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U. S. NAVAL TECHNICAL MISSION TO JAPAN
CARE OF FLEET POST OFFICE
SAN FRANCISCO, CALIFORNIA

NS/tk

20 November 1945

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From: Chief, Naval Technical Mission to Japan.
To : Chief of Naval Operations.
Subject: Target Report - Dentistry in the Japanese Armed Forces.
Reference: (a) "Intelligence Targets Japan" (DNI) of 4 Sept. 1945.

1. Subject report, covering Target M-02 and Supplementary Questionnaire "H" of Fascicle M-1 of reference (a), is submitted herewith.

2. The data on the Japanese Army Dental Corps was gathered by Lieut. P.E. Arioli, (MC) USNR. The data on the Japanese Naval Dental Corps was prepared by Comdr. P.B. Ayres, (MC) USNR.



C. G. GRIMES
Captain, USN

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M-02

DENTISTRY IN THE JAPANESE ARMED FORCES

"INTELLIGENCE TARGETS JAPAN" (DNI) OF 4 SEPT. 1945

FASCICLE M-1, TARGET M-02

AND SUPPLEMENTARY QUESTIONNAIRE "H"

NOVEMBER 1945

U.S. NAVAL TECHNICAL MISSION TO JAPAN

SUMMARY

MEDICAL TARGETS

DENTISTRY IN THE JAPANESE ARMED FORCES

The practice of dentistry in the Japanese armed forces seems, for the most part, to have been in the hands of qualified personnel. Entrance requirements to the Dental Corps were adequate and the standards of teaching in the recognized dental colleges are fairly advanced. The Japanese services suffered from a grossly understaffed Dental Corps, more than from the mediocrity of the performance.

Instruments and equipment were modern, and, since the Japanese make good technicians, the dental work is probably of a creditable nature. No new techniques or drugs seem to have been employed, although substitute metals were in use for fillings. Acrylic resins were produced in JAPAN two years ago, and are in dental use.

The number of qualified oral surgeons was as insufficient in ratio to the dentists, as was the number of dental officers to personnel in the services. Both Army and Navy Dental Corps were organized within the past four years, as such, and the waste of professionally trained men inducted into the ranks is indicative of the Army's dire need of man-power, or the lack of comprehension on the part of the Medical Corps, as to the dental problems it faced in caring for an Army of some 11,000,000 men.

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REFERENCES

A. Japanese Personnel Who Assisted in Giving Information, Securing Equipment and Documents:

1. Y. IWASAWA, Lt. Comdr., (DC) IJN, Naval Dentist, TOKYO Naval Hospital #2
2. K. HANA, Lt. Comdr., (DC) IJN, Naval Dentist, J. Naval Medical School, TSUKIJI, TOKYO
3. S. YAMAZAKI, Comdr., (MC) IJN, Chief, Aero-medical Research Section, 1st Naval Technical Research Institute, YOKOSUKA
4. M. NAKAYAMA, Maj., (MC) and (DC) IJA, Instructor, Army Dental School, TOKYO

B. Japanese Personnel Interrogated:

1. Same personnel listed in reference "A"
2. All surgeons and staff dentists of the ten Naval Hospitals visited and inspected. (See "Data Relative to Life in the Jungle", NavTech-Jap Report, Index Number M-01)

LIST OF ENCLOSURES

- (A) List of Documents Forwarded to WDC through ATIS.
- (B) List of Equipment Forwarded to NMRI, BETHESDA, MD.
- (C) Formula of Solution for Treatment of Pyorrhoea.
- (D) New Metal-alloy Formulas for Filling Material Substitutes.
- (E) Japanese Army Dentistry.

