

A Brief History of U.S. Air Force Prosthodontics

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This article is a brief overview of the evolution of the U.S. Air Force Dental Service with special emphasis on the simultaneous development of the specialty of prosthodontics within the Dental Service. Of special note is a review of the outstanding Air Force Training programs and Area Dental Laboratory system.

Birth of the USAF Dental Service

The United States Air Force was established by the National Security Act of 1947,¹ which authorized the transfer of designated functions, installations, personnel, records, materiel, and activities from the U.S. Army to the newly formed Air Force between 1947 and 1949. Following a mandate from the Secretary of Defense for the Air Force to be responsible for its own medical support, the Air Force Chief of Staff, General Hoyt S. Vandenberg signed Order No. 35² on 8 June 1949, which established the Air Force Medical Service. The Medical Service consisted of the Surgeon General and six subordinate divisions: the Medical Corps, Dental Corps, Veterinarian Corps, Medical Service Corps, Nurse Corps, and Women's Medical Specialists Corps.

The U. S. Air Force Dental Division inducted its first members on 1 July 1949 when the Joint Army and Air Force Adjustment Regulation No. 1-11-62 transferred 160 dentists from the U.S. Army to the newly formed U. S. Air Force.⁴

In all, 432 Army Dental Officers were transferred to the Air Force Dental Division. By 1950 the Senior Den-

tal Student Program was the primary source for new Dental Reserve Officers.⁵ Those original dental officers wore the old Army uniform with Air Force insignia. This uniform option was authorized until 1 July 1952. General Vandenberg approved the blue AF uniform in January 1949, but it was not available until September 1950. The blue uniform was essentially a blue Army uniform and remained unchanged until the late 1960's when the pockets were redesigned.⁶

That original cadre of Air Force dentists saw their Army service numbers change to a new Air Force I.D. number.⁴ The Air Force service number system was in effect from 1949 until 1 July 1969 when the member's Social Security account number became their service I.D. number.⁷ Another number which changed for those original Air Force dentists was their Army Military Occupation Specialty (MOS), which was changed to the new Air Force Specialty Code (AFSC).⁴ This classification system remained in effect until November 1993.⁷ At that time the Air Force adopted a new specialty classification system as part of the general reorganization of the Force.

The original Air Force dentists did not wear the Dental Corps badges which are worn today. The Medical Corps series of specialty badges for officers was first authorized by the Chief of Staff on 13 April 1955 and appeared in the AF Uniform Manual (AFM 35-10) in

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Fig. 1. The current U.S. Air Force Chief Dentist's Badge as approved in 1965. The star was awarded for completion of a residency; the scroll was awarded for specialty board certification.

1956.⁸ The original badge did not have the star and/or scroll versions seen today. (Fig. 1) These attachments were approved by the Chief of Staff nine years later on 9 June 1965.³ The star was awarded to dentists who had completed long-term specialty training. The scroll was awarded to specialists who successfully passed their specialty boards. The scroll was later (in the early 1970's) also awarded to dental administrators who had served in administrative positions for ten years.

In 1951 the Dental Division was renamed the U.S. Air Force Dental Service.⁵ During its first few years, the Air Force Dental Service identified a need for trained specialists but was not very successful

at recruiting the numbers of specialists that were needed. The logical decision, to create Air Force specialty training programs was made, but the early leaders of the Dental Corps realized that in order to compete with the existing programs of the times, the new Air Force programs would have to be at least as good as any program at any university or hospital around the country. Otherwise, the Air Force would not be able to attract the level of talent that it was seeking in its future specialists.

