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ASTROSTOMATOLOGY

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ASTROSTOMATOLOGY

*CAPT E.A. TOPOROWSKI, BA, DDS***

INTRODUCTION

Keeping in mind the consequences of a dental emergency in space, throughout the duration of the Gemini and Skylab missions and the forthcoming Space Shuttle program, NASA* dental officers have been concerned with all aspects of space dentistry. Oral health is an important consideration in extended space voyages. Although astronauts are physically and mentally healthy individuals, all potential health hazards must be detected and eliminated: the mouth is susceptible in that it is a reservoir for potentially pathogenic micro-organisms as well as being a port of entry for infectious agents.

This article will examine the selection of astronauts, dentally speaking, normal oral hygiene procedures in flight, methods of dealing with dental emergencies, and some problems and future considerations.

INITIAL ORAL EXAMINATION

After a general examination of the head and neck of the potential astronaut, a thorough examination of the oral cavity is performed and consists mainly of:

- a soft tissue examination;
- an evaluation of the periodontal status;
- a clinical and radiographic survey of all teeth and their supporting structures; and
- an occlusal evaluation.

Since any minor emergency could jeopardize the success of a mission, the standards are most stringent. Among the conditions that would disqualify a candidate for the program would be his need to wear one or both complete dentures, a gross malocclusion, and inadequate natural dentition for mastication or communication when a prosthesis is removed.

PATIENT INSTRUCTION

In terms of clinical care prior to a space flight, prevention is stressed to all astronauts from the very first day they enter the NASA program. They know that marginal gingivitis is due to bacterial plaque and is correctable by diligent oral hygiene. They are instructed in oral hygiene procedures using unwaxed dental floss, a toothbrush and toothpaste. The same materials are provided in-flight so that oral health can be maintained at a high level during space missions.

INGESTIBLE TOOTHPASTE

Initially it was necessary to develop a digestible toothpaste because there was no provision made for expectorating in a zero-gravity environment. It had to be made without volatile oils because the space cabin atmosphere is closely controlled and all materials must be gas-free under reduced pressure. In addition the calcium content of the dentifrice had to be kept to a minimum because of the ongoing mineral metabolism studies carried on during the manned space missions.

Clinical experiments resulted in NASADENT, also called ASTRO-9. The main ingredients are sodium metaphosphate (40%) and dicalcium phosphate (2%) in a glycerin base. Ingestible toothpaste was used through all Apollo missions. With the more recent

***National Aeronautics and Space Administration**

and sophisticated space vehicles provision is made for expectorating, so conventional toothpaste is used. As a result of its clinical trials at the Veterans' hospitals in the United States, the "space-age" toothpaste has proved to be useful for severely debilitated patients and for the physically and mentally handicapped.

DENTAL EMERGENCIES

In the first Apollo flights, there were no means to treat dental emergencies other than the use of some analgesics and antibiotics in the medical kit. The short flight of the Apollo spacecraft entailed minimal risk, but with the longer Skylab missions there was a greater probability of dental problems en route. The million dollar programs would be most uneconomical if a mission were halted midway because an astronaut developed a toothache.

What dental emergencies would most likely be encountered in space? Dental caries in itself would not be a problem because of the comprehensive preventive program at the manned space center. The most probable dental ill of sufficient magnitude to compromise the effectiveness of an astronaut would be a painful pulpitis in a previously restored tooth, or a periapical inflammation. Without the expertise and small reamers to allow pulp extirpation, treatment considerations would include tooth removal. The other common emergencies that may arise include broken teeth and gingival inflammations. During the Air Force simulations of space flights, it was found that when the pilots were under stress they would at times grind their teeth, increasing the possibility of fractured cusps or restorations.

Since the beginning of the Skylab flights, the prime crews and the back-up crew of all missions receive two days of intensive training in pertinent dental procedures. There are also lectures in anatomy, pathology, oral medicine and local anaesthesia. Demonstrations are followed by a supervised performance of a variety of dental procedures, including tooth removal.

Included on board the spacecraft is a manual with line drawings of complete intra-oral radiographs of each crew and illustrated diagnostic and treatment procedures. If an emergency arises, diagnostic judgement is made by a ground base dental officer. In addition, there is air-to-ground communication with a dentist who has intra-oral photographs, radiographs, diagnostic casts, and complete treatment records, as well as detailed knowledge of the treatment capabilities of each crew member displayed during the training program.

EMERGENCY KIT

A simple, light-weight emergency kit is provided in each space vehicle to enable the astronauts to manage their own dental problems. The kit is borrowed from an original military design and is called (in good military fashion!) IN-FLIGHT MEDICAL SUPPORT SYSTEM – DENTAL. It consists of a non-flammable beta cloth container that is strong, compact, non-toxic in an altered environment, secure, able to survive the G forces of take-off and re-entry, and able to retain its instruments when uncovered in zero gravity.

For launching, 1000 pounds of thrust are necessary for every pound on board; therefore weight of the kit was an important consideration. Hollow-handled instruments were designed, including universal maxillary and mandibular forceps, # 150 and # 151, anterior forceps, and a hand instrument with five interchangeable tips. Other items included a flashlight mirror, an aspirating syringe, 2 x 2 cotton gauze, a file for smoothing broken restorations and a Gigli bone saw for sectioning connectors of fixed bridges in case an abutment tooth must be removed. The Gigli saw was a back-up item for the astronauts in Skylab II when it was necessary to free a stuck solar panel.

RESTORATIVE MATERIAL

To rectify fractures of cusp tips or restorations, an antibiotic, anti-inflammatory dressing is included in the emergency kit. It is called PIRM – Polychromatic Intermediate Restorative Material – a zinc-oxide eugenol with a bound polymer as a filler, developed by the United States Air Force for effective and rapid treatment under combat conditions in Vietnam. Initially it was color-coded to indicate the nature of the underlying tooth structure: red meant caries, blue distinguished caries-free tissue. IRM is commonly used today in many dental clinics.

A special method had to be developed for mixing the PIRM in the zero-

gravity environment of space. A small plastic pouch divided in two compartments by a stopper contains on one side a zinc oxide pellet and on the other eugenol. The eugenol in the upper part is ejected into the bottom one by a plunger and the mixing is done by mulling.

DENTAL RESEARCH

From the time of the Apollo-Soyuz project in July 1975 to present days Space Shuttle trips, the space program itself slowed down considerably but the dentally-related studies continued. One of these studies concerns the demineralization of teeth and jawbones during space flights. Because of the short duration of the Mercury, Gemini and Apollo flights, demineralization of teeth and bones had not been a primary concern, but with long term voyages the subject now becomes more relevant. An animal study related to bone demineralization and wound healing is being prepared for the forthcoming Space Shuttle program.

ORAL MICROFLORA

One other major project involves an investigation of the oral microflora and the changes that occur in it during space flights, especially in the closed environment system of Skylab. Generally, an increase in counts of specific anaerobes in the dental plaque has been found, involving particularly the caries-inducing streptococcus mutans, but also neisseria, lactobacilli and enteric bacilli. It is postulated that these changes may be due to a lower salivary flow during the space flights, or a change in the diet. All astronauts are placed on a high carbohydrate space diet thirty days prior to take-off.

SPACE NUTRITION

The nutritionists must concern themselves not only with the nutritional value of a space diet, but also with its mass, volume and effect on the teeth and their supporting structures. Great efforts are made at selecting foods which will not induce plaque build-up, caries, or periodontal disease. Foods that are very hard to chew may be hazardous because of the damage they can cause to the gingiva, and/or the teeth. One simulated space flight had to be interrupted when an Air Force volunteer fractured a tooth while biting into a dehydrated frozen cheese sandwich.

