# U.S. NAVY MEDICINE

September 1982

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# U.S. NAVY MEDICINE

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**September 1982**



**COVER:** The recently completed replacement hospital at NRMC Bremerton, WA, was this year's recipient of both the Secretary of Defense Blue Seal Award for outstanding design in military construction and the Merit Award in Architecture for Energy Conservation. For an update on Navy medical facilities, see page 7. Photo by Tim Gohrke.

# Cold Weather Operations

## The Medical Department Perspective

LT J.S. Hogerson, MSC, USN

*In 1777 the physician general to United States military hospitals wrote in a pamphlet on preserving the health of soldiers:*

*The commanding officer should take the utmost care never to suffer a soldier to sleep or even to sit down in his tent with wet clothes, nor to lie down in a wet blanket or upon damp straw. The utmost vigilance will be necessary to guard against this fruitful source of diseases among soldiers.*

*Clearly, in that year of the bitter Valley Forge winter, a lesson was being taught on the crippling effect of cold injury.*

*Nearly 2 centuries later, in World War II, the Russians watched as the unprepared and unacclimatized Germans fell victim to the cold.*

*A decade later the Chosin Reservoir and Yalu River campaigns underscored our vulnerability to cold climates.*

As history repeatedly and pointedly illustrates, the failure of combat arms elements operating in cold weather environments to accomplish their mission has been, to a significant degree, attributed to an inadequately prepared medical department. Since 1978 the Naval Health Sciences Education and Training Command (HSETC) has been charged with exploring training requirements and developing training courses in cold weather medicine for the Navy Medical Department. The initial training courses in 1978 and 1979 were conducted in conjunction with the Colorado Outward Bound School (COBS) and produced a cold weather trained medical cadre of approximately 150 personnel (see *U.S. Navy Medicine,* August 1979). Concurrently, cold weather operational training was being provided to Medical Department personnel assigned to Fleet Marine Force units during actual cold weather training exercises. These evolutions effectively laid the foundation for our present training.

"The experience was undoubtedly one of the most emotionally and physically stressful that I have been exposed to in my entire lifetime." A quote out of history? No, although it may express the sentiments of the veterans of many conflicts, this was the assessment by a senior Medical Department officer of his participation in the Cold Weather Medical Training Course. The course was sponsored by HSETC and conducted in February and March of this year at the Army National Guard Training Site, Camp Ripley, MN. Similar com-

Photo by LT D. Garner, MSC

*The author briefs VADM Cox on cold weather medicine training at Camp Ripley.*

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*On a break during a cross-country march, students heat water to thaw frozen C-rations.*

ments by other participants serve not to endorse the success of a diabolically conceived training regimen but more accurately to reflect the severe limitations imposed by a hostile environment on man's ability to survive, to move, and, when necessary, to fight.

Seventy-six Medical Department personnel representing all corps, with the exception of the Nurse Corps, and operating forces units from such diverse points as Spain and Okinawa certainly found Camp Ripley to be an environmental enemy. They arrived with varying levels of cold weather experience and expectations, yet, to the man, departed with a new-found or renewed respect for cold, wind, and snow. The training program in which they participated had as its overall objectives:

- Survival in the cold
- Effective, confident functioning in the cold
- Ability to conduct military (medical) operations in the cold
- Prevention of cold injuries
- Identification and management of cold injuries
- Development of expertise sufficient to provide instruction at the troop/unit level in appropriate cold weather practices

To facilitate instruction, a cadre consisting of two medical officers, one dental officer, one MSC officer, one master chief hospital corpsman, two chief hospital corpsmen, and a Marine sergeant were identified on the basis of their participation in the COBS evolutions or their proven experience in cold weather exercises. They were joined by the HSETC representatives, a first class hospital corpsman, and an MSC officer. This cadre provided formal instruction, acted as

Photos by the author

*Learning to maneuver on skis is a prerequisite to operating in the snow. Below: Evacuating a simulated casualty in a mock chemical attack provides a strenuous reality lesson.*