Origin of Air Force Advanced Dental Training Programs

In the mid 1950's, during the tenure of Major General Marvin E. Kennebeck, the Assistant Surgeon General for Dental Services, the Dental Service made the commitment to establish its own graduate dental training programs.⁵ Colonel Wilbert A. Schroeder (Dental Director at Lackland AFB, 1954-1959) and his assistant Major Henry I. Copeland, were commissioned to create residency programs at Lackland AFB in oral surgery, periodontics, and prosthodontics along with a dental intern program. Colonel Schroeder as Dental Director and Major Copeland as the first Education Director at Lackland AFB became the "movers and shakers" who launched the programs which have evolved into the outstanding residencies in place at Wilford Hall Medical Center (WHMC). Among the early program directors whom they assembled were: Alex M. Mohnac in oral surgery; Jules D. Kartman and Sam W. Hoskins, Jr. in periodontics; and Kenneth D. Rudd in prosthodontics.⁹ It should be noted here that during this same period (1954), the Air Force Academy was established at Colorado Springs, CO.

USAF Advanced Training in Prosthodontics

Dr. Kenneth D. Rudd (Fig. 2) served in the Army from 1940 through 1944 both as a dentist and as a medical service officer. He reenlisted active duty as an Air Force Dental Officer in 1953 and was first stationed at Gunter AFB, AL where, among other things, he taught dental laboratory technology at the original School of Health Care Sciences. When he came due for reassignment in 1957 he asked to be stationed anywhere except at Lackland AFB because of



Fig. 2. Colonel Kenneth D. Rudd, first USAF Prosthodontic Program Director from 1957 to 1966.

that base's reputation for being a "denture mill." There apparently was a rather high incidence of full mouth extractions and immediate dentures among the basic trainees.¹⁰ However, the Air Force, in all of its wisdom, moved Dr. Rudd from Gunter AFB to Lackland AFB in the Fall of 1957 and thereby initiated his ascent to becoming the "Father of Air Force Prosthodontics." In 1957 the Prosthodontics Department at Lackland AFB was staffed by Colonel Arthur H. Schmidt and Colonel John R. Jameson. Colonel Schmidt had actually retired in 1956, but stayed on staff until 1958 as a Civil Service dentist. In 1957 Major Rudd became the first Program Director of an Air Force Prosthodontics Residency. He served in this position until his selection for overseas service in 1966. When Colonels Schmidt and Jameson both retired in 1958, the Department's Chairmanship was passed to Colonel Benjamin W. Dunn (later Brigadier General Dunn, Assistant Surgeon General for Dental Services) (Fig. 3), a member of the original Dental Corps. It was also in 1958 that the dental residencies and internship at WHMC received accreditation by the American Dental Association's (ADA) Council on Education.⁹ By this time the Dental Service had 392 regular officers in its ranks.⁵ It was during these early days of the Prosthodontics Program, i.e., 1957-1966, that Drs. Rudd and Dunn established the high standards of excellence and laid down the positive attitude that has flourished among Air Force prosthodontists until today.

The prosthodontics residency at WHMC has yielded more Diplomates of the American Board of Prosthodontics than any other program in the country. In fact, it has accounted for approximately 8 1/2% of all Board certified prosthodontists.^{11,12}

The American Board of Prosthodontics was established in February 1947 and gave its first examination in 1949. It did not require its candidates to be formally trained, i.e., possess a Master of Science degree or a Certificate in Prosthodontics from an ADA accredited residency, until 1965.¹³ The Air Force Dental Corps had no Diplomates of the Board until 1954 when Dr. Kenneth D. Rudd, who was recruited the previous year, successfully challenged the Board and gained Diplomate status.¹¹

Some of the early Air Force prosthodontists had acquired one year of formal training at a dental school but lacked the second year of training necessary for Board eligibility. For this reason, the first 13 Air Force residents in prosthodontics completed only one year of training at Lackland AFB, i.e., graduates from 1958 through 1963. Beginning with the 1964 graduates, all of the Lackland trained residents had a three-year program.^{14,12}

The prosthodontic program at WHMC moved into its present home at MacKown Dental Clinic in 1964 when the building was dedicated.⁹ By 1961, the Formal Military Consultant's Program had been established at nine centers within CONUS and 80% of all Air Force clinic Dental Treatment Rooms (DTRs) were equipped with ultra high speed hand pieces.⁵

The Lackland AFB prosthodontics residency maintained its affiliation with the University of Texas Dental Branch at Houston from 1960 until June of 1981, when the incoming freshmen were diverted to the University of Texas Health Science Center at San Antonio.^{9,12} Prior to 1960 the residents attended a number of different dental schools for their didactic training.