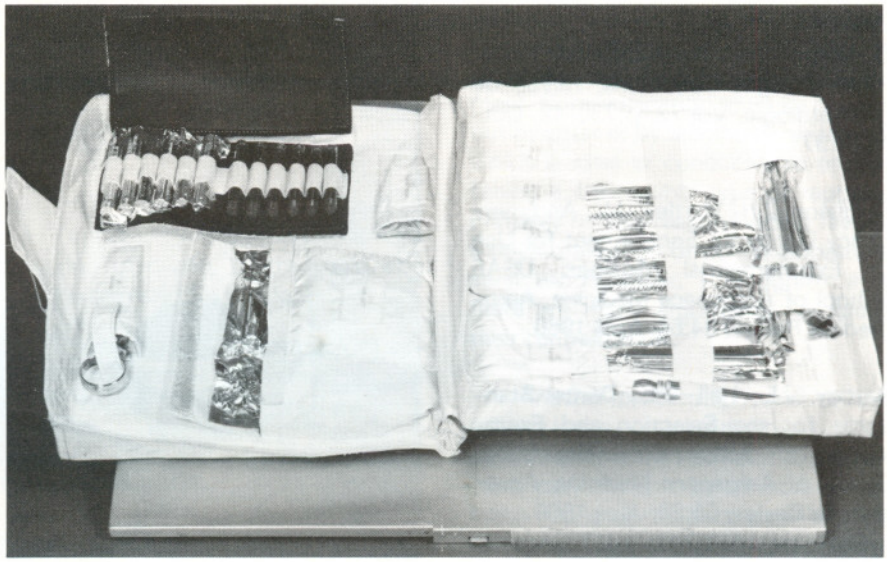
BITE BOARDS

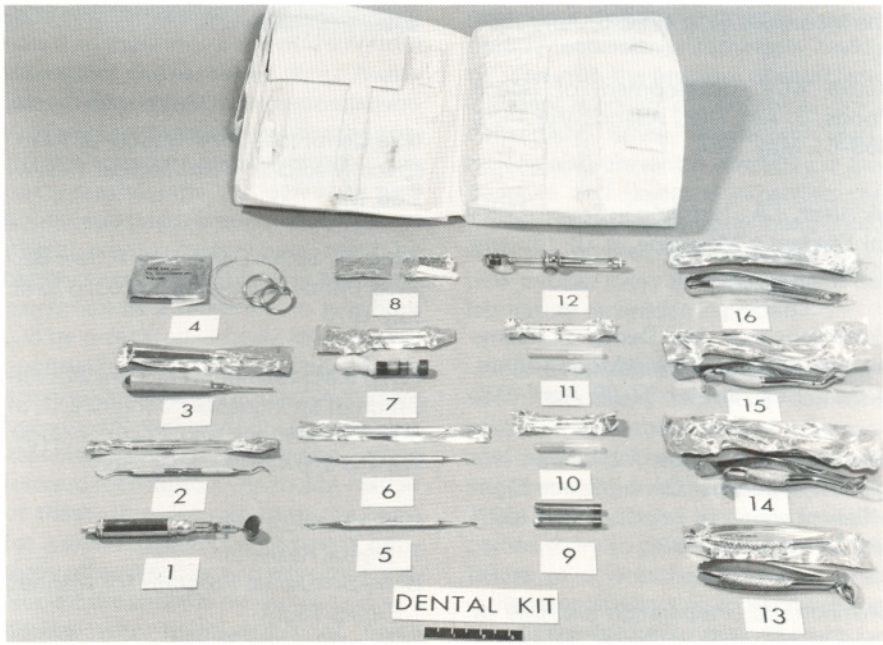
Dental research and NASA scientific expertise were combined to perfect bite boards used to measure the orbiting astronaut's ability to identify objects on the ground by maintaining a constant reference point between his eyes and a vision tester. The astronaut holds the instrument between his teeth mounted on a biteboard of hard acrylic cured over an aluminum bite fork. Weight of the testing instrument is no strain on the astronaut's teeth and jaws because of the weightless state.

CONCLUSION

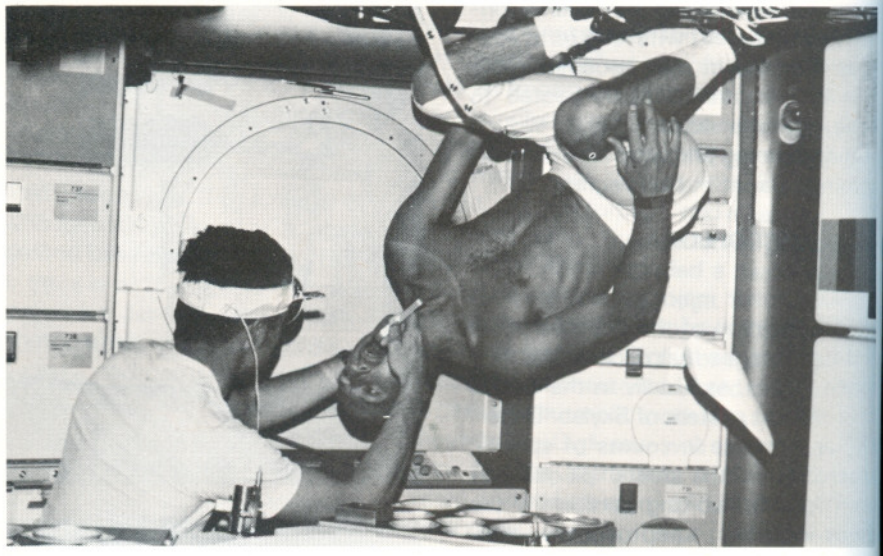
During the space missions that have taken place to the present time, pre-flight and post-flight dental problems were minimal, and in-flight dental emergencies non-existant. This excellent record was mainly attributed to the emphasis placed on preventive dentistry and the frequency of clinical evaluations of the astronauts' oral health.

The emergency dental kit has not





been used in manned space missions so far, but the dental officers and astronauts at the Manned Spacecraft Center feel confident that a dental treatment capability has been provided which could mean the difference between success and failure of a mission. The on-going space research should provide interesting dental knowledge for the future.



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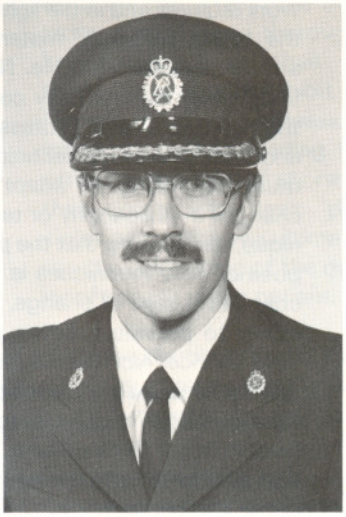
COMMUNICATIONS:

The key to success



*Major E.D. Cragg, CD, DDS**

The purpose of this presentation is to analyse the relationship between the military dentist and laboratory technician as each accomplishes his part in the fabrication of the prosthetic appliance for the patient. It is toward this end that the dentist and laboratory technician must direct their efforts and energy – to providing a service to the patient. Since neither the dentist nor the laboratory technician can provide this service without the total support of the other, it is essential that they be able to work in harmony together, each being aware of his area of responsibility and of his relationship to the other. I would like to analyse this subject under the headings:

Reasons for Lack of Accord;
Establishing a Good Working Relationship;
Responsibilities of the Dentist;
Responsibilities of the Technician; and
Establishing Rapport.

Reasons for Lack of Accord

Because of the mutual interdependence which must exist between the dentist and the laboratory technician, a partnership type of relationship must be established and cultivated. The quality of the finished product of each is quite literally dependent upon that of the other.

Since each partner is so utterly dependent on the workmanship and integrity of the other, it is apparent that the alliance, if it is to be successful, needs to be a harmonious one, based on mutual respect and trust.

Unfortunately, this happy state of affairs does not always exist; and when the association is not a harmonious one, the inevitable consequence is a lowering of quality of the prosthetic service provided for the patient.

The reasons for a lack of close accord are enormously diverse; but, like most contentious matters, the root cause is misunderstanding. There is an abundance of evidence to indicate that a part of the blame must be shared by each side.

The failure on the part of some in the dental profession to understand fully the laboratory technician's rightful status as a partner on the dental health team is epitomized by two groups who hold widely divergent views concerning the role that he should play. The one group regards the technician as a poorly educated, inadequately trained menial whose every move must be closely supervised. The other group regards him as a father figure to whom can be delegated virtually all of the responsibility for construction of the prosthesis (once the impressions have been made), and to whom all problems associated with the prosthesis can be referred for solution. Obviously, neither of these attitudes can form the basis for a working relationship that is optimally effective and mutually gratifying. Nor will the patients be well served by a dentist who holds either of these misconceptions.

Other reasons for a lack of accord between the dentist and the laboratory technician may be peculiar to the nature of dentistry in the military. Certainly when the two are separated by distance as is the case with a central laboratory service, it is very difficult to establish an optimal working arrangement. Communication must be carried out by letter or by telephone, neither of which is ideal or conducive to establishing a partnership type of rapport. Primarily for this reason I would favour a decentralization of dental laboratory services. However, I recognize that there are many arguments favouring their centralization.

Another problem peculiar to the military is the continuous movement of personnel. It is very difficult to establish a partnership type of working relation if one of the partners is always changing. Since dental officers present a great variability in background, experience and clinical technique, the laboratory technician is continually having to cope with the problem of establishing new working relationships. And, conversely, since laboratory technicians also present a variability in experience and technical expertise, the dental officer is similarly confronted with the problem of adjustment to a new partner every time either he or his laboratory technician is posted.

The attitude of the individual dentist or laboratory technician can also prevent the establishment of a favourable working rapport if either one adopts the attitude that he knows it all. There is then often a tendency for both parties to try to place the blame for the failure of a prosthesis on the other rather than attempting to establish the reason for failure so that it might be overcome in the future.

*Maj Cragg graduated from University of Alberta in 1967. He completed his postgraduate training in Removable Prosthodontics with the US Army Dental Corps in Fort Benning in 1974. Since then he has served at the CFDSS, instructing in his specialty. He is also the Course Director for the Dental Laboratory Technician Trade.

Establishing a Good Working Relationship

A good working relationship must be based on a common understanding of the overall objectives – an awareness of the rightful role that each must play in attaining the goals, and an appreciation of the particular problems peculiar to each. Ideally, to this will be added a sincere respect for the competence and sincerity of the other partner.

Both the dentist and the laboratory technician must be fully aware which areas of responsibility are his and which are his partners in the fabrication of the prosthesis. A fundamental of good management is that each member of a partnership be assigned well defined responsibilities.

Responsibilities of the Dentist

The dentist must plan the prosthesis in its entirety. He must foresee the need for all preparatory mouth treatment, and ensure that it is properly accomplished. He must provide the dental laboratory technician with a detailed work authorization form which includes clear, concise, readily understandable instructions concerning the work to be done, as well as all necessary information dealing with materials to be used (composition, form, mold and shade of replacement teeth), occlusal scheme and any other technical specifications which might deviate from standard laboratory procedures. The dentist must also ensure the accuracy of the impressions and the master casts, make accurate and adequate patient records, fit the finished prosthesis to the mouth, perform necessary adjustments, educate the patient as to its care, and carry out periodic maintenance.

Responsibilities of the Technician

The technician is responsible for the fabrication of the prosthesis to the best of his ability, utilizing the best materials and techniques available in compliance with the directions provided on the work authorization form or laboratory prescription. In addition, he is responsible for accomplishing many of the intermediate steps in accordance with the dentist's instructions as the prosthesis progresses through the various stages of construction.

Establishing Rapport

The purpose of the team approach is to utilize best the special talents of two highly trained specialists in rendering for the patient a prosthetic service of the highest quality. If the team is to achieve this objective consistently each partner must be rewarded with a sense of fulfilment. Generally, it may be said that establishing and maintaining a working relationship on this plane will require that the dentist takes the initiative in assuming his rightful role of leadership and ensures that the technician, in turn, understands and accepts the responsibilities that are rightfully his.

How can rapport be established and maintained between the dental officer and dental laboratory technician? I believe that many of the dentist-laboratory technician problems could be resolved through the following considerations:

1. The dentist must assume full responsibility for the professional aspects of prosthodontic treatment. Since the dentist must bear the ultimate responsibility for the patient's treatment, it follows that he must accept the responsibility of seniority in his partnership. Although the contribution made by the laboratory technician is not only a significant one but an essential one, he is responsible only to the dentist – never to the patient. As the senior partner, the dentist must accept the responsibility of this position. Many dentists have imposed responsibilities on dental laboratory technicians which are not transferable and which the dental laboratory technician does not have the background nor the training to accept.

