions of the supporting apparatus of the teeth leading to progressive loosening and losss of teeth seem to have been somewhat overlooked if not neglected until modern times. The insidious character of the disease and the relatively painless complications and chronic course of the disease which follows almost in a parallel line with the natural ageing process of human beings may account for the meagre attention given to lesions of the gums. The eventual loss of teeth may have been considered as part of the inevitable process of old age and it is also possible that with the short life span of primitive man total endentulousness was rare and there was no dramatic event in the progress of the disease to attract special attention.

Inspite of recent advances in Dental education even today the general attitude with regard to this disease is much the same as it was centuries ago. The vast majority of the earth's inhabitants regard this disease rather lightly However, the disease has been rccognised by medical men for quite a long time. Lesions of the gingivae and treatment procedures for them have been described in the Papyrus Ebers (3000 B.C.) of Egypt. There are records in Mesopotamia from Ur, in Assyrian and Babylonic cultures The Arabian physicians and the Chinese (2000 B C,) have left records concerning gingival lesions.

Hippocrates (460 - 372 B.C) has described lesions of the gums and the significance of calculi. Celcus appears to have investigated the causes leading to the loosening of the teeth. The recognition of gingival diseases can be traced through the middle ages in Europe and the names of Paulus of Aegina (17th century.) The Arabian physicians Rhazes and Avicenna, Johannes Mesue and the 16th century French physician Ambrose Pare, are associted with descriptions and treatment of gingival lesions. Terms such as "Epulis" "Parulis" are attributed to Paulus. The Arabs pointed out the significance of the occlusion and the role of calculus in diseases of the gingivae.

In modern times the father of the Dental profession Pierre Fauchard (1678-1761) emphasied the importance of a perfect oral toilet in the treatment of this disease. In the eighteenth century the great British Surgeon, John Hunter described conditions in which pus forms in the sockets. Towards the middle of the 19th

century the Frenchman Toirac and Riggs the American (1857) termed these conditions of the gums 'pyorrhea alveolaris'. The name of Riggs was subsequently used to describe the disease 'Riggs disease' perhaps because he designed a set of instruments for the removal of calculus

The year 1921 is significant in the evolution of modern Periodontology because of the introduction of this concept of the 'Paradentium' and the inauguration of the A. R. P. A. Arbeitsgemeinschaft fur Paradento seforschung. The International A. R. P. A was inaugurated in 1932.

The Concept of the 'Paradentium' takes into account the entire supporting apparatus and the teeth of any given jaw as a unit, 'Organon dentale'. Structually as well as functionally. Thus providing the basis for describing the pathological lesions of these tissues as a single disease entity (Weski's 'paradentose' 1921.) Originally the Paradentium included the Periodontal membrane (periodentium proper), the alveolar bone and the gingivae. The cementum was added to this later and the name has been altered later to 'paradontium' and a number of pathological conditions involving the marginal 'paradontium' as distinct from the 'apical' paradontium called 'paradentopathia' and this brand of dentistry dealing with this condition was called 'paradontology'. In the U. S. A. the terms 'Periodontium' and 'Periodontology' gained currency for the supporting structures and the speciality respectively.

The concept of the Periodontium taken as a complete functional unit for individual teeth can be enlarged to include all the teeth from third molar to third molar of any given jaw. There is definitely a certain functional community of all the structures concerned. This manifests itself in the structure of the alveolar bone and the arrangement of the collagen bundles in the alveolar bone as well as the interpapillary ligament (Melcher 1962.) The development of the masticatory apparatus provides additional material in support of this concept.

Certain morbid conditions involving the component parts of the Periodontium tend to involve the whole of it progressively. The Anatomical features of Periodontium are of special interest to the understanding of Periodontal diseases. For example when a tooth erupts a sulcus is formed around it where the gingivae meets the enamel. From the floor of this sulcus - 'physiological pocket' the gingival epithelium continues on the surface on the tooth and is termed the 'epithelial attachment. In young persons it is said to be 3-4 layers of cells thick but in older persons it increases in thickness to about 10-12 layers. The epithelial attachment has been the subject of a great deal deal of controversy. Orban is one of the chief advocates of the theory that there is an organic connection between the surface of the tooth and the epithelial layers. But Waerhaug is of the opinion that there is only physical adhesion between the enamel and the epithelium Recent research with the electron microscope has provided much material which appear to support the theory of physical adhesion. A system of subepithelial collagen fibres extending from third molar to third molar keep the gingivae firmly attached both to the teeth and the alveolar process In the alveolar process itself there is a constant remodelling process going on in response to the stresses and strains to which the teeth are subject to, and transmitted into the alveolar bone via the collagenous fibres of the

periodontal membrane which are continous with the Sharpey's fibres of bone as well the vertical fibres of the cementum.

The Periodontium, it has already been pointed out buffers the mechanical pressure from mastication partly by virtue of its elasticity and partly because of its adaptability through remodelling. This same feature makes it possible for teeth within limits to alter their positions in all directions with in the requirements of normal function or during adaptation in abnormal situations. The gingivae protect the underlying connective tissue structures of the periodontium from external injuries and provides an effective seal between the epithelium and the enamel.

The significance of this is the mutual dependence of the 'health' of the periodontium and the positions of teeth in the normal dental arch. Thus malocclusion becomes an important factor in the production of periodontal diseases.

The Oral Cavity has important self cleansing properties. This is of great importance in view of the fact that the Oral Cavity is a major portal of entry for Organisms into the body. Of particular interest to us is the self cleansing ability of the 'physiological pocket' which plays a significant role in the maintenence of a healthy periodontium.

The transformation of the 'physiological pocket' into a 'pathological pocket' where no self cleansing action is possible has engaged the attention of Periodontologists More than one aetiological factor appears to be concerned in the process. Inflammatory processes of the marginal periodontium (or gingivae), and other factors such as a destruction of the collagenous fibres at their insertion into alveolar bone by loss of bone at this point which leads to a deepening the 'pocket' by the, migration of the 'epithelial attachment' apically. This process is further assisted in the pocket by micro organisms of the Schultz-Haudt Group which are able to destroy collagen fibres

Although the aetiological factors fall into two distinct groups, General and Local or endogenous and exogenous they tend to co-exist with one another, somewhat confusing the aetiological picture. For example an endogenous or general factor may have a predisposing effect and co-exist with an exogenous local exciting factor. Thus in describing the aetiology of Periodontal diseases Norberg in 1954 used the term 'Multicausal'. It is also interesting to note that the same local factor may produce an altogether different clinical picture depending on the general circumstances.

The emergence ot Oral Hygiene as the most important single local factor in recent investigations has not simplified the problem of periodontal diseases as one would like to think because the maintenence of Oral Hygiene is so much a matter of personal habit and has to be acquired by the individual from already existing social standards of personal hygiene which in turn depend on the economic status of the individual or group of individuals in society. Thus no amount or instruction in Oral Hygiene will be of any use if the persons instructed cannot afford the elementary material requirements necessary for the proper cleansing of teeth. It is a common experience in Periodontal work in Ceylon that elaborate surgical procedures for the removal of Calculus or gingival pockets do not produce the expected results because the patients after care is so inadequato or totally lacking due to conditions,

in the vast majority of cases beyond the patients control Periodontal clinics if established in Ceylon would attract large numbers of patients seeking cures for bleeding gums, wasting gums, loose teeth or those who merely want their teeth cleaned because they do not 'clean' their teeth at home.

The Prelimininary Report on the W.H.O. Periodontal Survey in Ceylon (October-December 1960) by Waerhaug has the following conclusions on the effect of Oral Hygiene. The severity of periodontal disease was found to increase with increasing amounts of calculus and bacterial plaque in a close to linear fashion. Bacterial plaque and calculus were found to be the most dominating etiologic factors, and other factors had as a rule much less effect in cases where the oral hygiene was good.

Comparison of the effect of other conditions should be done only within groups of other conditions should be done only within groups of similar oral hygiene.

On the effect of income the same report contains the following conclusion. 'There is less periodontal dssease in people belonging to the top income group than in people of moderate and poor income. However, there are many irregularities. Better oral hygiene in people with good income and education seems to be the main reason for the difference.

In my opinion all public health or preventive measures which seek to achieve anything positive through education alone or even combined with clinical assistance are bound to end in failure in countries where 90% of the population is economically incapable of practicing what they are taught or carrying out the instructions given after treatment

Therefore it is obvious that school dentists and Oral Hygienists can only benefit small sections of the population. Everybody knows that many persons in Ceylon cannot afford tooth brushes and tooth pastes at all Others can afford only one or two tooth brushes a year, while many cannot afford tooth paste at all. The most 'popular' dentifrices are also the cheapest and not the best. The criterion here seems to be the cost and not the quality. In fact most so called popular tooth powders may have harmful effects on the gingivae. The user is of course fooled by the easily obtained cosmetic benefits of the dentifrice.

Would the state produce a cheap tooth brush and tooth paste within the buying capacity of its poorest citizen or or supply them free to every school child.

In my view such a simple but radical step is a challenge to all those who plan public health measures to combat Periodontal diseases in countries like Ceylon, Better Dental education and wider clinical facilities (in the form of Dental Hospital services, School Dental services and Oral Hygienists) in themselves could only skim the surface of the problem which is undoubtedly the biggest Dental problem in Ceylon However this does not imply that these methods have no value The Socio-Economic aspect of the problem will be the main stumbling block to all workers in this field Public Health Periodontology in Ceylon will continue to be a problem so long as the most elementary requirements for maintaining oral hygiene remain luxuries which only the well to do can afford.

Conventional public health measures applied to Periodontology can have their full impact and meaning only where there is economic prosperity and living standards are high In Ceylon the Socio-Economic aspect of Periodontal disease is a challenge to Public Health authorities. Can public health thinking change sufficiently to regard such articles as tooth brushes and dentifrices a public health necessity like public pipe borne water or sewage disposal systems for the health of the nation ?

Examination Humour

by
DR. P.A P. JOSEPH, M.B.B.S. (Ceylon)
F.R C S. (Eng.)

Even in these days of Space Flights, Atomic Explosions and Cabinet Crises when one would expect the Human Race to be shock proof, examinations remain a nerve racking ordeal.

Viewed in prospect, examinations cause parched mouths, leaden tongues and tremulous lips (contrast Pavlov's salivating dogs). In retrospect, however, examinations have lost much of this alarm reaction, they have been robbed of their terror and may even possess a streak of Humour.

In an article such as this, it is difficult to portray the intimate characters of the participants, to capture the tense drama of the Exam Hall which contributes so much to the Humour of the situation. For this I must crave the indulgance of my reader. It is like trying to capture the fragrance when the flower is gone.

An Examiner with a razor sharp mind *(Hereafter referred to as E)* was facing a student, also with a razor sharp mind (*Hereafter referred to as S*) across a table laid with a number of dissected specimens.

E.— (In a mood of carefree abandon) Picking up a specimen and tossing it to S "Here! what do you make of this?" He inquires.

S — Catching the specimen gives it one fleeting glance and tosses it back to E and calls out "Jejunum Sir!" while the specimen is still in midair.

E.— (A bit shaken) "Why do you say its Jejunum?',

S.— "Because, Sir, it is Jejunum and nothing but Jejunum."