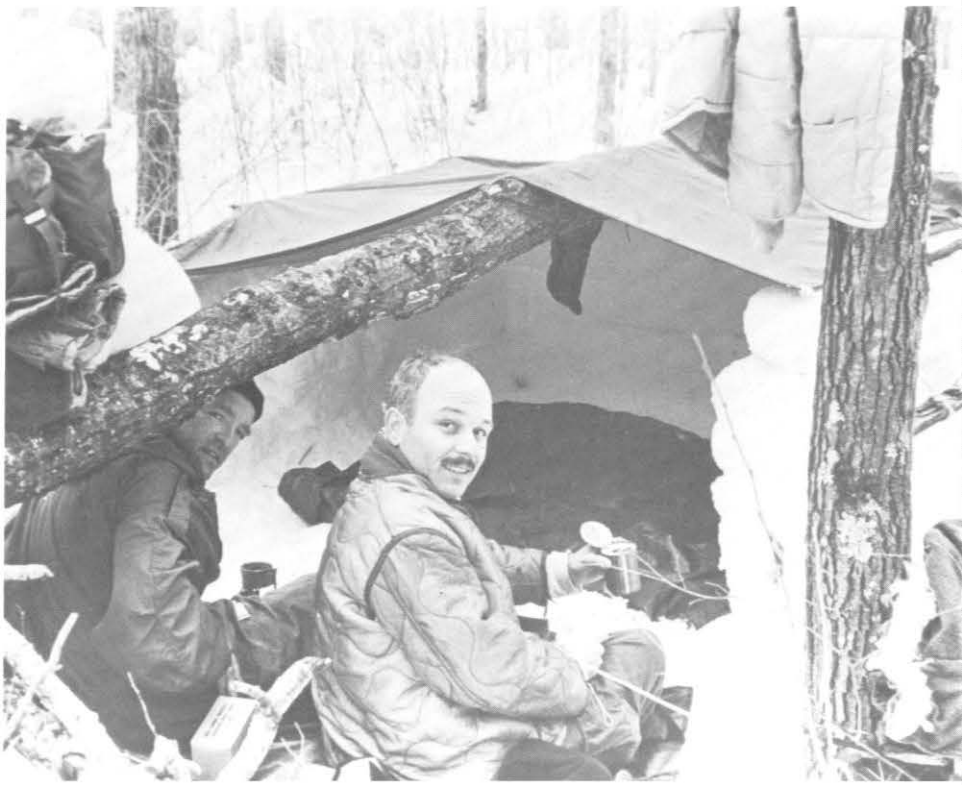
Photo by LT D. Garner, MSC

advisors to the students in their squad configurations, and accomplished logistic and administrative support.

The initial 6 days of the two 12-day courses emphasized didactic instruction, complemented by practical instruction and exercises in the afternoon. During this phase, the topics covered included:

- Equipment and clothing: skiing and snowshoeing techniques, clothing layering principle, tentage and stoves, heat maintenance
- Survival training: shelters, avalanches, land navigation, meteorological conditions, nutrition, and water requirements
- Medical training: prevention, identification, and management of cold weather injury and illness; dental conditions; preventive medicine; special considerations for handling drugs and medicinals; casualty evacuation methods; psychological aspects; considerations and problems imposed by NBC (CBR) warfare.
- Military training: military operations, considerations, and problems in medical logistics

The second phase of each course consisted of a 4-day field expedition. The student squads, accompanied by their staff advisors, put to use what they had learned in the previous 6 days. During this experience the participants found the mildly undulating, snow-covered Camp Ripley terrain to be a much more formidable obstacle than they had imagined. Activities such as traversing open country on skis or snowshoes, pulling all their equipment on the sledlike ahkio, attempting to thaw frozen rations, and functioning within a simulated chemical attack environment contributed to an appreciation for the rigors of cold and, for many, gave new meaning to the word "stress." Also conducted during this phase were exercises in evacuation of casualties through wooded areas and across expanses of knee-deep snow. Finally, integral to the survival aspect of the



*Students prepare rations in an overnight shelter of their own construction. Below: A warm, dry shelter for these students is a lined tent with stove.*

course, participants had the opportunity to live in shelters of their own design and construction.

As may be expected of a program in its developmental stage, lessons were learned. Critiques by the students in the first class led to curriculum modifications for the next group. The major changes consisted of early intense emphasis on skiing and load-carrying (which also "toughened up" some of the students who came to the course physically unprepared) and an additional night spent in improvised shelters. While these and other changes served to increase the success of the second course, they also caused a student to remark, "It sure is lucky there's not a third class to 'benefit' from our suggestions."