2. The technician must handle the fabrication of dental prosthesis with the care and concern the work requires and in the light of the latest research, materials and techniques available. New techniques will normally come through the dental profession and the laboratory technician must be willing to adapt to changes in philosophy or technique, recognizing that the purpose of new techniques is not change for sake of change, but rather to provide a better patient service. Nowhere is there greater need than in the military for a laboratory technician to be flexible in his dealings with the persons with whom he will come into contact.

3. Both dentists and technicians must admit errors when they exist, and concentrate their efforts on overcoming the problem rather than trying to fix the blame for it on the other. This type of defensive supersensitivity is highly detrimental to the establishment of a good working relationship.

4. Technicians should return work for inspection whenever doubt exists as to its accuracy or usability. Once the technician accepts work for fabrication of a prosthesis, he is accepting responsibility for that phase of treatment.

   Similarly, dentists must now accept work from the laboratory that fails to meet an acceptable standard of quality.

   If either the laboratory technician or the dentist accepts work from the other that fails to meet a reasonable standard of acceptability, the quality of work produced by their partnership will inevitably deteriorate.

5. Criticism should be freely exchanged between the dentist and the technician only in a constructive way as one teammate to another, avoiding supersensitive listening and always keeping in mind the overall objective of providing the best possible service to the patient.

6. Both the dentist and the technician must be thoroughly knowledgeable in their respective areas and exhibit the highest ideals of professional integrity, neither leading the other down a path of shortcuts that contradicts basic principles and which will ultimately result in a lowering of the quality of service to the patient.

7. Both the dentist and the technician must recognize the constraints imposed by the nature of military service and do their best to overcome them.

8. Both the dentist and the technician must put forth a sincere and genuine effort toward improving communication, preferably through personal contact so that problems of mutual concern may be identified and resolved.

Neither the dentist nor the dental laboratory technician is exempt from professional or human relation problems. Many problems from the technician's point of view involve such factors as personal relationships, recognition and opportunities for individual development.

Most problems can be solved and their solution is more easily attained if concerned individuals just give a little thought to the other person. Listening is the key to good, effective human relations. If there is any one secret of success, it lies in the ability to get the other person's point of view of things from his angle as well as from your own. To get the other person's point of view you have to listen uncritically, sympathetically, attentively and creatively. Avoid supersensitive listening. This is the attitude we adopt when we think we know what someone is going to say, and we know that we are not going to like it. So we listen not to learn but to have something to argue about.

There are two sides to every problem and identification of the problem is the first step in its solution. Communication is most effective on the one-to-one level. Therefore, the dentist and laboratory technician must get together on a regular basis. Unfortunately, this often does not occur until a problem arises, and this is certainly not the best time to establish meaningful personal contacts. Regular visits by the dentist to the technician in his laboratory can be extremely beneficial to both parties involved in that the dentist and technician can become better acquainted and establish better communication in their teamwork endeavors. The visit should not be hurried, preferably over coffee, so that the following may be accomplished:

1. establish common terminology;
2. reach an understanding of acceptable laboratory procedures;
3. establish types of laboratory procedures to be accomplished; and
4. establish a personal and friendly relationship.

Much worthwhile information can thus be exchanged for the benefit of both parties, information that can contribute immensely to the success of the combined effort. A spirit of cooperation can be established and maintained through personal contacts such as these. There is no reason why sincere men (and women) cannot resolve differences and work as a team since both will prosper from such a relationship, and ultimately the patient will also gain.

Editor's Note: This paper was presented by Maj Cragg at the Dental Laboratory Workshop held in Trenton in August 1977. The Workshop members were unanimous in their support of its content and recommended it receive maximum exposure through the CFDS.

a panoramic radiographic stud

*CAPT L.C.R. St. Pierre, DDS**

One hundred and thirty-eight recruits, aged 18 to 20 entering the Royal Military College of Canada, received "Condition on Enrolment" examinations, bite-wing radiographs, mouthguards, and a panoramic radiograph using a General Electric Panelipse unit. For coding purposes, bite-wing radiographs were used to verify the existence of interproximal decay since the image of proximal surfaces of posterior teeth often overlap on the Panelipse.

The following tabulated findings were made from Panelipses only. No references were made to the clinical examinations or bite-wing radiographs.

The percentages found in this study are compared to those found in a 1970 study of 997 similarly aged recruits at Cornwallis.[1] (Table 1)

CARIES

Carious lesions are observed on a Panelipse when they have extensively invaded the dentine (Photo 1). Thus in our survey, although 45.7% of the recruits had obvious decay, the actual percentage was 3% higher. The recruits at Cornwallis had a higher incidence of decay.

TABLE 1
CONDITIONS REVEALED BY RADIOGRAPHIC SURVEY

Findings	Recruits	Instances	% of Recruits RMC	Comparable % of Recruits Cornwallis
Caries	63	–	45.7	77.6
Periodontal Disease Radiographically Evident	13	–	9.4	1.2
Missing Teeth	70	–	50.7	66.0
Impactions	81	258	58.7	71.7
Periapical Radiolucencies	1	1	.7	14.5
Radiolucent Lesions	32	63	23.2	25.5
Radiopaque Lesions	9	9	6.5	3.7
Retained Roots	4	4	2.9	4.8
Retained Deciduous Teeth	3	3	2.2	3.4
Restorative Overhangs	4	4	2.9	7.2
Supernumerary Teeth	2	2	1.5	1.9
External Root Resorption	2	2	1.5	2.3
Foreign Bodies	3	3	2.2	1.1
Sinus Disease	4	–	2.9	0.8
Endodontically Treated Teeth	18	24	13.0	2.5
Soft Tissue Calcification	3	6	2.2	0.0
No Operative Treatment	9	–	6.5	21.8
Abnormalities Absent	2	–	1.5	2.1

PHOTO #1 Gross caries, molar and cuspid impactions, and retained deciduous cuspid.

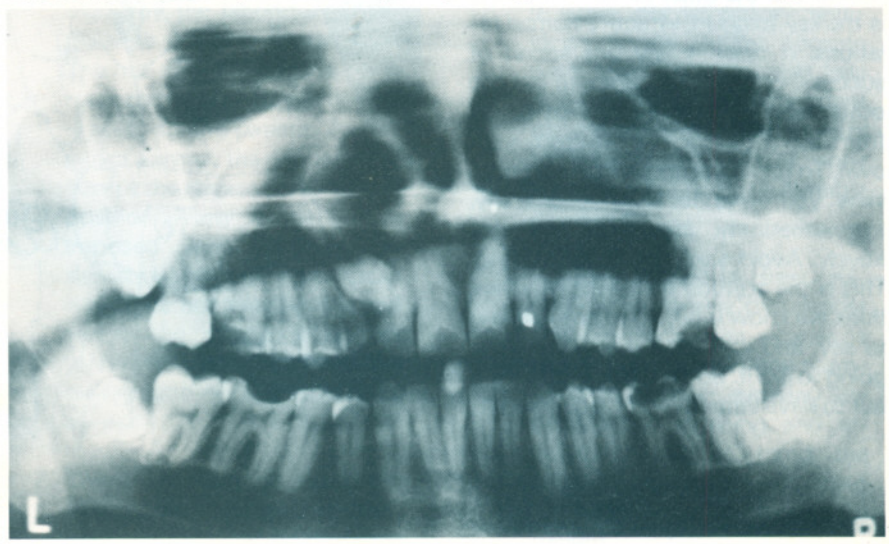


TABLE 2
NUMBER AND PERCENTAGE OF RECRUITS
BY NUMBER OF MISSING TEETH

Teeth Missing	Recruits	Percentage RMC	Percentage Cornwallis
0	65	47.1	33.9
1	18	13.0	15.7
2	13	9.4	16.2
3	7	5.1	9.4
4	15	10.9	8.4
5 – 10	13	9.4	10.6
11 – 15	2	1.5	1.6
16 – 20	4	2.9	3.0
21 – 25	0	0.0	0.3
26 – 31	1	0.7	0.4
32	0	0.0	0.2

TABLE 3
IMPACTIONS

	UPPER		LOWER	
Teeth Involved	RMC (In 138 recruits)	Cornwallis (in 997 recruits)	RMC	Cornwallis
Lateral Incisors	0	1	0	0
Mesiodens	0	5	0	0
Cuspids	2	10	0	3
Second Bicuspids	0	5	0	4
Supernumerary Bicuspids	0	1	0	2
Third Molars	121	941	133	943
Distodens	2	1	0	1

PHOTO #2 Complicated impactions with first bicuspids missing.

PERIODONTAL DISEASE RADIOGRAPHICALLY EVIDENT

The incidence of periodontitis was low in both studies because of the young age of both groups. The recorded 9.4% incidence does not mean there was no other periodontal disease. Gingivitis was common. The 9.4% only reflects periodontal disease starting to involve bone. No cases of severe generalized periodontitis were seen.

MISSING TEETH

The distribution of missing teeth is shown in Table 2. Four cadets had complete upper dentures; one cadet had both a complete upper and lower denture. In these denture cases, at least one unerupted third molar existed.

Some cadets had four congenitally missing or othodontically removed first bicuspids. 25% of the group were missing all third molars. Hence the percentage of four missing teeth is slightly higher than expected. (Photo 2)

It is of interest to note that 47.1% had a full complement of teeth, whereas in the Cornwallis study the average was 14% lower.

IMPACTIONS

All teeth which appeared to be restricted in eruption by either soft tissue, bone or adjacent teeth were classified as impactions. Impactions were observed in 58.7% of the cadets. Table 3 shows the distribution of these impactions. (Photos 3 & 4)

PERIAPICAL RADIOLUCENCIES

Only one periapical radiolucency was seen. However, RMC's incidence of endodontically treated teeth (13%) indicates previously treated periapical involvements.