As of the writing of this history, the prosthodontic residency at WHMC is staffed by seven board certified



Fig. 3. Brigadier General Benjamin Dunn, Chair, Department of Prosthodontics at Wilford Hall Medical Center from 1958 to 1960, also Assistant Surgeon General for Dental Services from 1964 to 1966.

prosthodontists and 12 residents and fellows. They are supported by a large cadre of ancillary personnel and laboratory technicians.¹⁵

From 1959 through 1996 this residency program has graduated 125 prosthodontists.^{9,12,14} Of these, 94 have achieved Diplomate status from the American Board of Prosthodontics.^{11,14} In recent years the graduates of the program have consistently won or placed as finalists in the annual research competitions sponsored by the more prestigious prosthodontic academies.¹⁵

Besides Dr. Rudd's program at Lackland AFB, there were two other Air Force residencies in prosthodontics established at Andrews AFB and Wright-Patterson AFB, respectively. Both of these programs had university dental school affiliation. The Wright-Patterson program was affiliated with Ohio State University, while the Andrews program was affiliated with Ohio State University, Tufts University, The University of Texas at Houston, and the University of Pennsylvania.

Both the Wright-Patterson and Andrews programs were established in 1965 and both survived until 1973 when they each graduated their last residents.^{5,14} In all, each graduated seven prosthodontists. Around that time, i.e., 1973, the Lackland program was expanded to handle four residents per year and the decision was made to train any necessary additional residents at a civilian program or in one of the programs offered by the Army or Navy. The residency at Wright-Patterson AFB has the distinction of being the only Air Force program to have had *all* of its graduates certified by the American Board of Prosthodontics. All of the Wright-Patterson AFB residents spent their first year of training at Ohio State University under Dr. Carl O. Boucher.

The needs of the Air Force have caused the demand for prosthodontists to fluctuate over the years. There have been years like 1961 and 1963 when only one new prosthodontist was graduated.¹⁴ Other years such as 1980 saw as many as 15 residents and fellows graduate from the Lackland program combined with graduates of programs at various civilian dental schools. For the foreseeable future, as part of the general downsizing of the Air Force, the Dental Service will train only three prosthodontic residents per year and those three will be trained at the program at WHMC.

Additional educational opportunities have been extended to Air Force prosthodontists in two subspecialty areas. The first is a one year fellowship in maxillofacial prosthetics. The Dental Corps trained six maxillofacial fellows at civilian programs during the 1970's. In 1985 the new maxillofacial prosthetic fellowship at Lackland AFB received its initial accreditation from the ADA.^{9,12} It graduated its first fellow in 1988 and was re-accredited by the ADA that same year. One fellow has been trained every year since.

The other fellowship opportunity which is open to trained prosthodontists is in the subspecialty of dental

materials. To date, four prosthodontists have completed a dental materials fellowship.

Besides the long term prosthodontics training which the Air Force has offered at WHMC, there have been a number of "short term" courses also offered by the Department of Prosthodontics. The most noteworthy of these is undoubtedly the Prosthodontic Postgraduate Course which originally began in 1957 under the supervision of Dr. Rudd.^{12,10} Though that first course only had a few participants and a question exists as to its exact length, it very quickly evolved into the well structured, six week course for ten students that was given twice a year from 1958 until late 1983. This course was shortened from six to four weeks in 1983 with a de-emphasis on removable prosthodontic treatment. From 1983 until 1993, however, it continued to be offered twice a year to ten students per class. In late 1993 it was drastically cut again along with many other Air Force short courses to keep in line with severe budget cuts and the generalized downsizing of the Armed Forces. By 1994 only one prosthodontic short course was being offered each year and it was only open to eight students per class. The course length, however, was still four weeks. Despite the budget cuts over the years this course has managed to continue to provide high quality continuing education in prosthodontics to Air Force general dentists. There has never been a counterpart to this course offered in the civilian community.