E.— "What if *I* say it is ileum"

S.— "Ah! if *YOU* say so, Sir, I have to accept it"

E.— "So then it is ileum is it?"

S.— (Stoutly) "At no stage did I ever say so',
(At this stage there is some confusion as to who is E and who is S)

E.— (In desperation) "You are a tough nut"

The verdict was true—S has since attained the dizzy heights of Political Fame.

Now shift the scene to the neighbouring Block—The Department of Physiology. "The subject for discussion" says the Examiner to the awe struck student, in a slow measured tone "digestion."

The student swallows hand demonstrating that deglutition is after all a part of digestion.

"Tell me" says the examiner in a most patronising tone "What did you eat this morning?"

Visions of Carbohydrates, Fats, Proteins, Minerals float across the mind of the student.

Here's trouble indeed! So he replies a little untruthfully "Nothing Sir"

"Well" Says the Examiner "What did you drink today?" Worse trouble - Visions of Xanthines Purines.

"Nothing Sir except a sip of Water"

"Very well," says the Examiner completely unperturbed "Let us then get on to the Physiology of starvation."

It is not always the Examiner who gets the edge on the student. Witness the following Viva in a Surgical Oral.

"What," asks the Examiner, "Do you know of the Parathyroid glands?"

The student without a moments hesitation answers "The Parahyroids are four in number, Oval, small Bodies, Brownish red in colour and measure 6 mm. in length and 3-4 mm. in breadth .. "

The surgeon interrupts this torrential eloquence and in an attempt to un-nerve the candidate puts the question "And what may I inquire is the weight of the Parathyroid?" The student without apause "Do you want the weight with or without the capsule Sir?"

A diagnosis is nothing but a shrewd guess. The irony of the situation is that while the odds are against the experienced Examiner getting the right answer the student is expected to make the correct diagnosis every time. On this inspired guess, the student's fate is sealed.—"Sec itur ad Astra"

"Thus do you reach to the stars"

A woman with an abdominal lump on whom a provisional diagnosis of an Ovarian Cyst was made was brought as a long case for the Surgical Practicals. The Registrar pleaded with his Chief, a well known and venerated Surgeon that this might confuse the Students. "Good Lord Man" replied the latter. "They have no business to be confused." The case proved a diagnostic pitfall and one in which many a candidate met his waterloo.

Duly the case came up for operation, turning to his rapt audience the Surgeon dealt severely with those theoretical Johnnies who entertained such fantastic diagnoses as abscess, mysenteric cyst etc. "Only five," he concluded. "Could you imagine it only five, ever thought of the possibility of an Ovarian Cyst." He paused to let the full impact of his words sink home and then as the knife plunged into the lump in the pin-drop silence-creamy yellow pus oozed out—"Gosh" remarked the Surgeon "Had I only known I would have *also* ploughed the five who said Ovarian Cyst."

The confusion of thought that springs from rigid departmentalisation is revealed in the following Medical Viva :-

"What are the complications of diabetes"? was a question posed to one candidate. "Diabetic Coma" was the answer followed by a prolonged pause. The Examiner shifted his position, adjusted his spectacles and waited, but there was no reply "What about carbuncles?" He put in helpfully. "That Sir," said the Student in astonishment, "Is a surgical complication."

A famous Professor in Eye Surgery rather short of hearing posed this question to a student.

"What types of Iritis do you know of"?
"Parenchymatous" said the student.

"Yes" nodded the Examiner.

"Parenchymatous" shouted the student a little louder.

"That's two now-what else"? continued the Examiner.

The Student gave up and shook his head in resignation.

"You have given me two but failed to mention the commonest-Parenchymatous" said the Examiner.

The Writer was once handed a bottled specimen of an extensive cancer of the Laryngo Pharynx with a secondary deposit in the regional lymph node by a world famed Surgeon. Identification was easy.

"And what my boy! would you say is the treatment of a patient with this lesion."

"Radio Therapy, Sir, to both the primary and the affected lymph nodes."

"Really," said the Examiner in surprise "and are the lymph nodes radio sensitive?"

"No" I replied.

"Then, why my boy, did you give such a stupid answer"?

"Because, Sir, in my opinion treatment of this case is purely palliative."

"What would you say if this very patient is alive now after a Laryngo-Pharyngo Oesophyageotomy and combined block dissection of the glands of the neck?"

I said nothing (following the golden rule when you have nothing to say, say nothing) "and what would you say if I tell you that she has since got married my boy"? Here at last was my chance.

"That, Sir, is because she could not say "No" after the operation."

The Surgeon gave me a piercing look. She somehow managed to say, "Yes my boy"

To the chilly foreboding atmosphere of the Exam Hall humour brings a ray of sunshine on the irritable Examiners whose patience is at a premium, and on anxious students filled with nervous apprehension, it often acts like a charm.

SALES TECHNIQUE: "Now gentleman" said the President of the Hungry Baby Bottle Co., "We have 50,000 of these feeding bottles in stock and we expect you to go and create a demand.

Criticism of a Class II Preparation Commonly Seen

by
L. TILLEKERATNE, L. D. S. (Cey.)
D. D. S. (Pennsylvania)

It is a common occurrence in the Clinic, especially at a time when a new batch of students begin their clinical training to draw my attention to a type of Class II restoration in certain cases which is quite different from what they have been instructed to prepare.

The Class II preparation in question consists of a proximal dovetail preparation involving the interproximal caries, (FIG. IA)

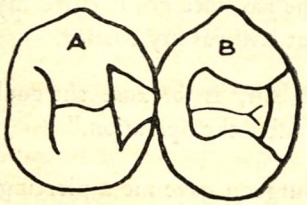

FIG. I

In order to obtain retention and accetuatne the dove tail the labial and lingual walls are converged and are placed interproximally. The depth depending on the decay.

Althoug the apparent advantages of this preparation are that less time need be spent on it and that minimum of tooth substance is removed, (two factors which greatly appeal to students as their guiding principles in cavity preparation) it does not confirm to the principles of cavity preparation. It also cannot be considered a satisfactory restoration because of decay arising at the margins.

Let us consider how the principles of cavity preparation apply to this preparation. Regarding the outline form, apart from the removal of undermined caries the cavity margins should be extended into areas of enamel which are least susceptible to caries, i. e., extension for prevention. In this preparation there is little possibility of extension on the occlusal surface as the distal wall may encroach on the pulp. The extention for prevention is the weakest procedure in this preparation. According to this principle the labial and lingual margins should be extended into axial angles of the tooth (Fig. II x and y).

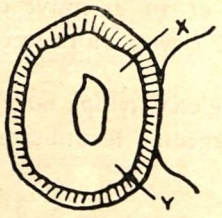

FIG. II

But in this preparation the lingual and labial margins do not extend into selfcleansing areas and are actually placed in inter-

proximal areas where food stagnation may have already initiated the decay. Any attempt at placing the margins at the axial angles of the tooth will mean parallel or diverging lingual and labial walls and loss of retention. Once the restoration is completed since the margins are inaccessible they cannot be polished and also cannot be cleaned by the brush or the normal action of the tongue and favour food stagnation.

Another reason why caries occurs at the margins of such a restoration is because of the crumbling down of the enamel margins both labially and lingually. It is quite obvious that since the direction of the enamel rods will be radially, that the more converging the walls are made to obtain retention, the greater will be the number of enamel rods left unsupported and therefore left to crumble down and cause marginal caries.

In the case of the molars this type ot preparation has the further disadvantage that the broadest end of the dovetail will be very dangerously close to the pulp horns and be easily exposed during the preparation. Also these cavities have to be kept very small and thus there is scarely any room for a cement lining and manipulation of instruments inside the cavity especially during the condensation of the amalgam. The adaptation of the matrix band itself will loosen some ofthe enamel rods.

If the normal Class II is prepared with the proximal box and the occlusal dovetail all these disadvantages do not occur. The outline form includes the fissures and the margins on the occlusal surface wall ends around the base of the cusps The lingual and labial walls are extended to the axial angles and the flare will be in the direction of the enamel rods (FIG IB)

These areas are visible and the margins ot the restoration can be polished on completion of the restoration. Due to the flare of the labial and lingual walls there is sufficient room to allow for manipulation of instruments and placing of a good cement lining. In the case of premolars the occlusal dovetail is placed on the pit distal tothe box preparation and in the case of the molars made to include the all the fissures or only the mid fossa,

Considering all the above it is quite apparent that since the purpose of the cavity preparation is to prevent further caries and also to provide a long lasting restoration there is no choice but to prepare the cavity according to the accepted methods of Class II preparation.

LOGICAL

Wife : "How helpless you men are : What would you do if there were no women to sew on your buttons for you?"

Husband : "Has it occured to you, my dear, that if there were no women that we men would need no buttons.

Thoughts on Planned Extractions

A. SAVUNDRANAYAGAM, B.D.S. (Cey.)
F.D.S.R.C.S. (Edin)

Through the years, extraction of teeth has emerged, as the choicest profit making concern, among dentists everywhere.

Perhaps the lucrativeness of such a practice has been instrumental for the neglect in their main functions as guardians of the oral health of our nation. The popularly held notion among the laity, that dentistry is solely concerned in the extraction of teeth, is a view to which even some members of our profession have, not only subscribed, but to which they have fallen a prey themselves. Indeed, therefore, it is no surprise that the public have come to accept this fateful idea, and what is worse, inspite of it they submit themselves to such malpractice.

A review of this subject, needless to say, is of fundamental importance to many a student of dentistry, who not infrequently fail to look on the question of extractions in its correct perspective. When a decision, regarding the extraction of teeth has got to be made, often, its relation to treatment planning is ignored. Although one is able to get away with such a callous attitude, on occasion a major pitfall may be encountered, from which situation it will be too late now to turn back. The indifference, in, respect of this, that we notice among students especially - others not being exempt from it - has been due to the harbouring of certain strong misconceptions about extractions. Many teachers are, hence faced with the difficult task of first having to shake off these preconceived beliefs. It is with the fervant hope for a better understanding of the problem that I attempt to familiarise the reader with a few observations.