OTHER RADIOLUCENT AREAS

All of these areas were associated with unerupted or impacted teeth.

RADIOPAQUE AREAS

These were tentatively diagnosed as osteosclerosis, or condensing osteitis if associated with deep restorations or deep arrested caries.

RETAINED ROOTS

Four retained roots, one deciduous, were found in four individuals.

RETAINED DECIDUOUS TEETH

The deciduous teeth retained were either mandibular second molars with congenitally missing permanent second bicuspids, or maxillary cuspids with impacted permanent cuspids. (Photo 1)

SUPERNUMERARY TEETH

Two maxillary distodens (fourth molars) were seen (Photo 5).

OTHER FINDINGS

No abnormalities were noted in 1.5% of the recruits. 6.5% showed no sign of ever having received restorative treatment.

The foreign bodies observed were amalgam, and in one case a lead pellet from an air rifle. This cadet had been shot in the chin at 8 years of age. The pellet was palpable, partially embedded in the bone over the cuspid root (Photo 6). Only four gross overhanging margins were found.

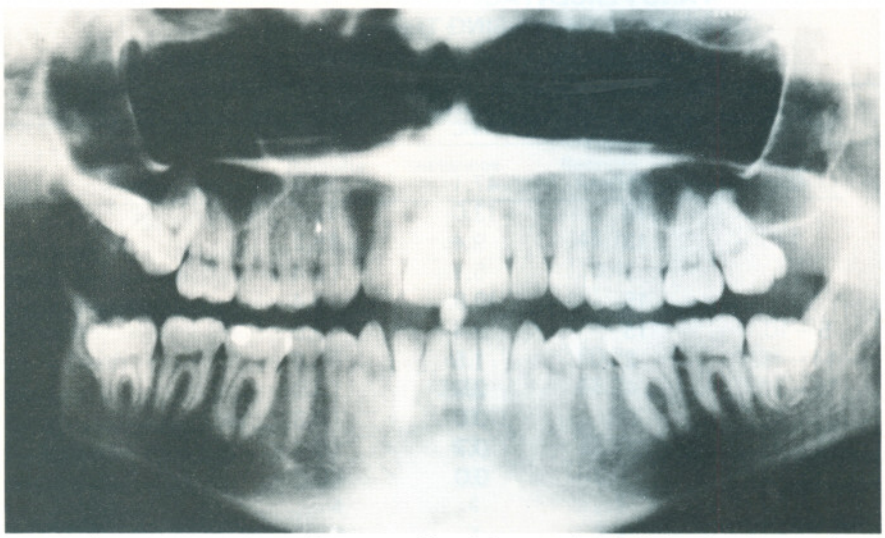


PHOTO #3 Complicated impactions – maxillary left second and third molars impacted.

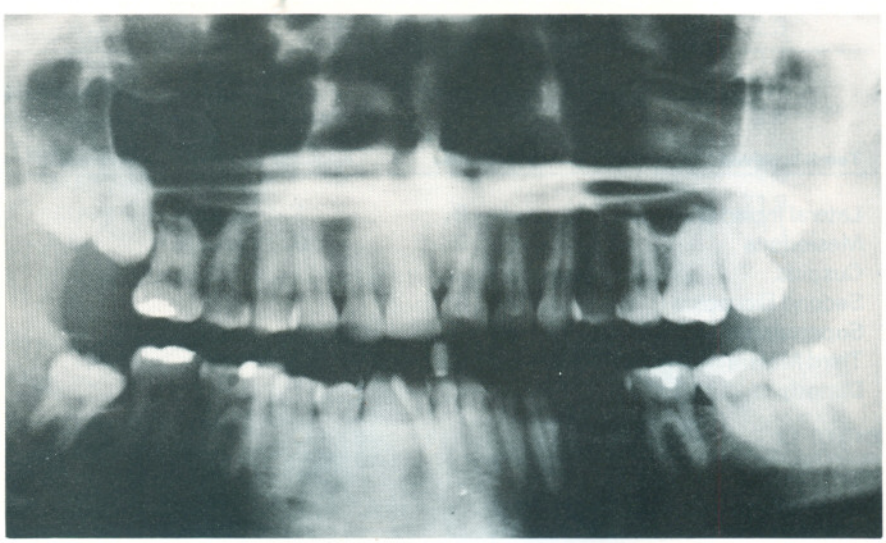


PHOTO #4 Complicated impactions and follicle around lower left third molar.

DISCUSSION

The dental health of RMC recruits is clearly better than that of Cornwallis recruits. Whether this is so because of better socio-economic background, higher IQ, good public health education, preventive dentistry programs, and fluoridated water, would require further study.

The dental condition of recruits still presents a heavy treatment commitment. In addition to the prosthetic and restorative treatment required,

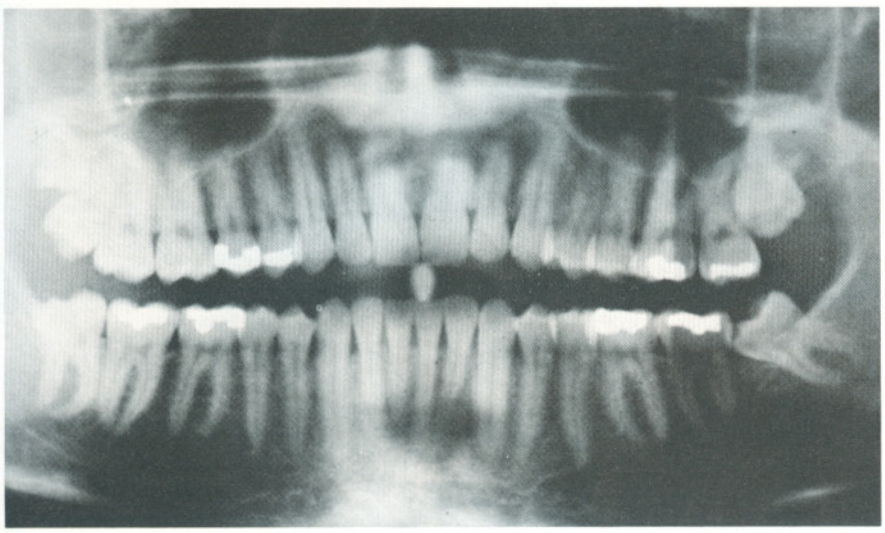


PHOTO #5 Maxillary fourth molar.

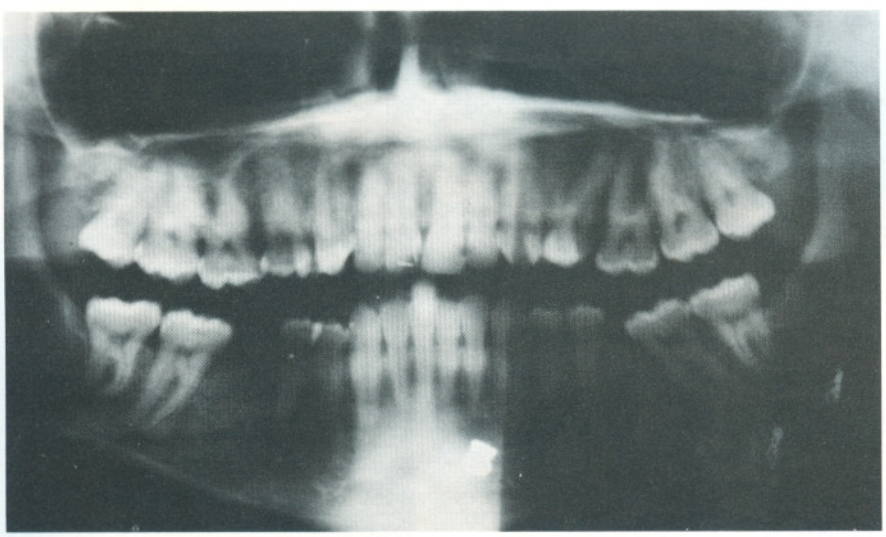


PHOTO #6 Foreign Body (lead shot from pellet gun) in chin.

70% of the mandibular third molars would require surgical removal because of the angulation or depth of impaction.

RMC recruits were classified as follows:

- 49.5% were dentally fit for service employment (RED Coded)
- 32.4% required up to three hours of operative treatment (BLUE Coded)
- 18.1% required more than three hours work (YELLOW Coded)

Cornwallis recruits were coded:

- 5.9% – RED
- 68.4% – BLUE
- 25.7% – YELLOW

SUMMARY

A dental panoramic radiographic study was made of 138 Royal Military College recruits and observations were recorded.