By 1987 the Dental Service established an Air Force wide implant program to assure quality implant therapy for all Air Force beneficiaries and also to control the myriad of logistical problems arising from the use of multiple implant systems throughout the Air Force. One system, i.e., the Branemark® System, was officially chosen as the only one which would be used at all of the implant centers. In the Fall of 1987, the Prosthodontic Department at WHMC hosted the three-day Branemark Course for the original group of Air Force oral surgeons, periodontists, and prosthodontists who were credentialed in the use of this system. The course was again offered in 1988 and 1989. The course was no longer offered once implant training had been integrated into the Oral Surgery, Periodontic and Prosthodontic Residency Programs.^{5,9,12,16}

In addition to the Branemark Course designed for clinicians, the Prosthodontics Department also offered a Dental Laboratory Implant Course which lasted five days and which could accommodate eight students per class. This course has been given every year since 1988 and to date has trained more than 70 students.

The USAF Area Dental Laboratory System

No history of Air Force prosthodontics would be complete without mention of the Area Dental Laboratory System. Air Force dentists depended on the Army

CDL's (Central Dental Laboratories) for dental laboratory support from 1947 until the rapid expansion of all of the uniformed services in response to the Korean War in 1950. The Army CDL's had been in operation since the beginning of WWII and served the new Air Force very well until the Korean War build up. As of 1950, however, they only served Air Force dentists on a "space available" basis. Such coverage was woefully inadequate as were initial Air Force attempts to make each base dental laboratory self sufficient, since adequate supplies of laboratory technicians and material obviously were not available to meet that objective. The Air Force granted each Command permission to create its own central dental laboratories in 1952. These central laboratories were designated as ADL's (Area Dental Laboratories) and could produce prostheses that a local base could not. By 1952 the Army was still handling 56% of the Air Force's laboratory cases. However, by 1954, that number dropped to 30%. It was during this time, i.e., the early 1950's, that the profession was making the switch from gold to chrome alloys for removable partial denture frameworks. In keeping with this major technological change, the Air Force offered its first Chrome Alloy Course for dental laboratory technicians at Gunter, AFB, in 1954. By 1956 the brightest and most capable students enrolled in the Dental Laboratory Technician's Course were selected for training in chrome alloy techniques. A manpower study at the time, however, showed that 60% of these technicians were misassigned following training. This represented not only a waste of skill and training but also a lack of chrome alloy service throughout the Air Force. The solution to this problem was an AFSC (Air Force Specialty Code) identifier, so that technicians trained in chrome techniques could only be stationed at bases with chrome alloy capability. By 1958, bases with chrome alloy capability had designated satellite bases for whom they were authorized to fabricate chrome alloy prostheses. In 1958 there were 33 ADL's in operation (21 in CONUS and 12 overseas). The Dental Service, however, did not in fact have the equipment and personnel to support such a large laboratory system. This shortcoming threatened the quality service which was the driving force behind the Air Force Dental Laboratory System. And so, the logical decision was made to reduce the number of the ADL's to a manageable level. By 1960, 10 ADL's had been closed leaving 15 in CONUS and eight overseas. By 1968, which coincidentally was a peak year in the Vietnam War build up, the new regulation mandated eight ADL's in CONUS and only three overseas. However, it took two years (until 1970) to close the five other overseas ADL's which were operational in 1968. By 1974 the Army had four RDA's (Regional Dental Activities) in CONUS and none overseas. The Navy had only two PADL's (Principal Area Dental Laboratories) — one on the East Coast and one on the West Coast, while the Air

Force had five ADL's in CONUS and three overseas. This consolidation of the ADL mission forced the remaining ADL's (particularly the ADL at Barksdale AFB) to greatly expand their manning and facilities. Also, by 1974 all of the eight remaining ADL's operated in rehabilitated or newly built facilities. Between 1958 and 1974, 25 of the original 33 ADL's had been closed. As of 1995 the Air Force supports only four ADL's, i.e., Barksdale AFB, Peterson AFB, Wiesbaden AFB, and Kadena AFB. The ADL at Barksdale AFB though still the largest ADL is an inadequate facility and undoubtedly will be replaced with a new facility sometime in the near future, probably at Lackland AFB. Wiesbaden AFB has closed as of this writing but the ADL there has continued to stay operational for the time being. It undoubtedly will close in the near future but the fate of its mission is uncertain.^{17,10,18}