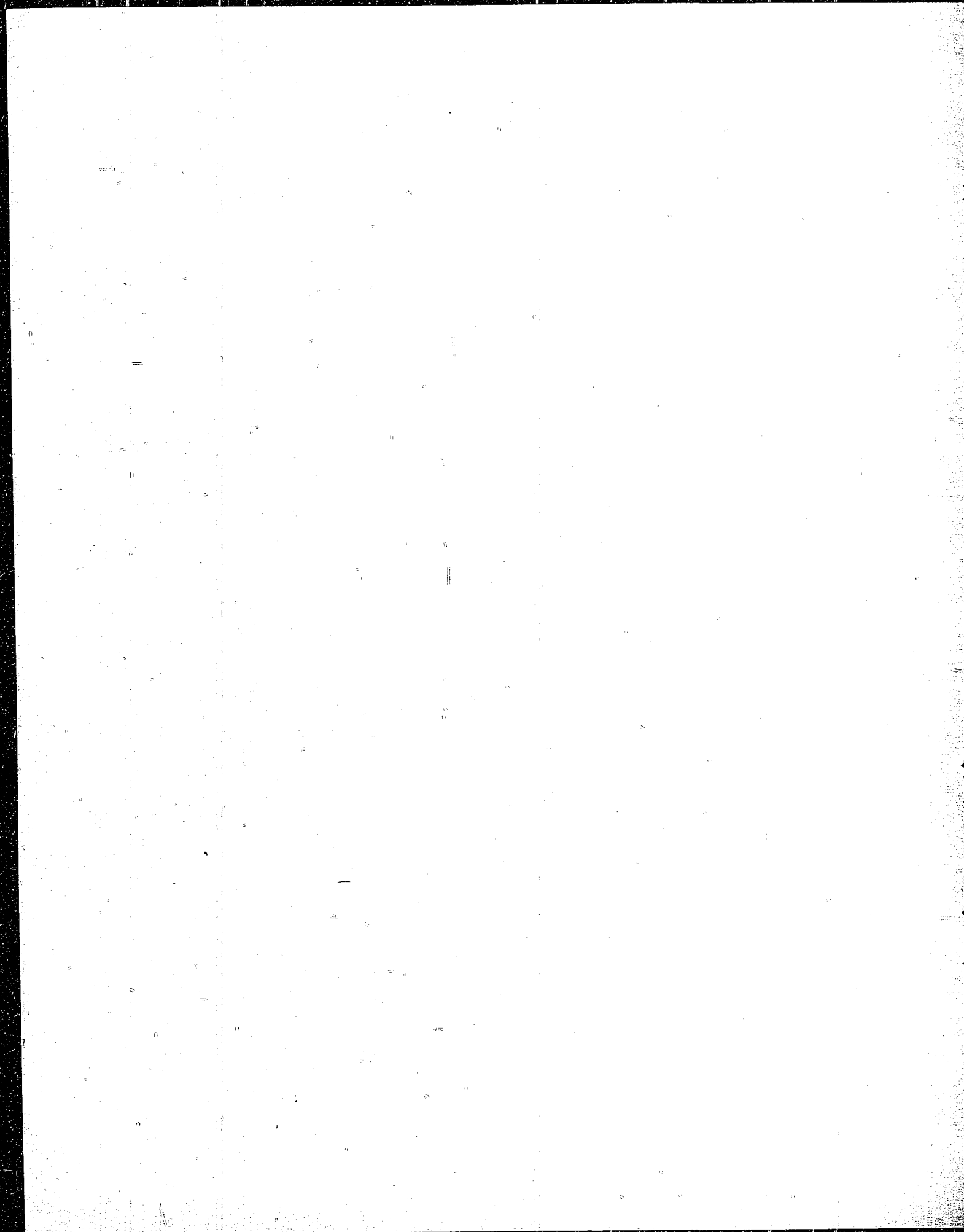
INTRODUCTION

The magnitude of the problem facing the Japanese Naval Dental Corps in its expansion programs, necessitated by the huge increase in the numbers of naval personnel entering the service in the recent war years, was appreciated, and an adequate program instituted. For ordinary dental hygiene and repair requirements, the amount of service involved was enormous.