CONCLUSION

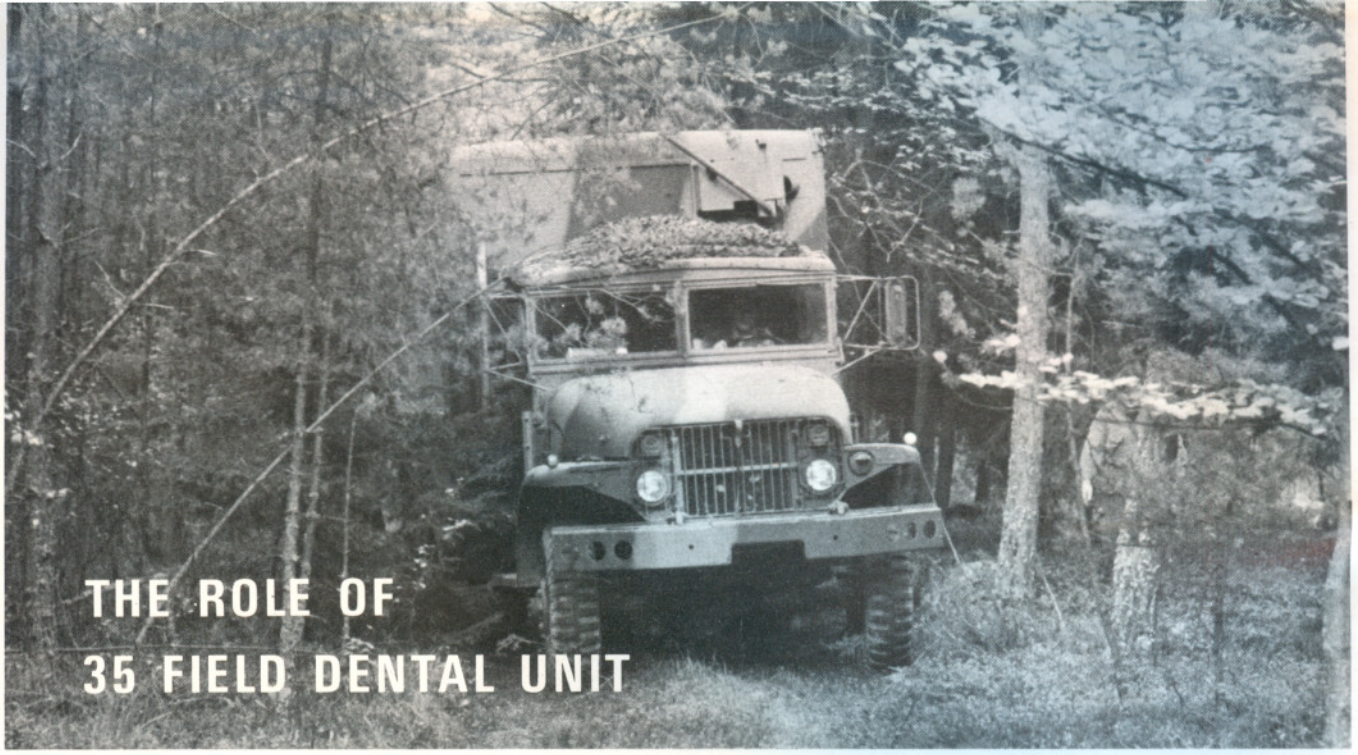
The panoramic radiograph is an excellent screening device. In less than a quarter of the time required for a full mouth radiographic survey with periapical films, a Panelipse can be taken. In addition to the regular dental views, the Panelipse provides good views of the temporomandibular joints, the body and rami of the mandible, maxillary antra, nasal vomer and turbinates, and the floor of the orbit.

However, for diagnosis and treatment planning, complementary views of higher resolution, using bite-wing, periapical and occlusal radiographs, should be taken.

REFERENCES

1. DONELY, J.M. A Panoramic Radiographic Study of 997 Canadian Armed Forces Recruits. CFDS Quarterly 11; 2-5, Jan 1971.

*Capt St. Pierre is a native of Sudbury, Ont. He graduated from U of Toronto in 1975. After his graduation he was posted to RMC Kingston where he is presently serving.



THE ROLE OF 35 FIELD DENTAL UNIT

*MAJOR P.D. HIGGINS D.D.S.**

35 Field Dental Unit exists in Europe to satisfy the dental requirements of the 5,000 personnel who make up the Canadian Mechanized Brigade Group (4CMBG), the Canadian Air Group (1 CAG) and the theatre base. Together with elements of the American, British and German Armed Forces stationed in West Germany and the various elements of the other NATO countries, the task of the Canadian contingent is to protect Western Europe against possible aggression from the Warsaw Pact Countries.

The threat of such an aggression is very real as indicated by intelligence summaries which reveal the excellent quality and massive quantity of materiel and personnel that face us from the other side of the Iron Curtain. It is with this threat in mind that the Armed Forces of NATO exercise their troops in Europe.

Every fall, for about six weeks, troops undergo intensive training at the gun camps of Hohenfels and Grafenwohr and then participate in the exercises "Reforger" and "Donau Safari".

Donau Safari is a predominantly Canadian exercise of one week duration. It consists mainly of river crossing tactics. With elements of the American infantry as allies and the German Armoured Corps as the enemy, 4CMBG attacks, retreats and then counter-attacks across the Donau River (Danube).

Reforger is a combined NATO exercise that lasts about two weeks. This exercise is probably the most important single NATO manoeuver since it is carried out in south-eastern Germany, the probable target area of a Warsaw Pact attack. Thus, the troops familiarize themselves with the actual terrain they will have to defend. Also, with very few limitations, the game is played in deadly earnest.

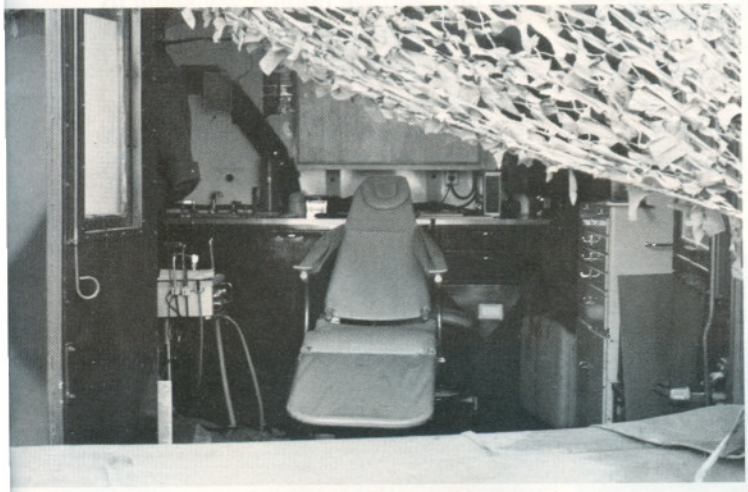
The citizens of this most beautiful part of Germany must watch while their fields are churned up by tracked vehicles, their fences knocked down to allow passage of convoys, and their orchards battered by heavy trucks seeking overhead cover. In the towns the lawns are turned into rutted mires by various vehicles attempting to camouflage themselves away from main thoroughfares by squeezing between and behind houses. The damage, of course, is carefully monitored by damage control teams, and the citizens involved are more than adequately compensated. The bill is enormous, running into millions of dollars, and is shared by the various governments according to the damage their troops have done as assessed by the damage control personnel.

Yet, strangely enough, the friendly smiling Bavarians do not seem to resent the presence of the tens of thousands of troops. One has the feeling that these people, having known in-

vasion from the east, welcome the thought of protection. It is not at all unusual for someone, when bivouacked in a town, to visit a Gasthof for a schnitzel and find various troops talking with the locals and being treated courteously despite the presence of holstered pistols, slung sub-machine guns or rifles stacked against the wall.

35 Field Dental Unit plays an active role in all major exercises in Europe by augmenting various units of 4 CMBG. During Reforger we usually deploy three dental operating vans and one laboratory van. The training is excellent and provides an opportunity to realize our problems with equipment. All personnel in 35 FDU must possess a DND 404 driving permit, be small arms qualified yearly, and be NBCW trained with the inevitable annual trip to the gas chambers.

Being a member of the armed forces for most dental personnel in Canada means wearing a green suit five days a week. In Europe it means more. It means being able to support a brigade in the field, and this involves being able to drive and maintain a vehicle, handle a weapon, protect yourself from nuclear, biological or chemical attack, understand and be able to apply the various facets of field discipline, and then still be able to do dentistry.



HAZARDS OF DENTAL ASSISTING

*Capt T.R. Melbourne**

Introduction

Puncture wounds and scrapes on hands and arms caused by dental burs are a fairly common occurrence in the dental operatory. This article describes a case in which a bur remained implanted in the arm of a dental assistant for approximately 18 months.

Case Report

In November, 1976 one of the dental assistants working at the Dockyard clinic brought the author's attention to a swelling on her left arm just below the elbow (Fig. 1) Physical examination and routine questionning yielded no apparent cause for the swelling. However, Xray examination of the area (Figs 2-3) soon made it evident that a broken fissure bur from a high-speed handpiece was the source of the lesion.

At this point, the dental assistant recalled an incident in June 1974 in which she hit her arm on a bur mounted on a highspeed handpiece. In retrospect, it is obvious that it had imbedded itself in the dental assistant's arm. No bleeding or pain was associated with the incident at the time. However, one month afterward, swelling begain to manifest itself and gradually increased until it attained 20 mm in diameter and 5 mm in height. Although at this stage there was no pain or accompanying drainage.

On 4 Jan 77, a surgeon at the Victoria General Hospital in Halifax excised the lesion intact. It was described as cystic in nature. Four silk sutures were placed and healing was uneventful, except for slight paresthesia of the surgical site.

Histopathology Report

A 2.5 x 1.5 x 1.0 cm portion of grey-pink, soft tissue was submitted to the Department of Pathology at the Victoria General Hospital. The microscopic examination showed segments of dense, hyalinized scar tissue with marked lymphoid reaction. The lymphoid tissue was histologically benign. The diagnosis was that of dense, hyalinized scar and lymphoid tissue.

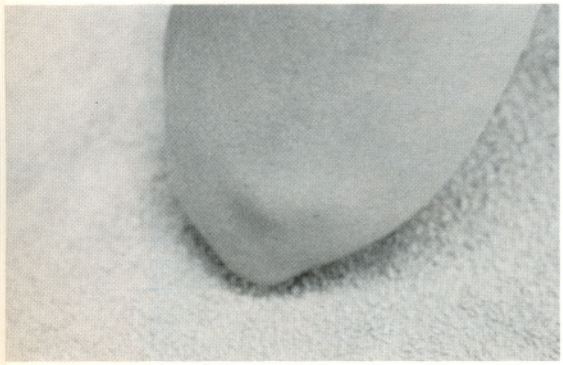
Discussion

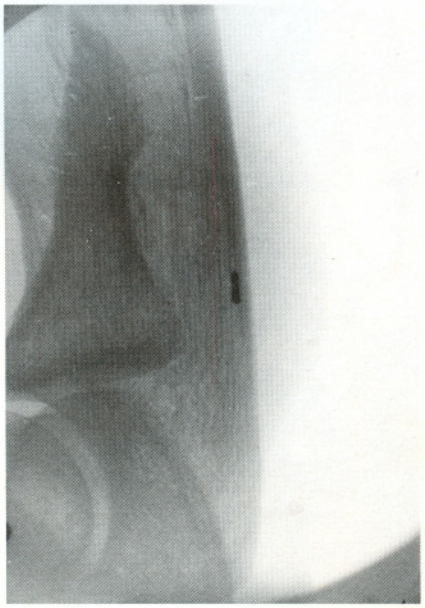
This traumatic wound effected by the dental bur was painless and was associated with no bleeding. Dental personnel would be well advised to look very carefully at their hands and arms after hitting or scraping against a dental bur, particularly if the dental bur breaks.