The Air Force Dental Laboratory System is unparalleled. From the beginning, the Air Force ADL's have had a dentist permanently assigned to them for the purpose of quality assurance, technician training, professional communication with the clinicians using the ADL system, and general laboratory management. These dedicated dentists were either prosthodontists or general dentists who had been through a one year residency in laboratory management. As early as 1959 the Air Force began training general dentists in the Dental Laboratory Officer's course offered at Lackland AFB. Following the demise of that course in 1978, it was decided that all future new laboratory officers would be trained prosthodontists who would receive on-the-job laboratory management training at one of the large, CONUS-based ADL's. At present, there are 10 prosthodontists assigned to the laboratory system. All ten are Diplomates of the American Board of Prosthodontics.^{14,12} Besides fulfilling the management and training responsibilities at their particular laboratories, the Area Dental Laboratory officers all make consultant visits to the satellite bases in their respective areas. Until 1991, each ADL hosted a local workshop for dentists and laboratory technicians from their satellite bases. As of 1992, these individual workshops, were replaced by one large, Air Force wide workshop. In the past, the Air Force Laboratory System hosted a Tri-Service Laboratory Symposium beginning in 1960 and which met annually for approximately 20 years. This meeting promoted better interservice cooperation and information exchange.^{9,12} One of the greatest contributions which the laboratory system made to the Dental Service's mission has been the dental laboratory manuals which it has developed. The first of these manuals was published in 1959.¹⁹ The most recent edition (AF Pamphlet 162-6, 30 May 1990) is a three-volume series which covers the basic sciences, removable prosthodontics, fixed prosthodontics, orthodontics, and special prosthetic applications.²⁰

Dental Service Strength in Times of Crisis

As stated earlier in this history, the original nuclei for the Air Force Dental Corps were the 432 dentists who were transferred from the Army to the Air Force in 1949. By FY 1950 the Air Force was 409,091 strong. The Medical Service of that era was 11,431 strong and boasted 3,431 officers. During the following year, war broke out in Korea which led to a rapid expansion of all the services, with an accompanying expansion of the demand for medical and dental services. As of 1950, the main source for new dental officers was the Senior Dental Student Program. During 1952 the Air Force expanded to 500,000 members. Simultaneously the Dental Service grew to 1,749 officers. The entire Medical Service ballooned to 46,122 which included a total officer count of 8,565. By 1960, at the height of the Cold War, the size of the Air Force reached its all time peak of 810,355. The Medical Service stood 33,550 strong including its 10,699 officers.^{21,22}

Between 1960 and 1963, two of the main concerns of the Dental Service were to fluoridate the water supplies of all Air Force bases including those overseas and also to equip all Air Force dental treatment rooms with high-speed air driven handpieces. The early Air Force prosthodontists were mostly preoccupied with nurturing the fledgling residency at WHMC, reorganizing the ADL system, adequately manning it, and finally disseminating the new Air Force Dental Laboratory Manual. The size of the Dental Service in 1960 was 1,745 dental officers and 2,885 enlisted members.⁵ Looming on the horizon, however, was the developing war in South East Asia. Building, equipping and manning clinics in theater was becoming a big problem for the Dental Service. A review of the annual reports from those early years of the war reveals that no senior dental officers were granted clearance for an in-country visit until 1966. All prior planning was based on recommendations and suggestions of non-dental personnel who had insufficient experience and knowledge to assess the overall dental situation in South East Asia. No dentist was present on any of the planning boards for in-country medical facilities. It became painfully obvious by the mid 1960's that dentistry needed to be recognized as an integral part of the Medical Service and that a senior dentist needed to be present at any and all planning sessions involved with new base medical facilities. No plans existed at that time for bare base operations. There were no Air Transportable Hospitals as they are known today. The first Air Transportable Hospital was planned in 1949 as a 50-bed facility which was stocked for 90 days. The intention was to deploy it to Korea in 1950, however, it was diverted to Itazuki AFB, Japan where all of its tents and equipment were set up and used during the Korean