To begin with, extraction of teeth is a mutilating procedure and is never treatment by itself. Extraction belongs to a field of dental treatment, which is planned and effected with the purpose of achieving a desired result. It is only with an objective in mind that we could justify our decision to remove teeth Of course as common knowledge has it, teeth are at times sacrificed very unjudiciously. A patient, who for instance reports to a dentist with agonising tooth ache, often has the tooth extracted merely to alleviate the symptom, after which both dentist and patient rest content It should occur to us that this treatment is symptomatic in nature very much like what the family physician prescribes to his patients by way of antipyretic drugs in cases of undiagnosed fever. When ever there is dental pain, to the unwary this invariably spells doom to teeth. So, in their opinion extraction is the only means of salvation, and they do not pause to consider any other line of treatment Another case in point is that of grossly carious teeth, which appear so extensively involved that only elaborate conservative procedures could prevent their condemnation to extraction. A little more

time devoted at the chairside, to history taking and clinical examination will soon make it apparent to us, that a great many irreparable carious lesions are still capable of some restoration. The possibility of conserving badly broken teeth has been developed immensely in recent times, which of necessity would demand a high degree of skill and experience. Thus errors of judgement, that stem from a lack of sufficent training and practice in operative procedures, have often been the cause of these damaging extractions. It is not difficult, therefore, to construe that there have been many unnecessary extractions perpetrated in the labelling of a tooth as being "beyond repair." The actual operation of removal of teeth is said to be of not much significance in the final analysis, whereas the preliminaries to arriving at a decision to do so, are certainly of importance and can be wrought with difficulty. Today the introduction of ancillary personnel into dentistry, in the like of dental nurses, to whom the duties of extraction and filling of deciduous teeth have been relegated, in it-self suggests that the dentist has a more responsible role to perform in formulating a treatment plan We must realise that tooth extraction should be incorporated into a treatment plan, except of course in rather special circumstances where extraction is inevitable; this being the only possible course to relieve a suffering patient What then is the purpose of extraction? Before attempting any of them it would be advisable to pose a few questions. Is this extraction really necessary.? Probably in many cases, apart from a clear indication to do so, it has become urgent now, no other treatment being possible. This results from either negligence on the part of the patient or as more often than not, due to a failure of the dentist to forsee such and event well in time, In this way it would not only be possible to avoid unjustifiable extractions, but also preserve the vitality of savable teeth. What are the indications for extractions.? Is extraction only restricted to carious and badly infected teeth ?. If we look further there would be more indications than one. Notwithstanding this principle, teeth must never be sacrificed unless there is a sound reason for doing so.

Removal of teeth is carried out in numerous situations other than the straight forward cases as in teeth with gross apical sepsis, following involment of the pulp, or in chronic granuloma formation. Whatever the cause, one must be aware that a break in the continuity of the dental arch is a serious drawback to the dentition as a whole. The teeth and the supporting structures should be conceived as a balanced unit, which together with the Temporomandibular joint and the muscles concerned in mastication comprise an integrated apparatus forming the stamatognathic entity. Loss of teeth, therefore has its adverse effects on all three. At times loss of a single tooth in one jaw can cause a predisposition to periodontal disease in most of the other teeth. They begin to drift or rotate and encroach on the space thus created, and even produce over eruption of teeth in the opposing arch. This drifting is liable to be followed by loss of contact points a complication that again predisposes to periodontal disease through food impaction. Where the pulp is severely affected as in pulpits, root-canal therapy is possible. This is done so as to maintain or restore to a healthy condition the periapical tissues without any extractions. Through endodontic treatment the anterior teeth have been saved many a time. This is practicable

because they possess single roots with negotiable root canals. Today with the advent of antibiotics, the problem of dealing with multi-rooted teeth, has been reasonably tackled. Therefore, endodontia could probably (as it has been successfuly carried out in certain cases) be extended to the posterior teeth as well The contra-indications for endodontia may be strong enough to warrant extractions, particularly for instance, in patients suffering from general debilitating diseases and cardio-vascular diseases. Whether to extract or not, has got to be weighed in the light of the pathological changes in the pulp and periapical tissues as well as the general health of the patient. The case must be considered on its own merits For example in a patient suffering from iritis, where a pulpless tooth issuspect, the loss of the tooth is better than risking the loss of vision.

The removal of mandibular 3rd molars has been a tricky business for many dentists. There are some who advocate the removal of all four 3rd molars at the early age of 17 years. This age is preferred as the teeth are still in the formative stage with their roots one third formed, and surrounded by a fibrous follicle. The presence of a wide area of soft tissue makes removal less complicated, with only a crown to extricate, and hardly any roots to speak of. A point in favour of this prophylactic measure is the possible elimination of impaction later in life, and its associated complications, should the patient prove a bad surgical risk. Others prefer to delay extraction or not extract at all, but elect to do so only when they cause endless bother and pain to the patient. Pericoronitis of an acute type is a condition that repeatedly affects this area. When the attack becomes too frequent immediate extraction is justified. The possible development of a dentigerous cyst in relation to these teeth is not by any means rare, and therefore early removal would obviate cystic changes developing in an area that shows a prediliction for adamantinoma. P thologists are inclined to believe that parts of cyst linings possess neoplastic potentialities, for which they show concern. It is also suggested by them that an adamantinoma could masquerade as a harmless dentigerous cyst. In England, premature extraction of 3rd molars is done when the radiological picture shows the slightest inkling of radiolucency around the crown Making allowance for the usual radiolucency due to the follicle, any widening of this area is treated as having assumed cystic change, and the tooth is extracted.

During surgery of the mouth, teeth may be removed in a radical way. Treatment of dentigerous cysts by enucleation may at times necessitate extractions of healthy teeth, which show no caries at all, in order to facilitate primary closure of the wound and ensure rapid healing. For the sake of the latter, and especially with a view to preserving a well formed alveolar ridge, more than one tooth may have to be lost at a time. The commonly occuring fibrous epulis, for example, should be operated on, bearing in mind that recurrences are very frequent if the adjacent healthy teeth are not extracted simultaneously. At certain times one may have to be more radical sparing only a few teeth. The tooth in the line of fracture is a vexing problem which we are faced with on occasion. The risk of a fulminating osteomyelitis supervening, due to the compound nature of a mandibular fracture, will force one's hand to early extraction of these teeth. The only noteworthy exception would be where an unerupted and impacted 3rd molar is in

question. Here the fracture is not compound intraorally, and therefore extraction must be avoided at all costs. But should the fracture be compound in the case of a fully erupted 3rd molar, then the advantages of retaining this tooth, as a definite aid to immobilisation and fixation overwhelmingly outweigh the disadvantages. A decision to extract at this stage would prove disastrous, with no possible control of the posterior jaw fragment Subsequently it may be safely extracted, so as to prevent the spread of infection into bone, once callus formation has commenced.

In the treatment of periodontal diseases, removal of teeth has its rightful place although this may sound rather irrational. In some cases the loss of a tooth in a periodontally involved jaw, has resulted in damage to supporting structures of the adjacent teeth. As is often the case teeth have to be sacrificed in turn with a further breakdown of the periodontal tissues. On the other hand the removal of a few choosen teeth from an overcrowded dental arch, especially where malposed and supernumerary teeth are concerned, a definite improvement in the periodontal status of the invidual has been noticed It is therefore evident that extractions in such cases should be carefully planned and executed, so that the rest of the teeth would not suffer as a result Where traumatic occlusion prevails the problem is complex, not only because the periodontal tissues are affected but also the temporomandibular joint, bone and masticatory mascles are similarly involved In such an event, tooth extractions could possibly complicate matters further, with derangement of occlusion These cases should be investigated by means of study models of the jaws mounted on adjustable articulators, in order to ascertain the degree to which the temporomandibular joint is at fault in causing loosening of teeth. Clinical examination to determine the extent of pocket formation, state of oral hygiene and calculus formation, has got to be supplemented by other evidence, such as, whole mouth X-ray examination, before the question of extraction is finalized. Experience has taught us that removal of loose teeth of this nature will inevitably hasten damage to the periodontal tissues of the remaining teeth and their eventual loss, if, at the same time, the other causative factors of traumatic occlusion are not eliminated. Sometimes correcting a few faults such as the reduction of steep cuspal planes by means of selective grinding of teeth have improved the condition, by minimising the horizontal stresses to them and thereby restoring normal health to the periodontal structures. This method of producing balanced occlusion has brought about positive results. On occasion it has been possible to avoid any unnecessary extractions which would otherwise easily spark off a vicious cycle by aggravating the existing aetiological factors· All this is based on the current concept that periodontal disease is the clinical manifestation of trauma to the entire stomatognathic system, where not only is the periodontium affected, but also the bone, muscles of mastication and the temporomandibular joint. A quantitative measure of the degree of periodontal damage is not in proportion to the local aetiological factors, but on the contrary could be of a magitude totally unrelated to the local factors· Where there is severe alveolar bone destruction, notably in cases of periodontosis, the question of extraction has got to be entertained early in the treatment plan. Age factor alone could be the deciding one, where severe resorption of bone with pocket formation is evident. Especially in younger individuals,

who show rapid alveolar loss within a relatively short period, a total clearance may be strongly indicated, in order to stop further havoc to the alveolus. At this stage rendering the patient edentulus, would not only arrest damage to alveolar bone, but also retain sufficient alveolar ridge surface to make possible the wearing of satisfactory dentures. It is an accepted fact that alveolar bone resorption is on the high side in periodontal patients which continues to take place at a faster rate after the removal of teeth. Attempting to carry out prolonged periodontal treatment, in the hope of effecting a permanent cure, would only prove hopeless. It merely prolongs the period of bone destruction which is a sign of danger for it proceeds unnoticed to the clinician. Everthing else having being unsuccessful a final resort to extraction is made with no useful result at all, for now one is left with a patient who has the misfortune of being unable to wear dentures. The futility of having tried to conserve the teeth is clearly revealed at this stage by the dentist being encumbered with the impossible task of restoring function once more. Perhaps, the dentist should realise that his duties must extend beyond the confines of tooth extraction into the realm of maintenance of functional efficiency of masticatory apparatus. This also suggests to us that the timing of extraction is something to reckon with in the handling of the periodontal patient.

Conversely, the treatment of temporomandibular disorders, may be carried out through the medium of extractions. For example, habitual malocclusion that is caused by a premature contact of teeth, is a common occurence during eruption of the 3rd molars, especially where the opposing molar is missing. Here as a result of the premature contact between the cusps of the over erupted tilted 3rd molar and that of the opposing 2nd molar, the mandible is thrown into a bite of convenience, during which time the joint is deranged. The extraction of the offending 3rd molar is the treatment indicated. Nevertheless it is essential that a bite analysis is done, before extraction is decided on. This would involve the taking of impressions from which study models are cast. The jaw relationship will have to be measured and the models transferred to an anatomical articulator, and the premature contact be established before extraction is done.