Summary

This article described the progress and treatment of a traumatic puncture wound effected by a dental bur, and we hope it will serve to remind dental personnel that dentistry involves certain risks.

* Capt T.R. Melbourne is a graduate of U of T, 1975. He is stationed at CFB Halifax (Dockyard Detachment), but is presently serving a 6 mos tour of duty in Egypt.





CFDS NEWS

AN HISTORICAL SKETCH

The Canadian Forces Dental Services School originated with the establishment of the Canadian Dental Corps Technical Training Centre at 14 Spadina Road in Toronto in 1943.

Shortly after the 1939-45 war, it became obvious that a military dental school was needed to meet peacetime training requirements. Therefore, the Royal Canadian Dental Corps School was established in 1947 at 541 Sussex Street in Ottawa, with Lieutenant-Colonel K.M. Baird, (Brigadier-General (ret'd) DGDS 1958 to 1966) now Colonel Commandant of the Canadian Forces Dental Services, as first Commandant.

The Royal Canadian Dental Corps School was moved from Ottawa to its present facilities at CFB Borden in June 1957 with Colonel B.P. Kearney, (Brigadier-General (Ret'd) DGDS 1966 to 1970) as Commandant. The School was officially opened by The Honourable George R. Pearkes, V.C., then Minister of National Defence, on 13 June 1958.

In 1969, as a consequence of integration and in concert with changes in the Corps structure of the Canadian Forces, the RCDC School became the Canadian Forces Dental Services School (CFDSS).

In 1972 the CFDS School was officially designated the Wansborough Building in honour of Brigadier R.M. Wansborough, OBE, MM, ED, CD, QHDS, DDS, FICD, FACD, who served as Director General of Dental Services from September 1948 to October 1958, and acted as Colonel Commandant from January 1965 until his death in 1970. A plaque located in the main entrance to the Wansborough Building and presented by the Royal Canadian Dental Corps Association was unveiled 20 October 1972, to commemorate this great man who dedicated his life to the betterment of the CFDS.

The functions and responsibilities of the School have varied although dental classification and trades training have always been the primary function.

Division News

VISITS

The Director General visited CFB Kingston, CFB Trenton and TSHQ (Trenton) on 8-9 January 1978. BGen Thompson also attended the Conference of Defence Associations meeting on 18 to 20 January 1978. LCol Lanctis

was also present at the CDA meeting and he took part in the group discussions on Friday and Saturday. Both attended the Mess Dinner on Saturday evening.

Col Donely attended the Canadian Dental Association Registrars and Secretaries Conference held in Toronto on 1-2 December 1977, as the CFDS representative.

With the visit of the University of Toronto first-year students early in December, LCol Fortier completed his first annual recruiting drive for DOTP candidates. So far 23 students have joined our subsidization program. The four-year plan attracted roughly the same number of candidates as the three-year plan.

LCol J.F. Begin attended a few meetings in the Nov-Dec period. On 8-9 Nov he travelled to Toronto for a two-day meeting of the Canadian Standards Association Technical Committee on Dentistry and the Sub-Committee on Rotary Instruments. Later in the month he spent two days, 28-29 Nov, at a national meeting of the CDA Council on Health Care held at the CDA headquarters in Ottawa. He was tasked with a review of the literature on "Occupational Hazards of the Dentist" in preparation of a brief for the CDA. In Dec LCol Begin participated in a two-day DND meeting on Performance Measurement. And the 16th Dec he ventured down the road to present a talk to 1 Dental Unit staff outlining the rationale and the logistics along with an evaluation of the P.D. programme to date.

HONOURS

BGen Thompson presented LCol Hank Griesbach with the first clasp to his CD and thanked him for his excellent contribution to the CFDS during all these years.

1 Dental Unit News

RETIREMENTS

Approximately 50 senior NCOs and Officers gathered at the WOs and SGTs Mess of CFB Ottawa (S) on 15 November 1977, to wish farewell to MWO McFadden who served 26 years in the Forces. Short speeches were given by LCol Deyette, CO of 1 Dental Unit, other members of the unit and some guests. Earl was also presented with some gifts to help him remember his time in the service and received a coveted "Air Force Plaque" as he said: "I always enjoyed my time with the gentlemen of the Air Force". Earl had the last say of his day when he took the opportunity to roast a few of his old friends and peers. We all wish Earl well in his new endeavours as a denture therapist in Ottawa.

Guests at MWO Earl McFadden's Retirement Luncheon.

Maj A. Marcil presenting gift to Mrs. Jewers on behalf of NDMC Clinic.

MRS. THELMA JEWERS

On 8 December 1977, a dinner was held to honour Mrs. Thelma Jewers on the occasion of her retirement from the public service. On behalf of the members of 1 Dental Unit, LCol M. Deyette, Commanding Officer, presented her with a CFDS plaque, while Major Andre Marcil presented a small gift, and a certificate, signed by the Prime Minister, commemorating 26 years of service. We all wish Thelma the very best on her retirement.

CHRISTMAS PARTY

A gathering of 50 people enjoyed a sit down dinner at the Hylands Golf Club Lounge on the 2nd of December to celebrate the annual Christmas Party. Short speeches were presented by BGen Thompson representing the Directorate staff and by LCol Deyette from our own unit. The evening was rounded off by conversation and dancing to a local D.J.

11 Dental Unit News

THE MINISTER OF NATIONAL DEFENCE TRAVELS WEST

MWO J.A. Christiansen, NCO in charge of the Central Laboratory had a rare opportunity to make his point with "the man at the top", the Honourable Barney Danson.

"Look Sir, carry both drinks in your left hand and maintain complete freedom of the right".

DEPARTURE

A dinner party was held at the Adm Officer's home for the HQ staff in honour of Mrs. Freda Seguin who is leaving.

Rear L to R: Sgt J.A. Wesley, LCol A.G. Taylor
Front L to R: Capt C.G. Sproule, Mrs F. Seguin and Sgt R.W. Boyd

CHRISTMAS FESTIVITIES

The Commanding Officer and his wife May were gracious hosts to the Victoria area dental officers on 16 December and to the HQ and Central Lab staff on 17th December. The Pacific Avenue home provided a cosy atmosphere to enjoy refreshments and a fine dinner along with some friendly conversations.

SPORTS

Capt Casey and Howie from Naden and MWO Christiansen from the Lab were members of the winning team competing in the Base Curling playdowns.

Colonel G.S. Kells (TSHQ) presents the "A" Platoon Top Student award to WO M.G. Williams of 12 Dental Unit. WO Williams recently graduated from the Senior Leaders Course held at CFB Borden.

12 Dental Unit News

12 DENTAL UNIT 5TH ANNUAL CONFERENCE

The highlight of activities for 12 Dental Unit was their Fifth Annual Conference held at CFB Shearwater from 30 Nov to 1 Dec 77. The success of the Conference was enhanced by the presence of the DGDS, BGen W.R. Thompson and by the contributions of other visitors including Maj Carver, CWO Adams, WO Pion and CWO Everett.

Briefings from guest speakers included: LCdr Panteluk for D/COS Sea MARCOM on sea operations: Cdr Thompson from CF Hospital Halifax on Hypertension; Dr. B. Harsanyi, Head of Oral Pathology, Faculty of Dentistry from Dalhousie University, on Dental Pathology; and Mrs Pat Grant from the School of Dental Hygiene, Dalhousie University, on Dental Hygiene. A total of 98 personnel attended the conference. The theme for this year's conference was "Dental Health like Success is not a Destination but a Continuous Journey."

Social events during the conference included a "Meet and Greet" on 30 November and a dinner on 1 December where CWO Keith Laurence

12 Dental Unit personnel and guests during their 5th Annual Unit Conference 30 Nov-01 Dec 77.

and wife were presented with a silver tea service on the occasion of CWO Laurence's retirement from the CFDS after 32 years service.

LCol McQueen was chairman of the organizing committee. He and his committee members are commended for putting on an excellent conference.

13 Dental Unit News

FRUSTRATED PROFESSIONALS

Attending seminars can become frustrating as two members of this Unit discovered in early December. Majors Fallon and Hamilton journeyed from Trenton to Peterborough, Ontario, a round trip distance of 150 miles, to attend a professional development day sponsored by the Royal College of Dental Surgeons of Ontario. Upon their arrival in Peterborough they were quite surprised to discover that the professional development day had been postponed for one week. An administrative mix-up had resulted in the two dental officers not being informed of the change. Unfortunately, their attempt one week later to attend the rescheduled meeting was thwarted by adverse weather and road conditions. Better luck next year.

THE GOOD LIFE

While most of us were "blessing", with unusual vigour, the worst weather conditions that south central Ontario had experienced in many years, Sgt Peggy Mahlitz was just reading about our misfortune. No matter what you may say, anyone who can arrange to be in Nassau for the week in which our worst winter storms occur deserves a lot of credit. Congratulations Peggy for enjoying the good life to its fullest and on spending the week of Dec 19-25 in Nassau.

NEW WINGS

Cpl Joyce West and Pte Charlotte Gilbert were recently authorized by NDHQ to undergo flight attendant training commencing 9 January 1978. Successful completion of the flight attendant's course will result in both women being employed outside of their parent Dent CL A 722 trade for a period of two years, and then returning to chairside duties. Our congratulations on their selection, and Good Luck for the next two years.

26 YEARS SERVICE

Miss Florence (Flo) Evans is shown receiving a congratulatory handshake from Major E.F. Sasse, Base Dental Officer, CFB London, following completion of 26 years service to the CFDS as a dental hygienist.

Flo commenced duty in 1950 at the CFB Clinton dental detachment. Following closure of Clinton in 1971 she transferred to CFB London where she has become very much a part of the dental team.