Added to this was the realization that traumatic wounds of the face would require specialized care, and that combat wounds in large numbers could be expected to make the presence of an oral surgeon imperative in the field.

At home, substitute materials for dental use were being developed, and techniques improved upon, while the gathering of the accumulating experience of the dental officers abroad, in the care of new infections and wounds, was adding to the sum total of dental knowledge.

With this realization, and in an attempt to see if new techniques, new drugs, substitute materials, and new therapy had been similarly developed in JAPAN, this inquiry was undertaken along the lines subsequently presented. It appears that little information has been gained or returned from the field by the Japanese, and that the progress that was made, was made in JAPAN proper.



THE REPORT

Part I

Supplementary Questionnaire "H" - Dentistry

1. a. The overall ratio of regularly appointed dental officers in the Japanese Navy to personnel was 1:17,500. About 100 dental warrant officers who had been licensed dentists in civilian life also acted as Naval dentists, in addition to the 160 dental officers. Thus the actual ratio was 1:7000.
b. There were 28 regular Army dental officers. Approximately 3000 civilian dentists were conscripted and inducted (as privates) into the regular army. They were permitted to apply for, and take, an examination in professional and military subjects. The successful candidates were given a three months course at the Army Medical School and then commissioned as "dental officers". Three hundred ninety of the 3000 drafted were so appointed to the Army Dental Corps. Of the remaining 2010, six hundred were allowed to practice dentistry where equipment was available. The remainder carried on as privates in regular military duty.

The total practicing number seems to have been 318 dentists for the whole army, giving an astronomical ratio of dentists to total personnel. The facts were reported as there having been one dentist per division, and one per field hospital, although "one per regiment" was called for by the T/O.
2. a. In the Navy, the dental officers were organized under the Medical Department as a service division, and served under the direction of the Senior Medical Officer.
b. The army dentists were similarly integrated into the Medical Department.
3. a. The naval dental officer served as "assistant medical officer" during combat, either being assigned a first aid dressing station, or acting as an assistant to the medical officer in emergency treatment or surgery.
b. The army dental officer accompanied the field hospital during combat and acted as an "assistant medical officer" also. Because of the lack of medical officer personnel there was instituted a program of training for dental officers to qualify them for medical officer duty, at the expense of the Dental Corps.
4. a. The naval dentist, if a qualified oral surgeon, and experienced, had charge of the surgery in maxillo-facial repair and wound which involved the mouth. Usually, the dental officer assisted the general or plastic surgeon in this field.
b. In the Army, maxillo-facial surgery was a function of the trained oral surgeon who held both M.D. and D.M.D. degrees.
5. a. The naval oral surgeon did no ocular prosthesis but was charged with maxillo-facial repair.
b. In the Army both ocular and maxillo-facial prosthesis came within the province of the oral (dental) surgeon.

Both services utilized acrylic resins in such prosthesis. The resins became available about two years ago.

6. a. Qualifications for entrance into the Navy Dental Corps were:

(1) Candidates must be graduates of dental colleges, or university dental schools.

(2) They must hold a license to practise dentistry.

b. The Army standards were similar to the Navy. Dental officers were supposed to have a year's training at the Army Medical School following entrance into the service.

c. Promotions in the Navy Dental Corps depended on time in grade, as was supposed to be the case in the Army. The Army dentists theoretically could reach the rank of Major General, while the Navy Dental Corps' peak was the rank of vice admiral. Actually the conscripted army dental officers are still 2nd lieutenants and only a few of the 28 regulars have been promoted to captains.