In Prosthetic work, such as in the planning of partial dentures, a careful assessment of the existing teeth is necessary especially when it is anticipated that clapsing or use of occlusal rests would be required. Abutment teeth, therefore should show a certain amount of periodontal tolerance to the lateral strees of dentures. If a doubt should arise about this, the tooth in question must be removed, and another design be adopted, with further modifications if necessary. It is absolutely purposeless inserting partial dentures in any mouth, that have a few standing teeth without initially studying the occlusion and the health of the existing teeth. Such a denture service does negate the very principles which underline their construction Denture design is based on a thorough knowledge of the prevailing conditions in the mouth. Partial dentures should not only replace lost teeth, but also preserve the health of the existing teeth by the redistribution of stresses and by minimising any embarrassment to teeth that would result from occlusal disharmony. Single standing teeth present problems, at times. For instance where only a single posterior molar exists and the others have

to be replaced by partial dentures, this tooth could be a great asset as it enables the saddle of the denture to be tooth bounded. If this is to be extracted, we are then left with a long free and saddle that is very difficult to retain. On the other hand, if this tooth is tilted in position producing premature contact with the upper jaw, its extraction may be necessary, inorder to establish balanced occlusion. Occasionally a lower molar may impinge on the tuberosity, rendering the placement of an upper denture impossible without resort to an increase in the vertical dimension. If jaw relationship is of special importance in that particular case requiring no further increase, the extraction of the molar is indicated, unless the surgically reduction of the tuberosity is preferred The latter may be necessary in case the molar is indispensable for the retention of the plate. A similar problem arises in the process of model surveyoring prior to partial denture construction, where a single tooth might exhibit an abnormal degree of undercut area. The determination of a suitable survey line on the remaining teeth could be difficult to obtain due to this one and therefore a decision to extract this tooth would be helpful if adequate clasping is what one seeks. In certain cases total extractions and full dentures have shown better results while partial dentures have proved to be more a nuisance to the patient with hardly any improvement in functional efficiency. It must be remembered that extracting all teeth and giving a full denture to a patient who, to all appearances would seem to require only partial dentures, is not a merciless act by any means. Considering the other factore that have to be satisfied in partial denture work, one may be perfectly justified in deciding to clear the mouth for full dentures. Here one could do a greater service to the patient by way of full dentures than unnecessarily subjecting him to a trying experience. There is the question of making partial dentures in a case of Kennedy's Class IV on the upper and Class I with a bilateral free end saddles on the lower jaw. We are aware that this is the most difficult type to construct owing to the innumerable technical and retentive problems encountered. In such an event it is preferable to do total clearance, as full dentures would be successful at any rate. It is an important fact to bear in mind that a unsatisfied and disgusted denture patient is a greater menace to the dentist, as the patient may not tolerate the wearing of full dentures when the time comes for it. Extractions should be looked at from a constructive angle in denture patients. The removal of one tooth or more could be of practical value especially when it could make a differance between success and failure.

Where children are concerned particularly during the deciduous and mixed dentition periods, extractions must be taboo in every sense of the word, with only rare exceptions. Deciduous molars, should always be saved from the irresistable eagerness to rid the child's mouth of chronic infection, until the sixth year molars have fully erupted and have come into occlusion. Not only is the 1st permanent molar the key to occlusion, but also it establishes the required vertical dimension and thus prevent further damage to the anterior teeth. The extraction of teeth to relieve crowding and irregularity in the anterior segment, is the most drastic of all orthodontic treatment, being irreversible unlike in appliance therapy, which may unfortunately be followed by a return of teeth to their original positions. Extractions therefore should not be done with-

out a rational basis and an attempt to visualise the course of events after the removal of teeth. The scientific evidence justifying extraction in the orthodontic patient may be summerised as follows :-

(a) Growth of the basal bone of the jaws does not depend on the presence of the teeth although alveolar growth does.

(b) The areas of crowding are anterior to the first permanent molar and growth of the jaws after eruption of the anterior teeth takes place distal to the permanent first molar. Growth in the anterior would therefore appear to be unaffected by extractions at that site.

(c) Cephalometric radiography has shown that the effects of orthodontic forces are limited to the teeth and alveolar bone with no influenee on basal bone.

(d) The mechanical effect on tooth position, of removal appliances such as expansion plates is mainly a tipping or tilting movement. This means that while the crowns are spacedout, the roots are not and may be tilted inwards thereby increasing the crowding.

(e) No amount of function will cause the enlargement of an organ beyond its predetermined genetic maximum.

In Orthodontic treatment, the problem of incisor crowding could be corrected by the procedure known as 'Serial extraction', provided of course the arch relationship is that of Angle's Class I. This method of extraction has been recorded in the literature over a century ago, being first described by Fox in 1803. In this method, one commences to extract the deciduous canines, usually from the upper jaw. It is advisable to delay extraction in the lower arch, particularly in children with excessive overbite, because there is the danger of a lingual collapse of the lower incisors. Following up clearly to this the deciduous 1st molars are next extracted, when the permanent canines can be clearly palpated on the labial side, in order to accomodate the eruption of the 1st premolars. And where over half the roots of the 1st deciduous molars are resorbed it encourages the early eruption of the 1st premolar. Finally the 1st premolar is removed when the canine is on the point of erupting clinically and in a correct position to move into the premolar gap. This process may be complete in two years, whilst in the slowly developing child it may have to be spread over even four years.

Apart from this, teeth may be extracted for other reasons, as in the treatment of Angle's Class II and Class III malocclusions. The extraction of upper 1st premolar, is sometimes done for treating a Class II division I malocclusion especially where there is considerable overjet, followed by applicance therapy to reduce the overjet further by retracting the canines. It is necessary to stress here the important part

other forms of therapy assume in Orthodontic treatment, in addition to treatment by extractions. The latter alone will not be effective enough, unless appliance therapy is used at the correct time. Mechanical appliances will have to be worn by the patient during the intervening periods while the patient is being watched.

All this is subject to certain qualifications, and one must be cautioned that failure to observe these could result in disaster to the patient. A fresh assessment should be made at each stage, as occasionally the crowding may resolve without extractions of permanent teeth, or be of only a mild degree acceptable, or even extraction of the 2nd premolar may suffice. It is also important to make certain that all premolars are present before resorting to extraction. In Angle's Class III malocclusion the extraction of teeth is near impossible, because of the danger of worsening the pernormal occlusion. Only appliance therapy could help in this case, however small the improvement.

The first permanent molar has a unique place in the oral cavity. Its extraction is rarely ever advocated as it is the foundation stone to the build up of a well alligned dentition. Despite this, in special cases it is removed with reluctence, to relieve crowding of teeth anterior to it, whether due to local causes or to a basic lack of room in the arch. To understand the pros and cons of extraction of these teeth it is necessary to re-consider the developmental anatomy of the 2nd molars. There is an essential difference between the the pre-eruptive positions of the upper and lower molars. The upper molar develops within the tuberosity of the maxilla and looks in a distal and buccal direction, and therefore on eruption it has a distal axial inclination. When moving in during eruption, it has a greater distance to travel as a result of its associated distal movement. Unlike it, the lower molar has a shorter distance to travel, which develops facing mesially and lingualy and on eruption has a mesial inclination When the first molar is extracted, the 2nd molar will tilt into the space left by the loss of this tooth. In the case of the upper 2nd molar, it will be brought to a more mesial position in the upper arch than the lower molar will occupy in the lower arch. Since the upper molar started with a distal inclination, it will be bodily carried forward and finally have a vertical position, whereas the lower molar starting with a mesial inclination would show an exaggerated mesial inclination and a potential traumatic occlusion is the obvious result with pocket formation From this it follows that, while the upper molar can be extracted with good chance of its satisfactory replacement by the 2nd molar, it is a risky business to extract the lower 1st molar.

Most Orthodontists recommend the 1st molars should never be extracted until the premolars are in occlusion, in order to to prevent overclosure of the bite. However, the position to day, in this regard, is that early removal even in the absence of premolar eruption can be done to give the

2nd molars an opportunity of reaching a good occlusion. This may be necessary sometimes, especially because the 1st molar is a tooth that is most vulnerable to acute caries and is frequently lost at childhood. Both practical experience and newer knowledge on the Rest Position of the mandible, have changed the earlier outlook on the bite. It is strongly suggested now, that the Rest Position is a fixed relationship between the mandible and maxilla, endogenously determined, persent at birth, and therefore not influenced by the mere positions of teeth, as previously believed. Logically speacking, therefore one can no more be dogamatic about the idea of overclosure being the result of premature loss of teeth. Some situations justify the extraction of 1st molars, as in a case where the longevity of the tooth is in doubt due to extensive caries. Sufficient reason may be fonnd in deciding to extract the 1st molar rather than a sound 2nd premolar. Where the degree of crowding in the upper arch is slight and not more than half a premolar width, the 1st molar may be safely extracted. The question of symmetrical extractions comes into the picture here. Where one upper 1st molar is extracted, the molar on the other side should likewise be extracted at the same time. If three 1st molars have to be extracted, then the fourth must be taken out together with the rest. This method of balancing extractions is of help in minimising the degree of malocclusion that could otherwise have been the result by extracting from one side only. A point of special importance is again the procedure of studying the occlusion with the help of study models of the jaws when planning molar extractions. It is useless to expect upper permolars to drift distally into a favourable position following on the extractions of the upper sixes if the permolars are in occlusion and the lower sixes are present, as the occlusion will be locked. Either one must also extract the lower sixes to remove the cuspel interference, or use an appliance in order to open the bite and assist tooth movement.

A word about the dentists role in the management of cancer patients. In this country, as the incidence of oral cancer is on the high side, the co-operation of the dentist at such cancer clinics is a great asset to the radiotherapist and surgeon. The dentist is often called upon to carry out extractions on patients afflicted with mouth cancer especially, prior to the application of radium therapy. The mouth is cleared so as to remove all sepsis and also to obviate the complication of osteo-radionecrosis developing. The latter is dreaded by both patient and dentist, when the question of extraction is to be taken up at a later date. Treatment cannot be considered complete by the avoidence of jaw necrosis in the period immediately following radiotherapy, unless precautionary steps are taken with a view to preventing an osteomyelitis and jaw necrosis that is bound to develop many years later when extractions are done. This is where the dentist has the all important part to play in avoiding such a catastrophe which may be inadvertantly caused

through thoughtless extraction. The possibility of retaining a few teeth, extracting only the doubtful ones, is largely dependent on various other factors such as the age of the patient, extent of lesion and area to be irradiated. There is one instance where the decision as to when to extract is not easy to obtain. In a gingival carcinoma, of interest is the fact that the epithelial attachment and the firm adherence of the mucoperiosteum acts as a barrier to the spread of the lesion Should an extraction be done close to the vicinity of the lesion, a pathway is created for the spread of the tumour into bone. What was otherwise a cancer confined to the soft tissues has now become one involving bone, demanding redical methods for its eradication. This spread may have been circumvented by giving a preoperative dose of radiation to inhibit its activity temporarily, until extraction is completed and the wound healed.

Perhaps it would be evident from the foregoing discussion that the time is nigh, to lay down a rationale for the dental treatment of out patients Although dentistry, just as medicine, has not yet acquired the status of being truly scientific, still it should not prevent us from working towards this goal. Empiricism, that was a feature of the past has given way to rationalism which is a product from the unravelling of scientific knowledge. Dentistry is now at its cross roads, and as for its future, much lies in the hands of the younger members of the profession. The aim of dentistry is in the prevention of dental disease as well as in the care of the masticatory organ. The basic principles must be appreciated, by the men and women who profess to practice this branch of the healing art, and according to the endeavours made to this end, so will they earn the measure of esteem in the minds of the public.

AT LONG LAST. At a X'mas office party all the guest were playing a merry little game entitled "Write your own Epitaph".

One rather popular young steno seated directly next to the publicity man whispered to him I am at a loss to write my own epitaph."