The second class had the opportunity to demonstrate their newly learned skills to VADM J. William Cox, Surgeon General, and RADM Frances T. Shea, Director, Navy Nurse Corps and Commanding Officer, HSETC, who visited the training site. In addition to observing an exercise demonstrating evacuation of simulated casualties over snow-covered terrain, the visitors had the opportunity to view the improvised shelters and meet individually with the students.

So what was accomplished at Camp Ripley beyond personal satisfaction gained by the students for completing an arduous program? The first requirement in any military operation or activity is to survive in order to accomplish the mission. The recognized critical aspect and concern for medical personnel is that they must not only survive the human and environmental enemies, they must also be capable of providing medical support services under extremely inhibiting circumstances. The experiences gained at Camp Ripley by the newest additions to the cold weather trained medical cadre represent significant progress in achieving that ability.

Planning for continued training in cold weather environments for Medical Department personnel continues at HSETC. Of immediate concern are altitude problems, the efficacy of drugs, and management of combat casualties in a cold environment. The uncertainty of the global strategic situation and unknowns of future theaters of operation dictate a continued effort to:

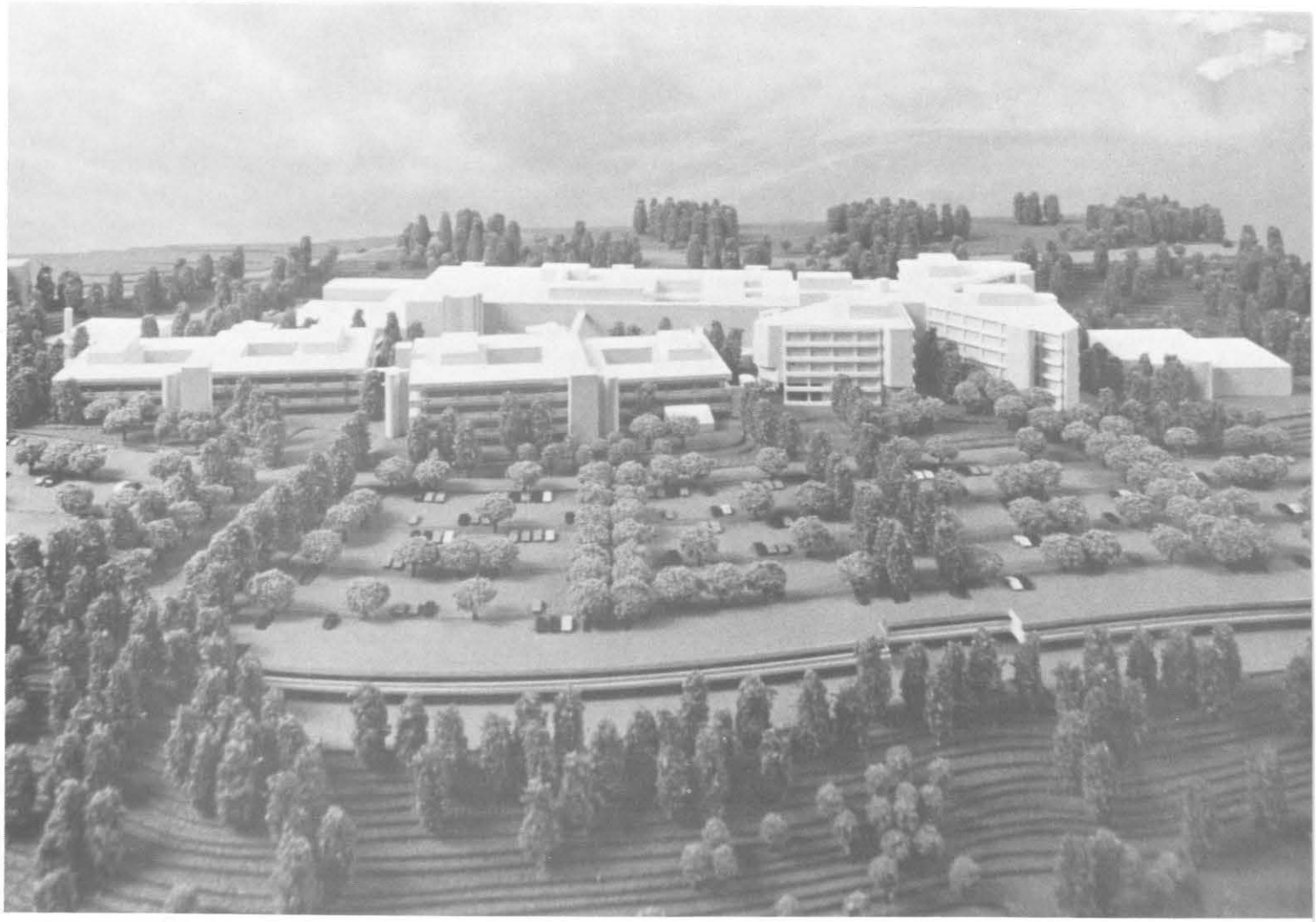
- Develop and maintain a cadre of instructors;
- Implement training programs targeted at developing expertise within the operational units;
- Achieve, jointly with the Marine Corps, mission-oriented military/clinical training goals; and
- Develop audiovisual and textual materials for specific levels of training (basic, intermediate, advanced) consistent with the evolution of the cold weather medical training program.