Time in Grade Table for Promotions

<u>From</u>	<u>To</u>	<u>Time Prewar</u> <u>Years</u>	<u>War Revision</u> <u>Years</u>
Ens.	Lt.(jg)	1½	The planned schedule was never put into effect.
Lt.(jg)	Lieut.	2	
Lieut.	Lt. Comdr.	5-6	
Lt. Comdr.	Comdr.	4-5	
Comdr.	Capt.	4-5	
Capt.	Rear Adm.	6	
Rear Adm.	Vice Adm.	4	

The Navy Dental Corps was established three years ago, the Army Dental Corps four years ago. Hence actually the promotion scale was not fully worked out, although it was intended to parallel that of the Medical Corps.

7. Neither the Army nor the Navy had a set of standard dental requirements for admission to the service for either enlisted personnel or officers. The dental officer's examination at the induction physical was expected to disqualify any "who could not carry on" due to dental difficulties. About 40% of the inductees had advanced cavities but few complained of any pain.

8. a. The Naval dentists were supposed to complete all essential dental work for troops prior to shipping overseas. This was done during their training period, and by the time they were fit for combat, it was expected that such treatment would have been completed.

b. The army dentists were equally supposed to have given all essential dental treatment, but due to the huge ratio of troops to dental officers, the program remained on paper.

9. a. The Naval Dental Corps supplied, fillings, inlays, bridgework and dentures to all ranks as far as possible. The amount of such restorations supplied, depended on the time available, and the press of other duties. Wounded, and those to be discharged from the service were supplied with prosthetic dental restorations in full.

b. In the Army, such prosthetic restorations were furnished service personnel if need for such was due to injury suffered in "line of duty", or if sufficient teeth were missing so as to prevent adequate mastication.

Part II

Target M-02

1. Filling Materials

Both the Army and Navy Dental Corps used the same filling materials, as follows:

- a. Gutta Percha - for temporary fillings
- b. Cement
- c. Amalgam (see enclosure D)
- d. Silver alloy (see enclosure D)
- e. Silicate fillings

Gold and porcelain, although standard materials in peace time, were not used during the emergency. Gold was scarce, and required too much of the dentist's time in working, although a few naval officers did receive gold inlays and fillings. Porcelain work was time consuming also, and its use was discontinued.

No "plastic" filling materials other than those referred to were known or employed.

2. Treatment of Gingivitis.

Results of following treatments relined and retarded their respective infections rather than cured the disease.

a. Mouth Washes

- (1) 1-3% H₂O₂
- (2) 0.5% Revanol Solution
- (3) 2% Chloramine Solution
- (4) 5-10% Boric Solution
- (5) 2% Sodium Bicarbonate Solution
- (6) 2% Zinc chloride Solution
- (7) Bichromate Solution

The latter, in conjunction with intravenous and topical salversan was used in treating VINCENT's Angina, while the sulfa drugs were employed in stomatitis (internally).

b. Topical Applications

- (1) 2% aqueous mercurochrome
- (2) Iodo-glycerine
- (3) 2% tincture of iodine
- (4) Various acriflavine derivations were employed by naval dentists for topical application and as mouth washes, as were mercuric salts.

3. Pyorrhoea

This condition was admitted to have been seldom cured, although the treatment improved or arrested the extension of the condition.

- a. (1) The teeth were scaled and cleaned.

(2) The various mouth washes and topical applicants as listed were employed.

(3) A special spray (see enclosure "A") was atomized into the infected pockets.

b. A NEUMANN-WIDDMAN gingivectomy was resorted to in advanced cases, the "flap" procedure being the only technique employed.

c. Loose teeth might be fixed by bridging to solid teeth.

d. Vitamins B and C were given orally and parenterally.

4. Denture Base Materials

a. No ready mixed sedative cement fillings were used or known, nor was there any technique for preparing such. Sedative cement filling consisted of the pre-filling application of phenol, or camphor-phenol to the cavity, or this was covered on occasion with a gutta percha temporary filling. The naval dentists used gold or tin foil as a lining for the cavity under the cement filling.

b. Dentures were made from rubber or acrylic resin with baked porcelain teeth. These resins were made in JAPAN, and have been in use for about two years as noted. The Navy produced its own dentures in the Hospital Dental Laboratories.