"That's easy," said the creative little man "I'll write you one"

And taking her paper he hastly scribbled suitable words. The epitaph, when read, was : "At last she sleeps alone"


Blois

That Second Set of Teeth

by

BEVIS BAWA

I have often wondered whether it wouldn't be a good idea to have one's second set of teeth pulled out, no sooner they appear. It would eliminate the brutality of the Dentist's drill, which is the most cruel torture mere man is called upon to suffer. But if one does this, there is the awful risk of being given a set of ghastly, perfectly matched, pearly white teeth, by one's family Dentist whose sensitive feelings one does not wish to hurt. I am ashamed to admit that I ducked a friend overboard for no other reason than that from being a pleasant looking fellow, he became a monster beyond belief. If he wasn't a humorist it would not have mattered. He is one of those chaps who greets you with "Have you heard this one?" and relates a filthy yarn or recites a limerick, which is worse. If he did not laugh at his own jokes it wouldn't be so bad, but he does - longer and louder than those he has cornered. Apart from his falsies being bloody awful, they don't fit and when they are half way out of his mouth, he sucks them in with great gusto, and a serpent like hiss. His wife still sticks by him, as she has the duplicate set. I am sure they must sometimes get rather mixed up in the mornings.

I am getting rather wobbly and "long-in-the-tooth" and I am deeply worried. I think the Government should start a "Public False Tooth Corporation," nationalise all existing stocks and then have an exhibition at the National Art Gallery. If there is a single set which looks a bit human, by all means offer a prize of thousand rupees. There can be no second prize as, where teeth are concerned, there can be no second best.

I met an old man the other day who hasn't a tooth in his head. I asked him why he didn't ever think of acquiring a man made set. He tried half a dozen in his time, he told me, but he swallowed one set in his sleep. His wife smashed the second pair in a "friendly" mood, and the third caused him a great deal of discomfort, what with fig ends finding their way in between the plate and his palate. He told me that to keep his mouth the original shape, he pressed his tongue against the inside of his lips-when he laughs of course, his camouflage goes for a six.

Do you think it would be possible to visit all the Dentists in town and ask to see their stock of teeth, it would be so much fairer by those, who by an act of God, or their own neglect loose theirs.

Changing Trends in Dental Education

by

E. P. FERNANDO, B. D. S. (Cey.)

In this paper it is intended to review some of the changes that have occurred in the field of Dental education during the last few decades in Britain and in this Country, where the evolutionary changes have followed similar patterns.

During the last twenty five years or so Dentistry has seen both an expansion in its scope for practice, as well as undergone a change in character.

These changes have placed new burdens on educational institutions engaged in training professional students in this field. This stimulus has resulted in new lines of thinking emerging in this matter of Dental Educational Theory.

The main trend of these changes have in general indicated a shift of emphasis from regarding Dentistry as a purely mechanical field dominated by 'mechanics' and 'technics' to its acceptance as a legitimate field of academic and scientific study.

Thus today in most countries Dental Schools are established as departments within University Faculties or are Faculties themselves. The traditional method of training dentists by apprenticeship is now of historical interest only, though a few such practitioners are still seen in this Country.

With the abolishing of the apprentice system of training the question of how to select the 'suitable student' was posed anew. The old apprentice neither needed nor generally possessed any fair level of educational achievement or cultural background. Many of them did not have a secondary or even primary school education. The new demands emphasized precisely these requirements; a high level of educational achievement at a pre-University level and a good cultural background. The selection of medical graduates to follow a two year course of study leading to a first degree or diploma in Dentistry represented an early attempt on the part of British Universities and Royal Colleges to ensure the selection of this suitable student.

Though during the early years there was some response from medical graduates recent years have seen a dwindling of this category who sought a Dental degree in a medical one. The reason is not far to seek. It was soon evident to the medical graduate who wished to practice as a Dental practitioner that firstly much of his medical

training was irrelavent to his subsequent Dental practice and secondly that whereas it required five years to obtain a medical first degree, which was the larger field, it took seven to obtain a similar degree (not a post graduation) in Dentistry which was the smaller field

It was therefore, among others, an economic reason too that induced Universities to give attention to the question of re-organising the Dental Curriculum. This was achieved by altering the medical curriculum in such a manner that certain areas which had no direct bearing on Dentistry were modified or completely eliminated.

The time thus gained enabled the purely dental subjects to be brought in and integrated with a course of study extending to a period of about four and half years and leading directly to a degree in Dentistry.

The point of departure of Dentistry towards the status of an independant proffession from Medicine really marks from here in those countries like Britain where the two professions had a close early relationship. In this respect the Americans are a notable exception.

Most Dental Faculties continue to face the problem of how best to attract suitable students in sufficient numbers. The major obstacle lies in the fact that both the Dental and medical faculties generally compete for the same student.

With the elimination of the apprentice system the premium placed on manipulative and mechanical skill does not dominate teaching attitudes any more. The need for manipulative skill has not however been eliminated altogether. Its role has undergone a re-orientation in relation to the general body of the field of study. A fine synthesis of two apparently divergent apptitudes viz. a purely mechanical on the one hand and a purely academic on the other has been achieved in modern day dentistry.

This change is most conspicuously seen in the curricular changes that the teaching of Dental mechanics has undergone. In Britain the original two thousand hours devoted to it were reduced to twelve hundred hours after the second world war and subsequently further halved to six hundred hours which also included the course on the properties of Dental materials.

The University of Birmingham has abolished it as a subject for examination of the degree of Bachelor in Dental Surgery. (Other Universities are discussing similar measures.) Other changes were made possible by the recommendations of the Dental Education subcommittee of the General Medical Council of England, which was revived in 1953.

Thus the traditional accent on mechanical perfection as an end in itself, which was the keynote in the teaching of Dental Mechanics has shifted rather to its applications. The object of the Course is no longer to make the student near perfect in his

ability to oonstruct an appliance but rather to enable him to master the problems of design and application, of the various types of appliances used as dental prostheses. Sir Wilfred Fish (1056) points out that in work room skills it is not possible for the dentist to compete with the fully trained technician. "It is difficult," he states, "to justify the attempt to concentrate within a period which is much shorter than the normal apprenticeship such a degree of repetitive training in lab craftsmanship of which would give his dentist any claim to be regarded as a dental technician, even if the attempt were successful the qualified dentist would be ill-advised to reduce the time he spends in the surgery in order to work in his laboratory . . . . . "

A major question occupying the minds of dental educationists today is how to re-orientate the curriculum to give a sound biological basis to the study and practice of Dentistry. The importance of ensuring that the Dental Student has the same opportunity of studying the basic sciences as comprehensively as the medical student, prior to his entry into the clinical areas of his subject, has been increasingly realized. Most British Universities have expanded the scope of the basic science courses for the Dental Student although it has resulted in some tendency to concentrate too much into a limited period of time. It may yet be necessary to increase the duration of the course.

The need to give a biological orientation to the study of Dentistry at all times is further reflected in the opinion of Prof Stones and Prof. Lawson. (1956) who reporting to the International Dental Federation state . . . . "A further development which has been made possible (by the revised recommendations) is that instead of the Students' first contact with the mouth being separated from his basic science course by an year or more spent in learning the techniques of Dental Mechanics, his introduction to clinical problems and practice can now follow almost immediately on the completion of his studies in the basic sciences of Anatomy and Physiology. Several schools are experimenting with a new arrangement of the clinical course in which the student, immediately after passing the examination in Anatomy, Physiology and Dental Anatomy, is given a short introductory course on the properties and behaviour of dental materials including the basic techniques involved in their manipulation and is then led directly to the clinical problems of diagnosis and treatment of the child's mouth which allows much greater emphasis to be given to the biological aspects of Dentistry, rather than the purely mechanical . . . . . This concept necessitates a change of approach to the general organisation of the 'phantom head' course since mere technical skill in this repair of localized lessons in individual teeth is no longer enough. The unit of treatment must be at least the whole dention and masticatory apparatus if the patient is to derive the maximum benefit from Dentistry."

In keeping with this general trend in the field of Dental education there is

evident an increasing awareness that the teaching of the basic sciences to dental students should be undertaken by dentally qualified teachers wherever this is possible. Thus subjects like Dental Anatomy, Physiology, Dental Pathology and Bacteriology would preferably be taught by dentally qualified teachers holding research degrees in these fields. In the past teaching of these subjects have been largely done by medically qualified teachers. This practice has generally not been very advantageous to the dental student. The medical teacher rarely succeeds in brewing the subject from the view point of dentistry. Further, his research problems and academic interests are usually more closely related to Medicine rather than to Dentistry, Often the teacher's perspective of the subject is not much wider than that of the students' and the result of the relationship is the mere passing across of book information.

This practice has further had the deleterious effect of restricting severly the opportunities that dental graduates might have for making an academic career as opposed to a professional one in their field.

The need for a vital and active basis of constant research activity from which the profession may continually draw new knowledge for the elaboration and perfection of its techniques is recognised today as vital to the survival of the profession as such.

In recent years in Britain there has been some attempt to give impetus to and encourage Dental research. Various organizations like the Nuffield Foundation, the British Section of the International Association for Dental Research, The Department of Dental Science of the Royal College of Surgeons of England and most Universities are now actively fostering Dental research and the training of research workers in this field.

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Dental Articulators

by

K. BAMBARADENIYA, L.D.S. (Cey.)
L.D.S., R.C.S. (Eng)

The dental articulator is an instrument used in the construction of a denture, designed to hold the upper and lower jaw casts in correct relationship to each other. It may also be capable of reproducing the movements of the mandible, in so far as these complicated anatomical movements are capable of accurate mechanical reproduction.

In recent times there seems to be a renewal of interest in articulators, which could lead to the repetition of the stormy debate about the articulators that characterised the period from 1918 to 1933 (Boucher.)

The Temporo-mandibular joint is a gynglyno-arthrodial joint. It is divided into two cavities completely separated from one another. The upper functions as an arthrodial joint cavity, and the lower as a gynglynoid joint. The two joints function separately, simultaneously, or in co-ordination. The movements in the gynglynoid joint is uniaxial (the axis being transverse.) The arthrodial joint cavity permits only a grinding movement due to opposition of plane condylar surfaces. The head of the mandible, thus after brief hinge movement follows the condylar path.

Basically, there are two schools of thought regarding the accuracy of positional relations between the upper and the lower jaw, in the construction of dentures.

The first considers that the articulator should be able to reproduce the complete dynamic jaw relationship. The second school of thought doubts the value of such elaborate instruments when one considers the fact that only a small segment of this condylar record is used by the patient in tooth contact They maintain that the static records obtained from the edentulous patients are the foundations for an efficient physiological set up of the artificial teeth. Much valuable evidence has been clouded by prejudices or vested interests of investigations for one or another type of articulator.

Probably the earliest "articulator" was a block of plaster which held the models of the upper and lower jaw together in their correct relations.

J. G. Garriot in 1805 made the first mechanical device known as the plane line or hinge articulator, This was capable of reproducing the hinge type of movement in the Temporo mandibular joint and no more. Despite the many shortcomings,

the hinge articulator continues to be used on account of its simplicity and low cost.

The disadvantages attributed to plane line articulation are, absence of balanced occlusson, instability, cuspal interference, inefficiency and trauma on denture bearing area.

W. C A. Bonwille in 1858 recognized the sliding movement of the Temporomandibular joint in addition to the hinge movement. In fact Bonwille has been called the "father of anatomical articulator." The Bonwille articulator, however suffered from several anatomical inaccuracies. There was no provision to determine the position of the maxillary dental arch in relation to the condylar points. He assumed the triangle bounded by the condylar heads and the meeting point of the mesio incisal angles of the maxillary central incisor teeth, to be an equilateral triangle, with a side of 4 inches, known as the "Bonwille triangle." It has been copied in many articulators of later vintage.