As training becomes more encompassing, the Navy Medical Department will become a more informed source of advice to commanders as well as a more capable entity in the effort to reduce unnecessary injury and loss of effectiveness. □

*Proper foot care when wearing the vapor barrier boot is critical.*

*Site preparation for the 760-bed replacement hospital at NRMC San Diego.*

Photo by Jeran Aero-Graphics



*The planned San Diego facility will be the largest shore construction project ever undertaken by the Navy.*

# Medical Facilities Update

LCDR F.R. Tittmann, MSC, USN

In 1972 the Secretary of Defense directed the Navy Medical Department to modernize medical facilities. In response, BUMED designed a program to better serve the operating forces and improve personnel efficiency and professionalism.

Last March VADM J. William Cox, MC, Surgeon General of the Navy, appeared before the Subcommittee on Military Personnel and Compensation of the House Armed Services Committee. In his statement he noted that an essential ingredient of the health care system is the environment in which care is delivered. To accomplish its mission, the Medical Department requires modern, state-of-the-art medical facilities. VADM Cox further stated that the modernization program has enabled the Navy to replace and modernize many old and dysfunctional medical facilities. Moreover, plans are underway to retrofit those facilities that do not yet meet modern standards for delivery of health care.

Medical modernization was originally conceived as an "accelerated" program designed to modernize or replace all inadequate health care facilities between FY74 and FY78. As the program progressed, however, reduced funding forced continued extensions of the program well past FY78. Current plans call for completion by FY88.

The majority of older (pre-1945) permanent structures were con-

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structed primarily as inpatient facilities. To meet the shifting demand to outpatient care brought about by advances in medicine, these buildings had to be modified. Their original design precluded handling an increasing outpatient load. The poor, functional relationships among existing hospital ancillary services prolonged efficient delivery of patient care, and antiquated design hampered productivity.

In cooperation with the Naval Facilities Engineering Command, BUMED has begun to upgrade all medical and dental facilities as necessary. Under the supervision of BUMED's Facilities Division (MED 16) and medical construction liaison officers in the field, the program has made significant progress.