conflict. Chests #60 and #61 contained all of the dental equipment and supplies.^{5,23} Dental manning in South East Asia, unfortunately, was not based on troop strength as it should have been. Often it was most needed where there was not a great need for a large hospital and only too often it was not made available in such situations. Dental supplies, as a rule, were in short supply and often outdated. Spare parts were nonexistent. Equipment frequently came out of long term storage and was shipped directly to Vietnam without maintenance or service. Consequently, many pieces of dental equipment often arrived in an inoperable state. Units had to be cannibalized in order to get others working reliably. There were a significant number of instances where dental officers arrived at a duty station where no dental facility existed and no dental equipment was present. By the late 1960's the Air Transportable Hospitals were proposed and planned for bare base operations. They were to include a Dental Module. These units were developed and have evolved into the highly functional generation of dental modules deployed today. The present day Air Transportable Hospitals along with their dental modules certainly proved themselves during the recent Gulf War. The peak build up year for the Vietnam War was 1968. The Air Force was 800,000 strong that year. The Medical Service had 38,460 members, 13,805 of whom were officers. The Dental Service swelled to its all time peak that year reaching 2,016 officers. One major preoccupation of the Dental Service in South East Asia was the Civic Action Program. These missions of mercy were not always an end in themselves. They often were part of a larger organized program to win the hearts and minds of the Vietnamese people, i.e., an attempt to also win over the resistance to the cause of the South Vietnamese Government. Some Civic Action Missions were simply the cover for covert and clandestine operations of the CIA and Special Forces. Most Civic Action Missions, however, were carried out as humanitarian aid by sincere volunteers who wanted to offer the indigenous population whatever medical and dental aid that they could. For the most part Dental Med-Cap missions consisted of extractions — many, many extractions. This work was hard, hot and filthy. Conditions were incredibly primitive. The Civic Action Program represented a bottomless pit, however, and if allowed to seek its own level of support could easily eclipse the primary mission of a clinic. Pressure was usually forthcoming from higher headquarters to expand these programs. The Dental Service recommended that these missions be accomplished by fully trained, insurgency and counterinsurgency personnel because these programs had questionable medical benefits for the Vietnamese people and dubious value for the Medical

and Dental Services. Use of fully trained personnel in these matters made more sense than relying on volunteers who had to neglect their primary mission to carry out the Civic Action Program. Despite such recommendations from the Dental Service, until the end of the U.S. involvement in Vietnam in 1973, the Civic Action Program continued on the backs of volunteers.

By 1961 medical and dental facilities were being established at Ton Son Nhut, Da Nang, and Nha Trang. Bien Hoa was built in 1963. And finally Cam Ranh Bay and Phan Rang were constructed by 1965. These were the largest of the Air Force dental clinics in Vietnam. Air Force prosthodontists along with periodontists and oral surgeons served in these larger facilities. The American involvement in Vietnam ended in 1973. That same year Congress passed the Special Pay Act of 1973 which granted continuation pay to career dentists.

Figures are not available concerning Air Force dentists who served in Korea. However, some data is available for the Vietnam War. By the end of 1967 there were 75 dentists rotating through Vietnam each year. This figure peaked in 1968 when it climbed to 108. Through the late 1960's there were probably at least five prosthodontists per year rotating to Vietnam. Two general dentists stationed at Cam Rahn Bay AFB Dental Clinic in 1967 were the only Air Force dentists killed during the war. They were Lt. Col. Paul F. Kiecker and Capt. James R. Jones. Their names are etched on the black granite wall of the Vietnam Memorial in Washington, D.C.