Another device feature of the Bonwille articulator was that the sliding joint, which was on a horizontal plane, unlike in the natural condylar path brought about a loss of contact in the molar teeth in a protrusive position of the mandibular.

The anatomist G. H. Wilson concluded from the measurements of 300 skulls that the Bonwille triangle was not a factual entity. He said that such a simple theory could not be formulated regarding the upper jaw relationship with the condylar points.

Gritmann in 1899 produced an articulator in which the sliding joint was inclined 15 degrees from the horizontal plane. The "Rational Articulator" of present day is a modification of the Gritmann's original articulator. In the Rational articulator the condylar inclination is the average taken from a number of skulls and it presents a satisfactory dynamic concept of the temporo-mandibular joint.

George Snow recognized the need for a more accurate relationship of the upper jaw cast to the condyles and the need for an adjustable condylar mechanism. He will be remembered for his introduction of the "face bow" which has been acclaimed as a milestone in the history of anatomical articulation.

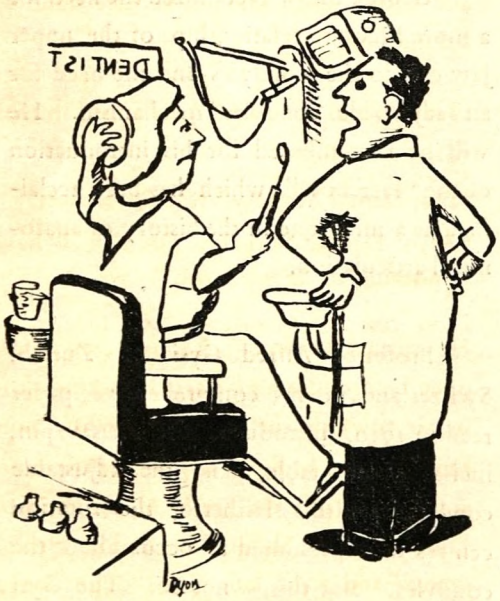
Professor Alfred Gysi of Zurich, Switzerland in his comprehensive paper read in 1910, introduced the incisal pin, incisal guide table, and the adjustable condylar width. Hitherto, the rotation centres were presumed to occur about the condyles. But this is not so. The Gysi articulator was the first to provide variation, rotation centres.

Professor Gysi has also been credited as the first to introduce the Gothic Arch tracing methods in recording this centric occlusion.

From time to time articulators have been produced some simple and easy to adjust, others more accurate or robustly constructed. But from 1930 there has been no articulator (except for one described by El Mahdy (1963) which provides for Bennet movement also) designed to incorporate any further knowledge of the temporo mandibular joint of prosthetic significance.

As one studies the intricate mechanism and the complicate adjustments of the modern anatomical articulator, the question that strikes him is that whether balanced occlusion still exists when a bolus of food is positioned between the upper and the lower teeth of the denture. The answer is that even if it does not, the denture stability is restored in the very next masticatory movement in a denture constructed on an anatomical articulator.

* * *



"If you've quite finished with that mirror, Mrs. Perera . . . ! "

"You're next, Mrs. Fernando"

Glimpses of the Past

by

DENTO THILLA

Aha! His name was on the list. It had to be. He had worked hard and he deserved to pass. Superior intelligence and all that. Our hero folded the newspaper and felt as happy as the drowning man who was rescued and told he had won the Industrial Sweep - first prize. Content with the fact that he was now a University Student, he told his father, "Daddy, after all it is a part of human medicine and I will be a dental Surgeon four years hence." Father got up, kissed him, shed a tear, congratulated him and wished him all success. He planned his son's future. "After four years my son is Dr so and so drawing a salary of some hundreds, later marriage proposals with dowry of not less than a lakh and half. Adè, adè good," those were papas thoughts.

In a few days time our hero went to Colombo where he had to follow lectures in the Faculty of Medicine. He rented out a room in the Bambalawatta area. Before he left his parents, he being the only son, the parents gave him some advice so that he may not be corrupted by the big bad world. Why, Sonna didn't even smoke or look at girls. He went to the Faculty and got himself registered to follow his course. He came to know his batchmates eight of them including a sweet looking young thing.

With great eagerness and with the hope of becoming a dental surgeon soon and with his parents' advice in mind he started his work. It was June 4th, the first day at Medical College. Our friend went to the 'Block' armed with his 'Rag Kit' and his small Cunningham in his hand. "I say you fresher, come here" was the first remark thrown at him. He turned back to see a so called senior in civil dress and with a stony look on his face standing behind him.

"I say your B . . . name?" "I am so and so"

"Doing medicine?"

"No, Dental Surgery" was the answer.

"Aiyo Dental Surgery, go man I have nothing to do with you"

He turned as though he had seen sewer open before him and started walking nose in air towards the Block. "Hellow you, remember to bring a tooth-brush tomorrow and brush the teeth of the bodies. Don't forget," Shouted his senior. He consented and went off. He thought for a while, "Ah, Dentistry is looked down on, why? Is it in any way inferior to other courses," and so on When he went in he saw some of his School-mates doing medicine. He was a bit sad and disturbed. But he was convinced when he saw the medicine boys doing the same dissection

as he was. He thought all what others talk should not be believed and he said to himself "study hard and show others that this is a better course. After all, without teeth, how to bite?"

He had to undergo a bit of ragging on his first day and he was busy making friends. Suddenly a fairly old gentleman came near him, tapped him on his shoulder and said, "I say why don't you dissect." Our young man thought, he being in the Varsity must answer this old man like a gent and said "Yes, waiting for an auspicious time." He was of the idea that it was some senior in disguise and it was a part of the rag. But later he learnt that he was a senior member of the Staff.

The lectures started and he started his work well. At the end of the second week he had to take part in the 'Body feed'. One interesting thing happened there. Though he wanted to have a sip of the liquor to experience it he was determined not to drink because of his mother's advice - don't get addicted to liquor. But in the body-feed he was forced to gulp down a bit of the liquor - the result of which was philosophy. On that day he was regarded as 'The Joker'. He had a very bad experience and he decided not to 'Hooch' any more, in fact he stuck to this decision to the bitter end. His favourite drink is still 'Seeni Kopi'.

He did his work, he was the chief entertainer in his batch One day the girl in his batch thought that our friend can never be serious and told her other friends that he is the biggest joker she had ever met. This story went round like wild fire among the girls and our friend had heard it sometimes. He decided to teach this girl a lesson. He decided to be serious. Early one morning in the block he called this student, told her what he had heard and asked for her explanation. Then she thought she had made a mistake and promptly apologised. Our friend was happy that he was serious at least for sometime but he could not maintain it for a long time thereafter. Once a joker always a joker.

Second Exam came and he passed with a distinction in one of his subjects. "Luck" said everyone, "what muck ! Brains" he thought. In June he was in his second year. He was told that he had to go to Peradeniya in September to follow the rest of his course and that he had to buy all instruments. He invested some money and bought all what he wanted. In this term he was a bit different but the difference was due to the environment and the lectures that he followed. He was eagerly looking forward to the day when he would go to Peradeniya because he was told that he will have clinicals and what not, also he had heard

and read about Campus life. At last one fine day he came, he was put in one of the halls of residence. He met his friends and his seniors in this hall He was given a warm welcome and respected instead of ragged. Usually the "Dentos" command a respect in the Campus, the reason being that students have shaky teeth after eating hall food and "Dentos" are highly sought after. He had con chats with people, went for walks, visited various halls of residence and came to know many things.

In a week's time he settled down and took to his books. During this week he studied Campus life and decided to be in his room for he thought that Campus life did not suit him. To while away his time he bought a radio and listened to some music whenever he felt so. Apart from this he did not have any other activities. Gradually he learnt to smoke which he wanted to give up everytime the prices went up but he could not. Not even the Jaffna instinct of thrift helped him to give up.

When he came to Peradeniya he thought he will deal with patients but at the start he was asked to practice on dummies which made him feel that dentistry was not worth doing. But he was very much impressed by the first lecture given on "Prospects of Dentistry" by a distinguished member of the staff at the Dental School. With this good impression in mind and with the hope of becoming a good dental surgeon he studied well and this was the secret ot his success at every exams. Also he drank Horlicks.

In January next year he started to do his clinical work with a tie round his neck and an overcoat on. The first patient he attended on was a beautifui young girl in her teens - usually this type of patient attended this clinic for treatment, for they are those who are very much worried about their teeth. He was taught to examine the whole mouth as a routine. This being the first patient he followed his theory well and examined the mouth carefully. From the way he behaved in front of the patient - he was sweating and shivering when questioned by his lecturer the patient thought he was a learner - of course he was - and did not trust him promptly she walked out of the place refusing any kind of treatment. That evening he came to know that his seniors also had the same experience and this had a consoling effect on him. Slowly he learnt to accomodate himself to this new type of work and he became one of the best clinical students in his class. He was also very modest.

In June this year he became a third year student. By appointments he called

up patients and attended on them. Everyday he was very busy while others were idling. He would laugh at them and work. The secret of his success was that he gave appointments to young girls in their teens. If anyone asked for an appointment he would ask for the age and sex of patient and he would consider the case only if the patient falls into his category. But anyway he was a successful student. His classmates gave him various nicknames - one of them was No. 9 the reason being unknown generally. I hear only he and the chap who gave this name knew the reason. During this period he came to know his classmates well and decided to be at arms length from them. He became a lone wolf. He had various discussions with his lecturers and he was seen very often with them whenever he was free. When the vacations came all students used to go home but this chap stayed two or three days more and worked. He impressed his lecturers well by doing these.

The fact that he did not move with his friends closely and the fact that Campus life did not suit him caused him to lead a lonely life. So, he used to go for long walks alone outside the Campus area. He usually was seen taking the bus to Katugastota for he thought there were better friends. He is fultype of fellow who likes to show off by spending money. One day he wanted to have a tea and so he borrowed his friend's scooter went to Mayfair in Colombo and had a small bite and a tea and came back. Later he told all his friends about it.

Somewhere near the end of third year he thought that the life in the Varsity is not complete without a good friend. He thought that all those he knew were not suited to be his friends. So he decided to have a friend from the fairer sex. He began his search and he was successful in his venture within a week - he seemed to be a successful candidate in any task he undertook. He found a girl suitable for him and started visiting her every evening at her hall. They both went for walks and exchanged presents. His classmates could not believe him for they thought a joker can never be serious - By his behaviour they later thought he had made up his mind and was quite serious But all these days he did not know that this girl was a popular one among the mischief makers.

In June this year he came up to his finals of which he was proud and also he was proud of having a girl friend. To everyone's astonishment, one day he told his friends—"I'm sad I have given her the 'Boot' for I thought she was not the girl for me." His friends felt sorry about the whole affair but he didn't.

In the 2nd term of this year a big batch of junior students came to the Dental School and there was no room in the match-box bus which provided transport. He had to walk four times everyday to and from the school. He wrote to his father about this and his father thought that his son being an honest chap, good in his work and being in the final year should enjoy all privileges and so he bought him a small car.