5. Dental Hand Piece and Instrument Sterilization

a. Burrs were sterilized in 2.5% Cresol.

b. Handpieces were sterilized in 2.5% Cresol.

c. Reamers were sterilized in 70% alcohol.

d. Other instruments were boiled for five minutes in electric, steam, or "water and lamp" sterilizers.

6. Dental Pain in Aviators

a. The Army dentists have reported that few complaints were made by their aviators and ascribe this to the fact that their teeth were always kept in a good state of repair. If, however, such discomfort occurred, the aviator was given "aspirin" and "sedarol" to carry with him for relief.

b. The Naval dentists report that 20% of the flying personnel in the air corps had dental pain in the air from low temperature or altitude effect. They attempted to correct all dental defects, but the symptom was not relieved. The pain, however, always disappeared as soon as the flight was over, and it was considered an inescapable evil, consequent to flight duty.

7. Mandibular Fractures

These were treated by fixation of the lower jaw against the upper, X-ray diagnosis pre and post reduction being S. O. P. Fixation was by wiring teeth, or by fixing the jaws in an acrylic resin denture. The usual tube feeding was employed for the nutrition of such cases, but they were relatively few.

8. Discharges from the Service Due to Dental Disability

No discharges were given from the naval service due to dental difficulties alone. Usually, serious facial wounds suffered in combat affected the teeth and jaws so irreparably that the individual was unfit for duty. In such cases a discharge was given upon medical survey.

ENCLOSURE (A)

List of Documents Forwarded to WDC through ATIS
 ND21-7516 " Dental Nursing Manual ATIS #3113

ENCLOSURE (B)

List of Equipment Forwarded to NMRI, BETHESDA, MD.

JE-21-7520.1-.2	Substitute Dental Kit Ordinary Dental Kit
JE-21-7505	Miro Solder Steel silver Dental Discs Miro silver Dental Alloy SS Morden

ENCLOSURE (C)

FORMULA OF SOLUTION FOR TREATMENT OF PYORRHOEA

Solution for Spray

Salol	0.2
Chlorcarbachelor	0.2
Ol.menthae pipertae	0.7
Ol. encalypti	0.1
Ol.foeniculi	0.1
Ol.cinnamoni	0.1
Saccharinum	0.1
70% alcohol	98.0

ENCLOSURE (D)

NEW METAL-ALLOY FORMULAS FOR FILLING MATERIAL SUBSTITUTES

1. Silver amalgam
Ag 66.6, Sn 26.4, Cu 5.1, Zn 0.6
2. Tin alloy Acolite (cast)
3. Silver alloy (Tarnish resisting Silver)(cast, band)
Ag 81, Zn 10, Sn 3, Cd 3, Cr 2, Ni 1
4. Copper alloy
Cu 88, Al 5, Zn, Sn a little
5. Nickel-chromium steel for dental use (band, swage)
Ni 87.46, Cr 11.38, Fe 0.42, Al 0.13, SiO 0.06

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ENCLOSURE (E)

JAPANESE ARMY DENTISTRY
INTERROGATION NO. 16

PLACE: MEIJI Building
DATE: 17 November, 1945

Subject: Dentistry (Japanese Army)

Section of Origin:

Medical Section

Personnel Interrogated and Background of Each:

Dr. NAKAYAMA, Makoto, instructor in the Army Dental School with two years duty in the Army (including base hospital experience). The doctor first took an M.D. degree, then a dental degree with oral surgery specialty.

Where Interviewed:

MEIJI Building

Interrogators:

Lt. Col. D. B. RIDGLEY (DC), Public Health, SCAP
Lieut. P. E. ARIOLI (MC)
Sgt. TANI

Interpreter:

YOKOGAWA, Nobuyoshi - From the Japanese Liaison Committee

SUMMARY

Information Relative to Target M-02

1. Plastic and Other Filling Materials.

- a. Gold (use discontinued during war).
- b. Silver alloy (see addendum for components).
- c. Gutta-percha.
- d. Cement.
- e. Amalgam (see addendum).