WEDDING BELLS

Capt P.G. Abbott from our CFB London dental detachment and Michelle McDonald of Oakville, Ontario were married in London on 8 Oct 77. The newly weds then proceeded to Hawaii for a two-week honeymoon and a supply of grass skirts.

14 Dental Unit News

"AUF WIEDERSEHEN"

During a recent visit to CFB Shilo, on 2 December 1977, an informal get-together between German and Canadian personnel was held to say goodbye to the German Army dentist, Capt Dieter Bohmer and his assistant MCpl Hoffman, prior to their return to Germany.

The German Army Medical Services maintain a small hospital clinic and a one-chair dental clinic at Shilo for use during the summer training periods. Facilities are staffed from mid-March to mid-December by German Army personnel on a rotational basis.

Front Row: L. to R. – Major Peter Kunze, Major Paul Levy, Colonel "Hap" Protheroe, Capt. Dieter Bohmer, Capt. Barry Doerksen. Back Row: L. to R. – MCpl Lothar Hoffman Sgt. Don Ray, Mrs. Bev Haverstock, Capt. Chuck Grabowski, WO Meinolf Keuerleber.

CHRISTMAS PARTY

The 14 Dental Unit Det Winnipeg Christmas Party was held on 10 Dec. It comprised a sit-down dinner, followed by an evening of dancing. It can well be said that our Commanding Officer is a leader, as no one can compete with Col Protheroe when it comes to doing "THE OLD SOFT SHOE" — he outdanced everyone.

WEDDING BELLS

Sgt Tweed got tired of cooking his own meals, so on 17 Dec, at Edmonton, he married Denise Irene Wilson.

RETIREMENT

On 2 Dec a luncheon was held for LCol Kettyls to honour his retirement. He was presented with a CFDS plaque and a silver tray at the Edmonton Offi-

cers' Mess. We wish you all the best, Sir, and may you enjoy many happy years to come.

HONOURS AND AWARDS

Maj Pinsonneault has been elected President of the North Eastern Alberta Dental Association.

WO Bosch of Cold Lake graduated from Nipissing University College, North Bay, with a bachelor's degree in sociology on 10 December 1977 — great work Warrant.

15 Dental Unit News

ANNUAL UNIT CONFERENCE

The Annual Unit Conference was held 22-23 Sep 77 at BFC Valcartier with approximately 60 personnel in attendance.

The principal guest lecturer for the officers' program was LCol L. Bourget from 14 Unit who spoke on a variety of subjects including hypertension and the pathology of the pulp.

We were pleased to welcome BGen Thompson to this conference – his first visit to Valcartier as DGDS. Other guests included Maj Carver (PCO/DENT) and Capt R. Savoie (CO 1 DED).

The Unit Golf Tournament was held on the last afternoon at the BFC Valcartier Course and we must be living right because the weather was perfect for that event. The low gross winner was WO PG Harkin (once again!) and low net honours went to Cpl Serge Gignac.

UNIT CHRISTMAS PARTY

The festive season got off to a good start with the annual Unit Christmas party held at CFB St Jean's Club Rendez-vous on 9 December 1977. In spite of the bad weather and road conditions a total of 66 people including a half dozen DOTP students were in attendance. A traditional turkey supper was served and music was provided for dancing. Members of the unit had a chance to show off their dancing skills with some good French-Canadian hoedown dancing. The conviviality of the party was evidenced by the fact that Sgt Bond didn't manage to make the short 10 mile trip home until the next morning.

SUPPLY SECTION CLOSE OUT

The unit supply section closed out officially on 6 January 1978. We now say goodbye to Capt Don Grenier and his staff — MWO Gil Blouin, WO Conrad Lefebvre, Sgt Ray Remillard and MCpl Clem Hébert. The CO took the section out for a farewell luncheon on 19 December 1977. All of the members have been posted in the Montreal area and have promised to drop in and say hello.

VISIT

Staff from the clinics at St-Jean and CMR visited a civilian clinic staffed mainly by ex-military personnel in Brossard during November. All were impressed with the facilities and efficiency of the place which seemed unaffected by the presence of 20 or so visitors, a tribute to the military training of the staff, no doubt. Former members of the military who run this clinic include Drs Yvon Gagnon, Jacques Nadeau, Normand Roy and René Lévesque (no, *not* the Premier).

ANNUAL CLASSIFICATION – HOT SHOTS

Personnel from the St-Hubert Detachment (including females) attended annual range classification in September. Particular commendation must be given to WO Jim Busse who achieved marksman scores with three weapons-FN rifle, SMG and 9mm pistol. In addition, three other members of the staff proved themselves to be marksmen with the 9mm pistol – Maj Al Gaudet, Capt Pierre Langlois and MWO Joe Hossdorf.

Group photo of 15 Dental Unit personnel and guests taken during the Annual Unit Conference.

35 Field Dental Unit News

TRAINING

Sgt Allen recently completed a tour (attached posting) to the Junior Leadership Course School as an instructor. The accompanying photograph shows him enjoying every moment of an inspection of the candidates.

CONVENTIONS

Maj Moore, Capts Amundrud, Alberti, Stone, Drs Moore, Jackson, Konchak attended the annual USAREUR Dental Convention at Garmisch on 12-13-14 October 1977.

PARADE

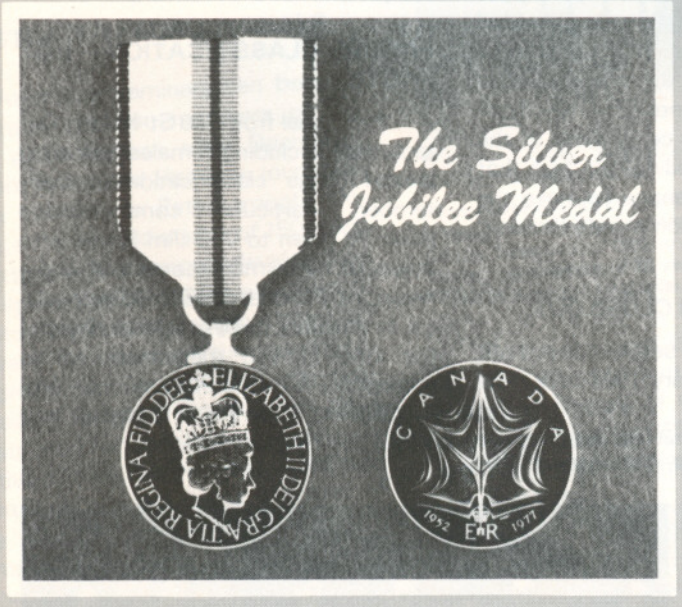
LCol Brogan was the Parade Commander for the C.F. Europe Remembrance Day Service.

SOCIAL

The unit Christmas Party was held on 2 December 1977 at the Berggasthof in Lahr.

WOs and SrNCOs of the unit in Lahr hosted the CO and Officers at the WOs and Sgts Mess 15 Dec at the annual "At Home".

Maj Lemieux leading the Canadian Contingent at the "Nijmegen Marches".



Last year marked the twenty-fifth year of Queen Elizabeth's reign. To honour the occasion a Silver Jubilee Medal has been struck and recently awarded.

The CDS has directed that awards be made primarily on the basis of merit, with consideration of length of service and other appropriate factors.

The 1-1/4 inch sterling silver medal portrays the Queen on one side and a maple leaf with the dates 1952-1977 on the reverse. The ribbon is predominantly white with red and blue vertical stripes.

Here is the list of the CFDS members who received the Medal:

DGDS – BGen W.R. Thompson
LCol F.J. Begin

CFDSS – LCol N.H. Andrews
Major E.D. Cragg
CWO M. Beauvais
CWO E.M. Everett
MWO H.E. Ayerst
WO L.H. Pion

1 Dental Unit – LCol M.N. Deyette
Maj G. Gunther
Maj J.F. Marcil
Capt J.R. Currah
MWO E.E. McFadden (Ret'd)
Sgt D.J. Thompson

11 Dental Unit – LCol A.G. Taylor
Capt R.M. Lobb

12 Dental Unit – Col L.A. Richardson
MWO W.R. Dawson
Sgt W.K. Jenereaux
Sgt W.C. Spates
MCpl W.L. Spencer

13 Dental Unit – Col L.R. Pierce
Maj E.E. Foley
Maj B.W. Yates
WO N. Highfield
Sgt R. Haiplik
Sgt R.K. James

14 Dental Unit – Col D.H. Protheroe
Maj G.H. Pinsonneault
Capt C.C. Cann
MWO J.A. Fraser

15 Dental Unit – Maj R.A. Gaudet
Capt J.P. Loiselle
CWO J.M. Tapp
WO R.S. Black

35 Fd Dental Unit – LCol H.W. Brogan
Maj J.J. Jacques
Sgt B.F. Hannay

GENERAL NEWS

WELCOME

Sgt B. Lynn, Cpl(W) M. Chevalier, Pte M. Bryden, Pte J. Forget, Pte C. McClure, Pte M. Roby, Pte J. Routhier, Miss S. Purewall

FAREWELL

Capt D. Grenier, Lt J. Fournier, MWO J. Blouin, MWO E. McFadden, WO J. Lefebvre, WO H.J. McKinnon, Sgt J.H. Gracie, Sgt J. Remillard, MCpl J. Hebert, MCpl B.A. Rubuliak, MCpl G.N. Vacheresse, Cpl F.A. McDougall, Pte W. Fasshender, Mrs T. Jewers, Miss J. Russell, Mrs F. Seguin

PROMOTIONS

A/Maj–	J. Steel
WO–	R. Black, D. Ferichs
SGT –	A. Baird, W. Spates
MCPL –	D. Bungay, P. Coss, D. Hurley, N. Jones, J. Laperle, L. Parker
CPL –	J. Anctil, A. Beland, A. Colburn, W. Jackson, I. Kennedy, M. Lebel, G. Payette, J. Sushelniski

TRAINING

PROFESSIONAL TRAING

Armed Forces Institute of Pathology

Washington D.C.