After he gave the boot he bought a couple of new dark trousers a few fancy shirts and pair of leather soled shoes because he thought he had to be smart, He walked to and from the Surgery and laboratory with his new pair of shoes. When he walked up and down he made lot of noice—the result of which was the students thought it was the Professor and the members of non academic staff thought it was the matron. I thought he was a Muslim trader in wooden clogs.

Always he used to say "I am tipped for a class, I am intelligent enough and so on. But he did not do the same amount of work as he did earlier. He was regarded as the 'Bogus' of this department as he did not do his work this year. He started loafing round in his car occasionally giving lifts to a few friends ot the opposite sex. The result was he failed his final exam when all his classmates had passed.

He was furstrated, he sat down with a cigarette looked at his books and cried. He was afraid to go to his father. But his father came and met him in the Campus. When his father came he said "This car had spoilt me. Please take it away." His father gave him some advise and from that day onwards he started to do his work. He had neither proper meals nor proper sleep. He studied day and night. He did his exam well and of course he passed. At last he realised that out of his four years in the Varsity the last year was the most miserable one.

(All characters in this article are fictitious. Any similarity to any persons is purely coincidental).

He was walking along the avenue one windy day when a girls skirt was blown up. He stood there and laughed which irritated the girl considerably.

"I can see that you are no gentleman!" She exclaimed angrily.
"I can see you're no gentleman either" he replied.

"A new era in tooth - pulling"

by

DR. T. W. VANNIASINGHAM, F.F.A.R.C.S.
Anaesthetist, General Hospital, Kandy.

With Riggs (of pyorrhoa fame) as dental surgeon and Horace Wells, a young dental surgeon as guniea pig, self styled "Professor" Gardener Q. Colton a travelling chemistry lecturer administered crude nitrous oxide for Wells to inhale while Riggs pulled out one of his teeth. On returning to consciousness Wells made the above remark "A new era in tooth pulling."

Wells has been credited with the discovery of Nitrous Oxide as an anaesthetic and this was due to a chance observation of his during one of "Professor" Colton's demonstrations on the hilarious effects of Nitrous Oxide. At a circus Wells noticed that one of the volunteers who had a few whiffs of the gas was reeling about on the stage when he banged his shin against a bench and had a bad wound but paid no attention to it as if it had caused no pain. Wells felt that this gas could be used to dull the pain of extraction and so on the next day December 11th. 1844 the above experiment took place and it was a great success. Wells learnt to manufacture the gas from "Prof." Colton and used it in his dental practic. In true scientific spirit he gave a demonstration at the Harvard Medical School, Boston, but unfortunately the subject was a robust muscular young man and when Wells tried to extract one of his teeth after giving him the gas the patient struggled and cried out aloud and poor Wells was hooted out by the students as a fraud.

Nevertheless Wells' discovery of Nitrous Oxide as an anaesthetic was indeed a new era in tooth pulling for up till then there were no local or inhalational anaesthetics. Perhaps it is not generally known that the hypodermic needle was not discovered till 1851 by Pravaz of Lyons, and that cocaine the chief alkaloid of Erythroxylon Coca (coca leaves) was isolated only in 1855 by Gnedicke of Germany. Furthermore its analgesic property was not known till 1884 when Koller at Heidelberg used it topically on the cornea at the suggestion of Sigmund Freud. Later Halstead at New York used it for mandibular nerve block. Long before this coca

leaves had been chewed by Indian long distance runners in South America to allay hunger, postpone fatigue and for mental stimulation.

Up to the time of Wells' discovery the only suggestion of some form of inhalational anaesthetic was that of Henry Hill Hickman who in his paper of 1824 suggested that carbon dioxide had anaesthetic pontencies because he found that sealing off a mouse in a closed vessel for a short time and then removing it and breaking one of its legs was apprently painless He called it a state of "suspended animation". He was however wrong in attributing the unconscious state to carbon dioxide because what he was really doing was to produce a state of asphyxia and acute anoxia to the cerebral cells. It is a wonder that more of his mice did not die off and how fortunate that he was not allowed to use human beings as guinea pigs.

W. E. Clark of New York had however in 1842 used ether inhalation for painless dental extractions and Crawford Long for removal of a tumor in the neck in the same year. Both of them however had made no written records of their work. It is interesting also to learn that about that time, people were indulging in "Ether Frolics" where quite respectable people gathered for parties and inhaled ether soaked on a rag for its intoxicating effects.

Anaesthesia has progressed a long way since the time of Wells' discovery but even to this day nitrous oxide forms the base of most inhational ansesthetics and if given with adequate oxygen it is hard to excel its non-toxic properties though it is weak in anaesthetic potency.

To return to our story of nitrous oxide, after the fiasco at the Havard Medical School, Wells did continue its use in dental practice but it was overshadowed by the discovery of ether as an anaesthetic. William Thomas Green Morton who, while still a medical student demonstrated at the Massachusetts General Hospital on October 16th 1846 that ether inhalation allowed the surgeon J. C. Warren to remove a tumor from the jaw painlessly. "Gentleman, this is no humbug", remarked the surgeon at the end of the operation.

Colton who had been mentioned earlier continued however to give his lectures and demonstrations on the effects of nitrous oxide and in 1862 by an odd turn of circumstances reintroduced its use in American dental practice. True to the honour of the discoverer of the anaesthetic properties of nitrous oxide - Horace Wells, Colton had mentioned the story of Wells and his painless extraction at one of his lectures and when a lady from the audience asked him whether he would administer it to her while her teeth were

extracted, he consented. With this was born the regular use of nitrous oxide for dental extractions.

Colton found this business so lucrative that later he chucked up lecturing and opened up the Colton Dental association in New York for extraction of teeth under nitrous oxide. It is interesting to learn how nitrous oxide was prepared and used then. Pure ammonium nitrate was introduced into a retort and heated. The evolved gas is bubbled through four bottles containing water to purify it and led into a gasometer where it collects under slight pressure and from which the gas is led directly into a mouth piece or into rubber bags for ready transport.

About this time, 1864, it was tried out in England for dental extractions but it did not become popular, chloroform being used for this purpose though deaths were being reported from its use. In 1867 at the First International Congress of Medicine held at Paris, Colton exhibited his apparatus for making and administering nitrous oxide. Evans, an American dentist practising at Paris learnt the art from Colton and began using it. In March 1868 he came over to London and demonstrated it. Gradually, English dentists came to adopt it, replacing the mouth piece by a face piece covering the nose and the mouth and with addition of a stopcock which allowed air to be breathed when so desired. However the expense involved and the cumbersome apparatus required, prevented its more universal acceptance in England, then. The gas was now being produced in a liquified form in metal cylinders by Coxeter & Sons of London in 1870 and in America in 1873, The compressed gas was led into a metal reservoir from which it was inhaled.

Up to this time nitrous oxide was given entirely free of atmospheric air as suggested by Colton. In an attempt to prolong the evanascent effect of nitrous oxide, Joseph Thomas Clover, a specialist anaesthetist and Fox a dentist in London in 1868 suggested the intermittent addition of varying amounts of air. With this same purpose in view Edmund Andrews of Chicago in the same year 1868 had used nitrous oxide and oxygen mixture, the oxygen being introduced into the same metal reservoir. Meanwhile, Paul Bert of France, a physiologist, in 1883 suggested that nitrous oxide as it was then used acted mainly as an asphyxial agent and that oxygen could be mixed with it, if pure nitrous oxide is used first to induce insensibility.

With this background H.T. Hillischer a Viennese dentist invented an apparatus for delivering varying percentages of nitrous oxide and oxygen. This apparatus consisted of iron cylinders containing oxygen and nitrous oxide, each of which

led into separate bellows acting as reservoirs. From these reservoirs, tubes led to a metal tube acting as mixing chamber. The entry of these gases into the chamber was controlled by orifices cut in a tube which fitted the mixing chamber on the inside. The size of the entry orifices was regulated by a circular plate which indicated the percentages of the two gases. This was the first anaesthetic apparatus to give variable proportions of nitrous oxide and oxygen.

In 1887 Fredrick William Hewitt (Knighted in 1911) made his own apparatus for regulating the percentage of oxygen. The stopcock allowed variable amounts of nitrous oxide and oxygen or pure nitrous oxide or only air to be inhaled. In 1897 Hewitt published the treatise "The administration of nitrous oxide and oxygen for dental operations"

Alfred Coleman, a dentist, revived the administration of nitrous oxide through a nose piece. Up to now, 1898, nitrous oxide was being given through a face piece which covered the nose and mouth.

In 1910, Dr. E.I. McKesson, a pioneer anaesthetist of Telede, Ohio U S. A. designed and manufactured the first intermittent flow machine giving accurate percentages of nitrous oxide and oxygen, the gases being shut off during expiration. He further elaborated this machine to what it is today where not only accurate percentages of the gases can be given but also under variable pressure with variable pressure with variable amounts of rebreathing also under variable pressure. The British corollary to this is the Walton gas and oxygen machine.

In 1917, Edmund Boyle made his continuous flow machine. Reducing valves were attached to the cylinders and the nitrous oxide and oxygen passed through flow meters which measured the minute volume. A variable quantity of the gases could be made to flow over the surface or bubble through different anaesthetic liquids contained vapourisers. The vapour-laden gases then led to what is known as Magills rebreathing circuit which comprised of a rebreathing bag, corrugated rubber tubing, expiratory valve and face piece.

It has indeed been a long way since Horace Wells exclaimed "A new era in tooth pulling." A little more than a hundred years have passed since the poor man was hooted out as a fraud but thanks to the efforts of anaesthetists and many dental surgeons we have arrived at safe and satisfactory ways of pulling out teeth, while the patient is rendered insensible. The short whiff of gas is allright when the patient is co-operative and composed and the dental surgeon is deft and speedy.

These conditions are not always obtained and dental surgeons and anaesthetists have been trying various ways of improving the anaesthetic. Attempts were made earlier to do this by the addition of oxygen or air and later by supplementing the gas with various anaesthetic vapours like ether, trichlorethylene, ethyl chloride. Thiopentone induction was also tried for robust individuals and each had its advantages and disadvantages. Nevertheless, the gas extraction day remained a day of tears, cries and urine and occasionally kicks and blows were thrown in when the patient happened to be robust or a chronic alcoholic.

An answer to the anaesthetist prayer has come in the form of "Fluothane" or "Halothane" (bromochlorotrifluoroethane) This was synthetised by the chemists of Imperial Chemical Industries in the late 1950s and vanished are most of the cries and tears on the gas extraction day. Owing to its possible hypotensive effect the patient is kept flat on an operating table (this also minimises the danger of aspiration which is easy in the dental chair.) A flow rate of 8 Litres of nitrous oxide and oxygen (at least 25% being oxygen) with minimal amounts of fluothane in an ordinary vapouriser are given to the patient with an ordinary face piece using a Boyles machine. No special vapouriser is required, the trichlorethylene vapouriser or a Rowbotham Vapouriser are adequate. Premedication for children is usually "Vallergan Syrup" (trimeparazine tartrate) one or two drachms according to age. Adults are given atropine gr. 1/100 by intramuscular injection half an hour before and if necessary a few c c. s. of dilute thiopentone given for induction. After about 25 breaths just as the expiration begins to shorten the face piece is lifted and the dental surgeon has a clear two to three minutes of a quiet, well oxygenated relaxed patient. There is no hypoxia, no cyanosis, no jactitation and if well given no struggling or commotion.