Thirty-three active duty Air Force dentists served in country during the recent Gulf War, though none were prosthodontists. A number of prosthodontists however, were deployed to contingency hospitals in Europe during that war.^{5,22}

There was a general downsizing of the Uniformed Services throughout the 1970's along with the transition to an all volunteer force. By 1970, the Air Force had slightly reduced its strength to 787,205 with a Medical Service of 36,772. The Dental Service had 1,784 officers in 1970. The Medical Service actually grew between 1970 and 1982 to 37,613 strong, but the Dental Service steadily drew down to around 1,400 by 1982. During the early 1970's the Air Force traded off the tan 1505 duty uniform option for a light blue shirt and Air Force blue trousers. By the mid 1970's the epaulets were added to the shirt. The late 1970's saw the introduction of the double knit uniform and the current dark blue mess dress uniform.⁶ In 1986 the Air Force Dental Service officer ranks rebounded to 1,614 with 77 prosthodontists on board. It was during 1986 that the present downsizing and reorganization of the Air Force began. By 1993 the Dental Service had dwindled to 1,310 but retained 91 prosthodontists. The present downsizing of

the Air Force should be nearly complete by the end of 1995. The target end strength for the Dental Service at that time is 1,174 with around 60 to 63 prosthodontists. The general consensus, however, is that the Service will continue to shrink through the turn of the century due to the dissolution of the Soviet Union and end of the Cold War. At present there are 64 prosthodontists stationed in CONUS and 14 overseas. Ten prosthodontists are assigned to the ADL System while 31 are serving in dual teaching/clinical positions. A few prosthodontists are presently serving in administrative positions. Fifty-nine of the prosthodontists on board are Diplomates of the American Board of Prosthodontists. Six of these have been designated as Consultants to the Surgeon General.^{5,21,22}

Over the past 45 years the United States Air Force has developed one of the finest dental care delivery systems that has ever existed anywhere. Air Force prosthodontists have made a tremendous contribution to this effort. In all, 139 prosthodontists were trained in Air Force Prosthodontic Residency Programs (125 at Lackland AFB, seven at Wright-Patterson AFB, and seven at Andrews AFB). In addition, the author's best guess is that approximately 120 prosthodontists received prosthodontic training sponsored by the Air Force at civilian institutions or at programs offered by the other uniformed services. That makes a total of around 241 trained prosthodontists who have gone or will go on to private practice, institutional practice, or teaching following their years with the Air Force.^{14,12} This certainly has impacted on prosthodontic care throughout the United States. Perhaps the greatest impact that Air Force prosthodontics has had on American dentistry has been in the arena of dental education. Air Force prosthodontists have been on the faculties of most American dental schools over the past 45 years, many in chair positions, thereby greatly influencing dental training and treatment nationwide. Numerous texts and hundreds of professional articles have been contributed to the dental literature by Air Force prosthodontists. The more prolific writers of this elite branch of the Dental Corps commonly have produced 20 or more articles each as their contribution. Many of these articles have become virtual classics of the dental literature as are Dr. Rudd's articles on dental stone and alginate. Many Air Force prosthodontists were charter members of the American College of Prosthodontists,²⁴ and over the years, Air Force prosthodontists have made great contributions to professional prosthodontic organizations.

Besides the contribution that Air Force prosthodontics have made to the Dental Corps' treatment delivery capabilities and to Air Force Graduate Dental Education, Air Force prosthodontists have also made a

significant contribution to the administration of the Dental Corps. Two of the Assistant Surgeon Generals for the Dental Services were prosthodontists. At least six Command Dental Surgeons have been prosthodontists. Four of the Dental Directors at WHMC were prosthodontists. And finally, there have constantly been from one to three Base Dental Surgeons around the Air Force who have carried the prosthodontic specialty code, resulting in too many to individually list here.⁵ Many Air Force dentists, including prosthodontists, have honorably served in all major armed conflicts since the birth of the Air Force in 1947.