2. Treatment of Gingivitis.

- a. Mouth Washes with:
 - (1) 1-3% H₂O₂.
 - (2) 0.5% Revanol Solution.
 - (3) 2% Chloramine Solution.
 - (4) Boric Solution.
 - (5) 2% Sodium Bicarbonate Solution.
- b. Painting with:
 - (1) Mercurochrome.
 - (2) Iodo Glycerine.
 - (3) Tincture Iodine.
- c. Vitamin B and C (intravenously and orally).

ENCLOSURE (E), continued

- d. Treatment of Pyorrhea.
 - (1) Scaling of calculi.
 - (2) Atonizing of pockets with a special medicine (see addendum).
 - (3) Painting with Tr. Iodine Iodoglycerne, 2-8% ZnCl₂ solution.
- e. Gingivectomy (Neumann-Widmann) "Flop" method only used.
- f. Fization of loose teeth by bridging to a solid tooth.
- 3. Denture Base Materials.
 - a. Dental rubber.
 - b. Resins (artificial and made in JAPAN) - see addendum.
- 4. Sedative Cement Fillings.

Phenal and phenol-camphor (used prior and not incorporated with filling).
- 5. Instrument Sterilization (Dental Handpieces).
 - a. Burr point in 2.5% cresol.
 - b. Handpieces in 2.5% cresol.
 - c. Reamer in 70% alcohol.
 - d. Other instruments in boiling water.
- 6. Dental Pain in Aviators.
 - a. Few complaints because of prior examination.
 - b. No experimental research, but those who did complain of pain, carried aspirin and sedarol.

Information Relative to Questionnaire M-H

- 1. The Army Dental Corps has been in existence for only four years. The theory was that volunteer dentists were to have a years special training at the Army Medical School, then be assigned, with at least one dentist to a regiment. Actually there was at least one dentist in a field hospital and usually one in a division.
- 2. Dental officers were integrated and subordinate to the medical department, they worked independently only in the actual performance of their profession. In theory the Dental Corps was headed by a Major General, the Medical Corps by a Lieutenant General.
- 3. During combat the dentist accompanied the first field hospital and acted as a medical assistant. Because of the shortage of MD's the program had been in effect to make MD's out of dentists at the cost of the Dental Corps.
- 4. Maxillo-facial surgery is a function of the trained oral surgeon holding both M.D. and D.M.D. degrees.
- 5. Prosthesis is also a dental function - the interviewed doctor reporting use of acrylic resins used for maxillary bone prosthesis.

ENCLOSURE (E), continued

6. Prior to the establishment of the Army Dental Corps, army dental work was done by civilian dentists under contract. The theoretical training of regular army dentists was realized for only 28 dentists. It was estimated 5000 civilian dentists were drafted as ordinary Pvts. These might apply for an examination on both professional and military subjects. Those who passed were then given three months instruction at the Army Medical School, and then commissioned as dental officers. Those who did not pass their examinations remained as privates in the army. Where dental facilities existed the latter were permitted to practice their profession, otherwise they did the duty of an ordinary private. On promotions the regular army dentists might reach the rank of major general; in reality the above 28 are now only 1st lieutenants or captains. The civilian group have remained mainly as 2nd lieutenants.

7. There were no dental student requirements for admission of either enlisted men or officers to the Army.

8. Essential dental treatment for troops prior to overseas duty was tried, but obviously because of the lack of equipment and personnel, little could be done.

9. Prosthetic dental restorations were supplied to service personnel if such need were caused by "line of duty" action, or if sufficient teeth were lost to make chewing difficult. Again actual application was poor because of the lack of professional personnel and equipment.