Forensic Dentistry (1 Oct-06 Oct 77)

Capt D. Vandahl

CFDSS CFB BORDEN

Dental Officers' Clinical Removable Partial Denture Course (16 Nov-01 Dec 77)

Maj J.J.G. Jacques, Capt R.K. Hockney, Capt A.K. Larter, Capt R.D. Mazurat, Capt R.B. Orawiec, Capt R.B. Taylor

CANADIAN FORCES TRAINING

CMR, St Jean, PQ

Senior Officers Management Symposium (9-20 Jan 78)

LCol F. Begin

Canadian Forces Staff School

Toronto, Ont

Junior Staff Course (6 Sep-10 Nov 77)

Capt J. Currah

CFB BORDEN

CF Warrant Officers Academy (13 Nov-20 Dec 77)

A/WO M. Fletcher

CFB ESQUIMALT

Junior Leaders Course (14 Nov-16 Dec 77)

Cpl J. Christiansen

CFB TRENTON

General Safety Officers Course (24-28 Oct 77)

Sgt C. Beauchamp

CFB EUROPE

Lahr, Germany

SIT 2 Course (30 Nov-12 Dec 77)

Sgt R. Danyluck

SIT 1 (12-16 Nov 77)

Sgt B. Hannay

TRAINING WITH INDUSTRY

New Rochelle, N.Y.

Porcelain to Gold Technique (12-14 Dec 77)

CWO D. Hughes
WO T. Taylor

HONOURS AND AWARDS

First Clasp to CD:

LCol H. Griesbach
WO J.B. Arsenault

CD:

Maj K. Morley
Sgt T. James
Sgt G. Lamontagne

MARRIED

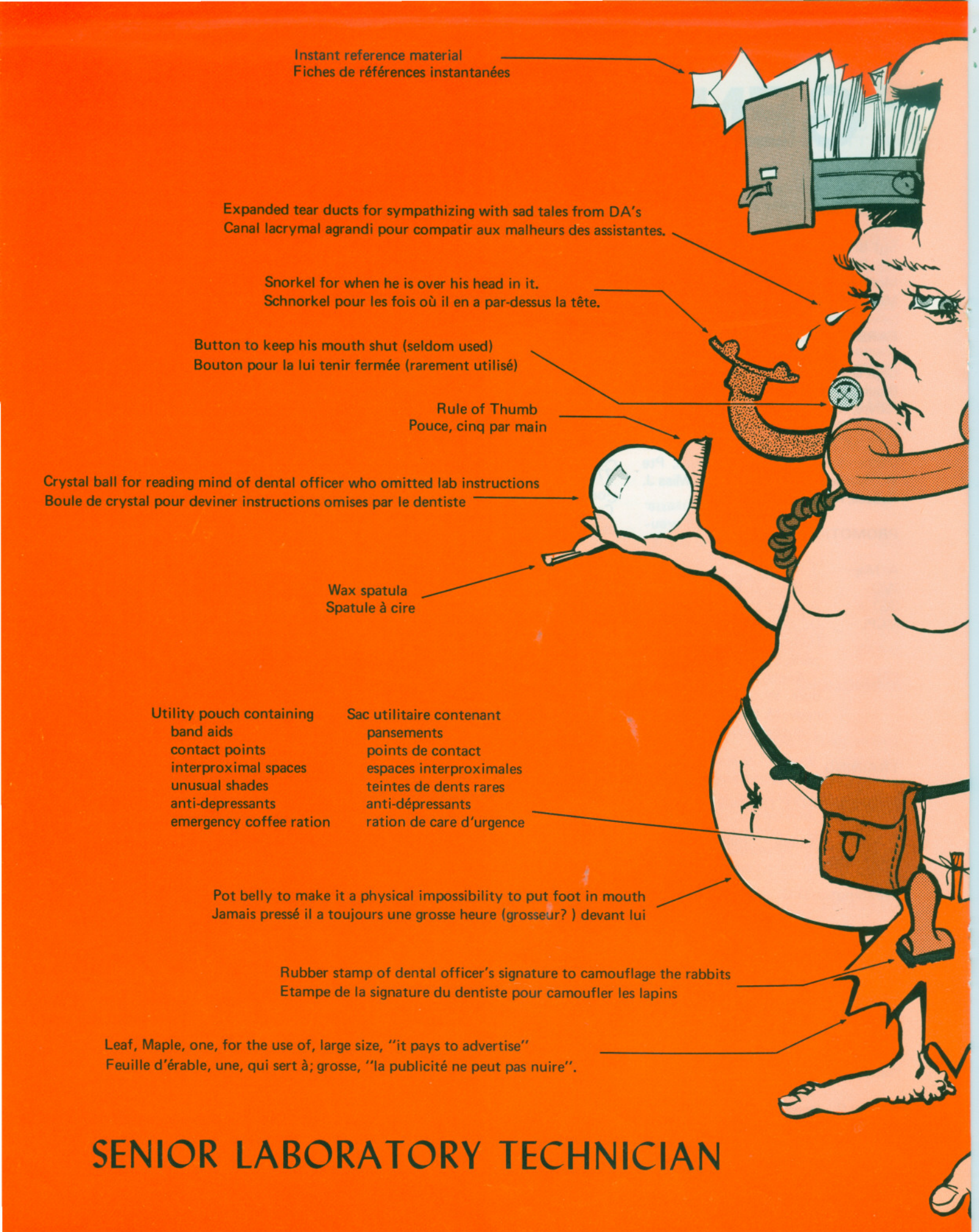
Best wishes are extended to the following newlyweds:
Capt P. Abbot and Miss Michelle McDonald
Sgt W. Tweed and Miss Denise Wilson
Pte(W) G. Aubin and Pte G. Isabelle
Pte(W) D. Dane and Mr J. McKie

BIRTHS

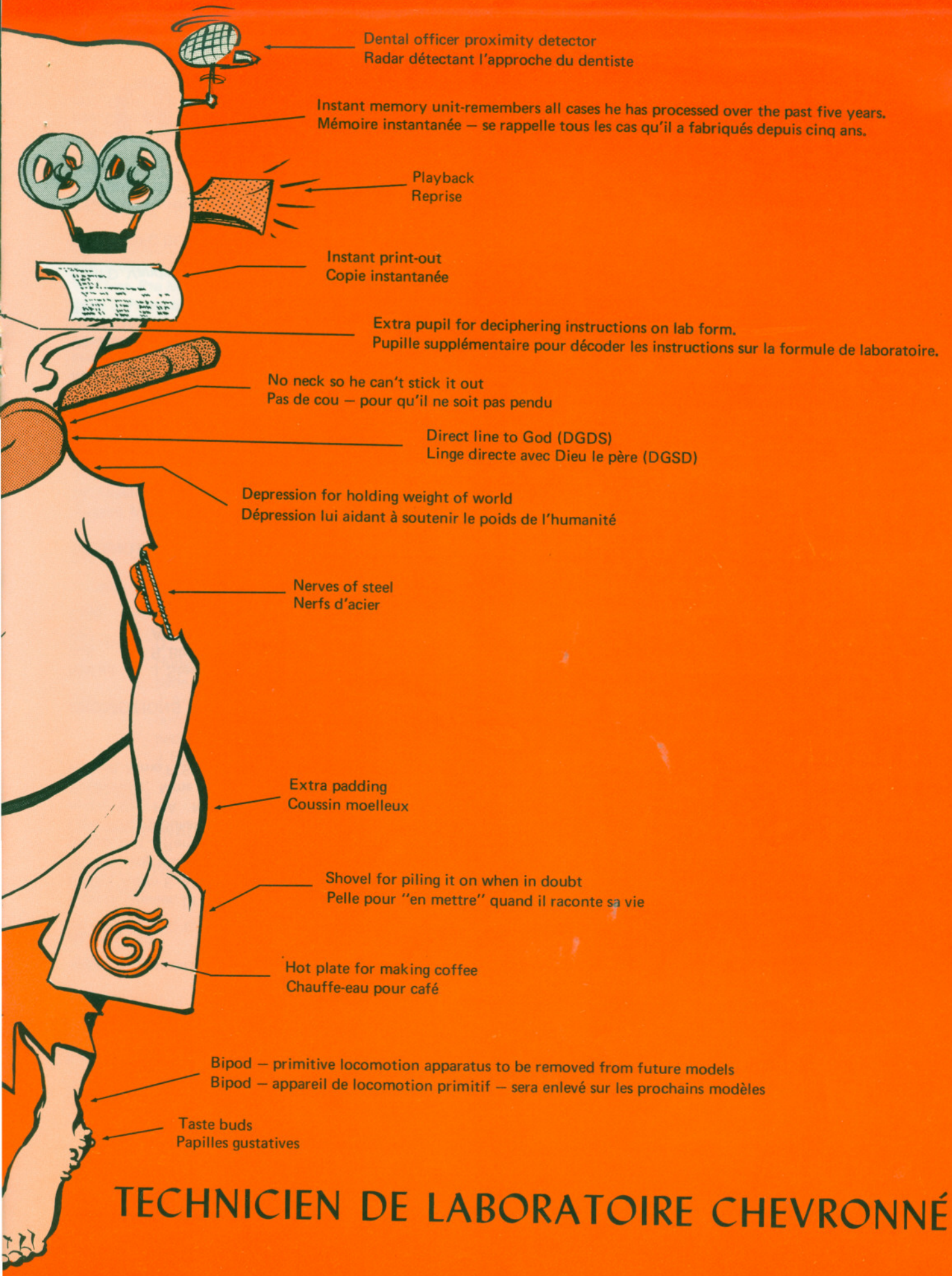
Congratulations to:
Capt and Mrs. J. Chaume on the birth of their son, and to Capt and Mrs R. Crosthwait and MCpl and Mrs F. Lemieux on the birth of their daughter.

BEREAVEMENTS

Our sincere sympathy is extended to:
MCpl J. Moir on the loss of his father
Mrs. G. Munro on the loss of her father



SENIOR LABORATORY TECHNICIAN



TECHNICIEN DE LABORATOIRE CHEVRONNÉ