The Air Force Dental Service and hence prosthodontics are being significantly affected by the present draw down and reorganization of the Force. With the closure of bases and consolidation of major Air Commands, specialty authorizations are being reallocated. Training programs are being downsized and at a few bases eliminated. The specialty mix at the end of this decade will look as different as the new, "airline pilot" style uniform.²⁵ However, in spite of the draw down and complete restructuring, the Air Force will continue to enjoy a very high level of dental care thanks to the esprit-de-corps, positive attitude, skill, knowledge, ingenuity, and dedication of Air Force dentists. Today's Air Force prosthodontists continue to carry on the traditions and high standards of excellence laid down over the past 45 years by the many mentors and giants of prosthodontics who have worn the Air Force uniform.

The intention of this document has been to provide a brief overview of the major facts concerning the specialty of prosthodontics as practiced throughout the Air Force over the past 45 years. Time and space do not allow for a fitting tribute to the many masters and mentors of this specialty who have graced the Air Force ranks over the years. Nor do they allow room to include anecdotes and photos of the many famous and infamous prosthodontists who have roamed the halls of Air Force clinics around the world. In closing, the author wishes to pay tribute to the army of dental laboratory technicians and legions of dental assistants who have supported the Air Force prosthodontists so well over the years. Without their help and dedication, Air Force prosthodontics could never have soared to the great heights that it has reached.

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REFERENCES

1. National Security Act of 1947.
2. USAF Order No. 35, 8 June 1949.
3. Archives: Office of the U.S. Air Force Surgeon General. Headquarters USAF/SGD, Bolling AFB, D.C. 20332-6188.
4. Joint Army and Air Force Adjustment Regulation No. 1-11-62, 16 May 1949.
5. Archives: Office of the U.S. Air Force Assistant Surgeon General for Dental Services, Headquarters USAF/SGD, Bolling AFB, D.C. 20332-6188.
6. Archives: Military Personnel Center, Uniform Board, Randolph AFB, Texas.
7. Archives: Headquarters USAF, Air Staff History Branch, Bolling AFB, D.C. 20332.
8. Air Force Manual 35-10, 1 February 1956.
9. Archives: Dental Directorate, Wilford Hall USAF Medical Center / DS, Lackland AFB, TX 78236.
10. Rudd, Kenneth D.: Personal Communication, 1993.
11. The American Board of Prosthodontics, Diplomate Roster, 1994.
12. Archives: Department of Prosthodontics, Wilford Hall USAF Medical Center / DSP, Lackland AFB, TX 78236.
13. The American Board of Prosthodontics: "Guidelines for the Certifying Examination," pp 1-2, 1993.
14. Engelmeier, Robert L.: "A Brief History of USAF Prosthodontics," USAF, Attachment 3, pp 3-4, 1995.
15. Engelmeier, Robert L.: "Point Paper — Department of Prosthodontics," USAF, 1993.
16. Engelmeier, Robert L.: "Point Paper — Dental Implants in the US Air Force," USAF, 1993.
17. Bange, Albert A.: "The USAF Dental Laboratory Program." USAF, 1974.
18. Bange, Albert A.: Personal Communication, 1992.
19. Air Force Manual 160-29, 1 March 1959.
20. Air Force Pamphlet 162-6, 30 May 1990.
21. "The Book" — Special Edition, Airman Magazine 39:9, pp 32-39, September 1995.
22. Archives: Office of the USAF Medical Service Chief Historian, Bolling AFB, D.C. 20332-6188.
23. Wyatt, James L., Jr.: Personal Communication, 1994.
24. American College of Prosthodontists, Charter Member Roster, 1994.
25. Air Force Pamphlet 36-2903, 1 April 1996.

FUTURE DENTAL HISTORY MEETINGS

- June 6-7, 1997 Saint-Honoré-les-Bains, France (French Soc. Hist. Dent.)
- June, 1997 Rome Italy (Italian Soc. Hist. Dent.)
- September 7, 1997 Seoul, Korea (FDI Section on Dental History)
- October 16, 1997 Washington, DC (AAHD with ADA)
- May 6, 1998 Toronto, Canada (AAHD with AAHM)
- October 10, 1998 Barcelona, Spain (FDI Section on Dental History)
- October 22, 1998 San Francisco (AAHD with ADA)