Indeed nitrous oxide anaesthesia for dental extraction has passed through several phases and I have briefly tried to trace these phases. Nevertheless it is still used in dental anaesthesia and we can do no more than salute the scientific spirit of Horace Wells who first observed, then experimented and then practised.

Officer : "You brought me the wrong boots, you idiot. Can't you see that one of them is black and the other one is brown"

Orderly : "Yes Sir, but your other pair is just the same"

Migration of Teeth

A report of a case

by

C. N. THILAGARATNAM — Final year

A. SAVUNDRANAYAGAM, B. D. S., (Cey.)
F. D. S. R. C. S., (Edin.)

It is unusual to find teeth lying embedded, or even erupting into positions quite remote from their natural sites, and in abnormal directions. Teeth may occasionally take their place within the dental arch, but lie out of normal sequence—as for instance when a tooth changes place with its immediate neighbour (Transposition). It may also migrate to areas where their presence would be an abnormal feature. The phenomenon of migration is very often confused with that of transposition. K. H. Thomas states "Transposed teeth are not a common abnormality. It is a condition due to interchange of two teeth. The canine is occasionally displaced and may occupy the site of the second incisor or of the first premolar. Teeth may migrate to abnormal positions, such as the Zygoma, orbit, coronoid process and even to the other side of the jaw."

Irregularities in position are commonest in relation to the maxillary canine, which vary between a slight deviation from the normal, to a complete inversion of the tooth. Sir John Colyer has seen this irregularity in 17 out of a thousand men examined. Interesting cases have been reported by him where the maxillary canine assumed numerous situations from a horizontal to an inverted one, and the latter condition was seen by him in a case where both maxillary canines were embedded in the nasal processes. One of the negress skulls in the Hunterian collection shows the right maxillary canine erupting into the nasal fossa. Dr. Rose of Pittsburgh, encountered a case where the mandibular canine had migrated to the opposite side of the jaw. He attempted to remove the tooth with a mandibular block aneasthetic on the side where the tooth was located, but the patient experienced pain on the opposite side; indicating that the tooth received its innervation from the side where it was missing. Shaw (1935) had reported a case of a mandibular canine erupting under the

chin in a man of 25 years. The maxillary incisors are occasionally affected and are sometimes seen to erupt through the lip. The involvement of the premolars is an exceptionally rare abnormality The maxillary molars are often held high up in the tuberosity probably due to insufficient bone growth necessary to encourage normal eruption. C S. Tomes and W. S Nowell have reported an extreme case, where the maxillary third molar was detected in an inverted position, embraced by the roots of the second molar. Mandibular molars are rarely found to occupy positions in the ascending ramus in close proximity to the coronoid process. J J. Andrew had recorded a case where a woman aged 55 years presented herself with the mandibular left 3rd molar, misplaced high up in the ramus, but with its apex directed towards the sigmoid notch (B.D.J. XXX 289). A case of a misplaced right mandibular 3rd molar erupting externally, about an inch in front of the lobe of the ear in a female aged 80 years has been described by M. W. Zernov (B.D.J. 1949).

The following case was thought to be of interest and is therefore recorded as follows :—

A 16 year old female presented herself with an alveolar enlargement in the maxillary right lateral incisor region which had gradually increased in size for the past year. There were no noteworthy symptoms except, thats he recalled an experience of numbness for some period of time in that area; especially on bending her head.

HISTORY

The patient gave a history of extraction of a tooth from this area two weeks prior to the day when she was first seen. The tooth was mobile before extraction, and subsequent to the extraction she related a single episode of bleeding through the nose, 2 days after. The past medical history did not reveal anything of significance.

ON EXAMINATION

The following teeth were present:—

7654c a	1234567
7654321	1234567

Her dentition was in a fairly good condition and her oral hygiene was satisfactory. The maxillary right permanent central incisor was absent from the arch, and this prompted further examination on the presumption that it was impacted. Between c ⌋ and a ⌋ was situated afirm sessile swelling, covered by a pale mucosa, measuring roughly 2. cm. x 1½ cm. It was confined to the alveolar part and was not seen to extend towards the palatal aspect.

X—RAY EXAMINATION

Both occlusal as well as intra-oral films showed an unerupted right per-

manent incisor, fully formed and lying high up. A cyst-like area, a little lower down gave a probale clue to the impaction. Higher up in the X-ray, an opaque area somewhat granular in appearence could be seen. What was worthy of note was the missing right permanent canine.

OPERATION

The operation was carried out under local anaesthesia. aJ and cJ were extracted and the swelling was approached by a palatal flap. There was a well-formed capsule, and at no stage during the operation was there any evidence of evacuation of fluid or pus from the lesion. Bleeding was minimal. The lesion was carefully enucleated and it was observed to extend a considerable distance upwards as well as palatally, almost as far as the junction of the hard and soft palates. The antrum appeared to be obliterated and was not opened into at any stage. The unerupted permanent incisor was removed together with it; being partly enclosed by the same fibrous wall. This soft fibrous sac was described by the surgeon as containing "sand", since it gave a characteristic gritty feel to the palpating fingers. It apparently Contained numerous calcified particles, and this was confirmed by X-raying the tissue after removal, when a more definite granular radio - opacity was noticed. The lesion measured about 2½ inches in length on removal,

FOLLOW UP

About 5 months later the patient returned with the complaint of pain in the operated area and in view of these symptoms, further X-ray films were taken. This was done, as a recurrence of the cyst was suspected. Under infiltration anaesthesia, an incision extending from the midline to the right premolar region was made, and a flap retracted bucally. The cyst wall was exposed and completely enucleated.

After 5 weeks, the patient reported for the third time with pain now localised at the right molar area. Intraoral films of the molar region at this stage revealed what was unmistakably a canine, lying in relation to the 1st and 2nd molars. A buccal flap was done in the molar area, the buccal plate of bone removed and the tooth levered without sectioning. The surgeon stated that the crown of the displaced tooth was in close proximity to the 1st molar while the apex lay in the region of the 2nd molar

COMMENTS

The missing canine that was reported after X-raying in the first instance was finally discovered six months

later. The tumour-like cyst removed at the first stage was probably a Complex Composite Odontome that had originated from the germ of the permanent lateral incisor. The abnormal position of the canine at the distal part of the arch is explained by the presence of this large space occupying lesion in the right maxilla. Although histological evidence was not available, it was infered, with reasonable accuracy, that the tumour was suggestive of an adontome.

DISCUSSION

During the actual movement of teeth, alveolar growth is a necessary factor for their emergence into the oral cavity and the occupation of their normal positions in the arch. Tooth eruption is the physiological result of differential growth between the teeth and the surrounding bone. In the initial stages of eruption, referred to as the prefunctional phase, pulpal connective tissue growth as well as accentuated bone growth at the fundus of the crypt brings about the resulting axial movement of teeth. Later on, once they come into occlusion, the functional phase of eruption operates, with continuous eruption taking place, where the same growth factors apply with a slight change in pattern. Here too, differential growth between alveolar bone and tooth tissue is present, but occurs to a lesser degree; being now confined to incremental additions of cementum on the root surface, and a continuous process of apposition followed by resorption on the alveolar side of the tooth which keeps in step with the gradual changes in tooth position (Sicher). A discrepency in the timing of eruption and alveolar growth could lead to a failure of eruption altogether. It commonly happens in the 3rd molar areas, particularly in the mandible, because eruption of this tooth proceeds into a period when bone growth has almost come to a standstill Where the other teeth are concerned, maleruption and impaction cannot be explained through failure of bone growth as the latter is rather active during the period of transition from the deciduous to the permanent dentition. The maxillary permanent canine is the usual offender with respect to impaction, and is the most frequent one to be missing from the arch, often finding its way into the palate. Quite another cause, apart from bone growth, must be searched in order to understand its peculiar behaviour.

Reduced intercanine width of the dental arch, where the 1st premolar steals on the space meant for the canine, is a plausible cause for its misplacement. In this particular case, such reasoning is unacceptable, as there were no signs of

crowding of teeth, and further more the deciduous canine was still retained at that late age. The anatomical feature regarding the canine's place of development which is in close proximity to the floor of the orbit, and the fact that it has a greater distance to traverse in its effort to enter the arch, might throw some light here By virtue of the rapid hollowing out of the maxillary antrum, the tooth that was nearer its predeccessor is carried further away from it. At this period only crown development is evident with no root formation. Should there be any interference to its path of eruption as root development commences, the tooth could then be deflected unfavourably. The unusual location of the canine here, is undoubtedly due to the presence of the obstructing calcified mass, believed to be a Complex Composite Odontome. The retention of the deciduous central incisor and canine, with the impaction of the permanent maxillary central incisor, in the right maxilla is clinically significant. Since the deciduous lateral incisor was previously extracted, as told us by the patient, and in view of the presence of all other teeth, with only the missing permanent canine being the one in question; it could be postulated that the socalled odontome originated from the germ of the permanent lateral incieor. It can further be added that this anomalous development took place at a time when the maxilla was growing in size and the permanent central incisor and canine were still in their formative stages. If we were to visualise a sudded outburst of proliferative activity on the part of the tooth germ of the lateral incisor, and as being in excess of the normal rate of growth in contrast to that of the adjacent teeth, the obliteration of the antrum as seen, could be explained. We are told that such accelarated growth is characteristic of the behaviour of a harmatoma, to which category the Odontomata belong.

At eleven years, when the permanent incisors and premolars have entered the oral cavity the canine by means of active root growth and bodily movement is beginning to force its way with much pifficulty. The thick fibrous capsule that encloses the odontome has been an effective barrier to its forward movement. As a result, therefore, it has been posteriorly displaced and misguided into a position along side the 2nd molar on its buccal aspect.

Toothache

To have it out or not. That is the question-
Whether it is better for the jaws to suffer
The pange and torments of an aching tooth
Or to take steel against a host of troubles,
And by extracting them, end them? To pull - totug !
No more: and by a tug to say we end
The toothache and a thousand natural ills
The jaw is heir to. 'T is a consumation
Devoutly to be wished To pull - To tug -
To tug - perchance to break Ay, there's the rub,
For in that wrench what agonies may come
When we have half dislodged the stubborn foe,
Must give us pause. There's the respect
That makes the aching tooth of so long life.
For who would bear the whips and stings of pain,
The old wife's nostrum, dentist's contumely;
The pangs of hope deferred, kind sleeps delay;
The insolence of pity, and the spurns,
That patient sickness of the healthy takes,
When he himself might his quietus make
For one poor shilling? Who would fardels bear,
To groan and sink beneath a load of pain?
But that the dread of something lodged within
The linen - twisted forceps, from whose pangs
No jaw at ease returns, puzzles the will,
And makes it rather bear the ills it has
Than fly to others that it knows not of.
Thus dentist's do make cowards of us all,
And thus the native hue of resolution
Is sicklied o'er with the pale cast of fear;
And many a one, whose courage seeks the door,
With this regard his footsteps turns away,
Scared at the name of dentist.

ANONYMOUS
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