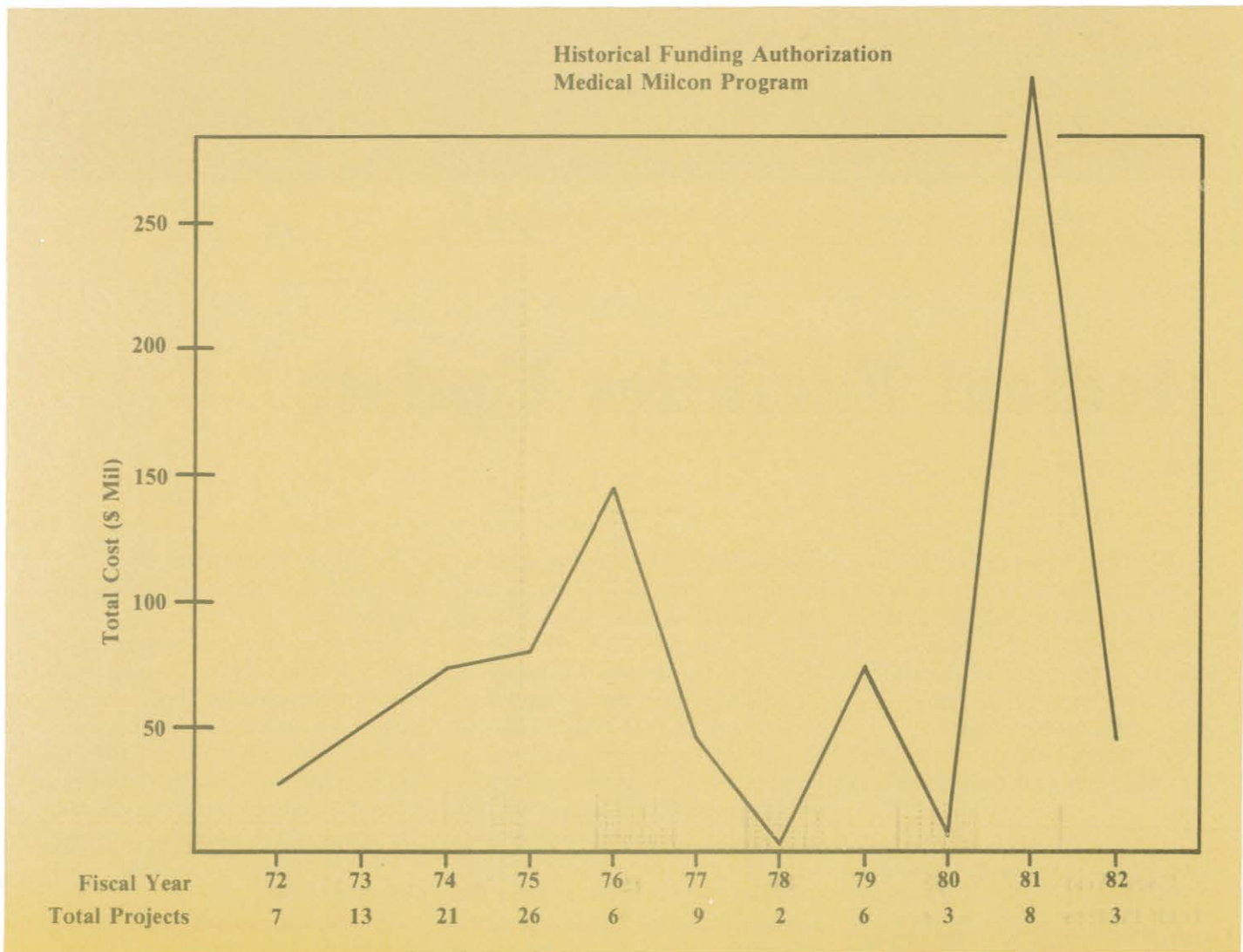
## Status Report

In FY72 Congress approved seven BUMED projects including clinics at Parris Island, SC, Yorktown, VA, MCRD San Diego, CA, Coronado, CA, and a hospital addition at Long Beach, CA.

Thirteen projects were authorized in FY73. Of particular interest was a 310-bed hospital at Pensacola, FL, as well as dispensaries at Pearl Harbor, HI, Camp Pendleton (Chappo), CA, Atlanta, GA, Guam, Australia, Lakehurst, NJ, and Sigonella, Italy.

Congress approved 21 projects for a total of $70 million in FY74 including authorization for a hospital facility at New Orleans, LA.

In FY75 BUMED received approval for $80 million to complete 26 projects including clinics at Portsmouth (Sewells Point and Oceana), VA, Charleston, SC, Memphis, TN, Jacksonville (Mayport and Cecil Field), FL, San Diego, Port Hueneme, CA, and Camp Pendleton (Edson, HQ Area, Del Mar, San Onofre). Modernization projects were also initiated for the hospitals at Beaufort, SC, and Jacksonville. Additionally, the initial phases of the redevelopment effort at NNMC



Bethesda, MD, were approved. That year proved to be very good for BUMED's modernization efforts.

Major funding of $100 million for the replacement hospital at Bethesda, and $30 million for the replacement hospital at Bremerton, WA, occurred in FY76. Additional projects approved that year included clinics at the Trident Weapon Facility, Bangor, WA, Indian Head, MD, and Key West, FL. The Bremerton project ultimately won the SECNAV top design award and the energy conservation award for 1981 (see page 12).

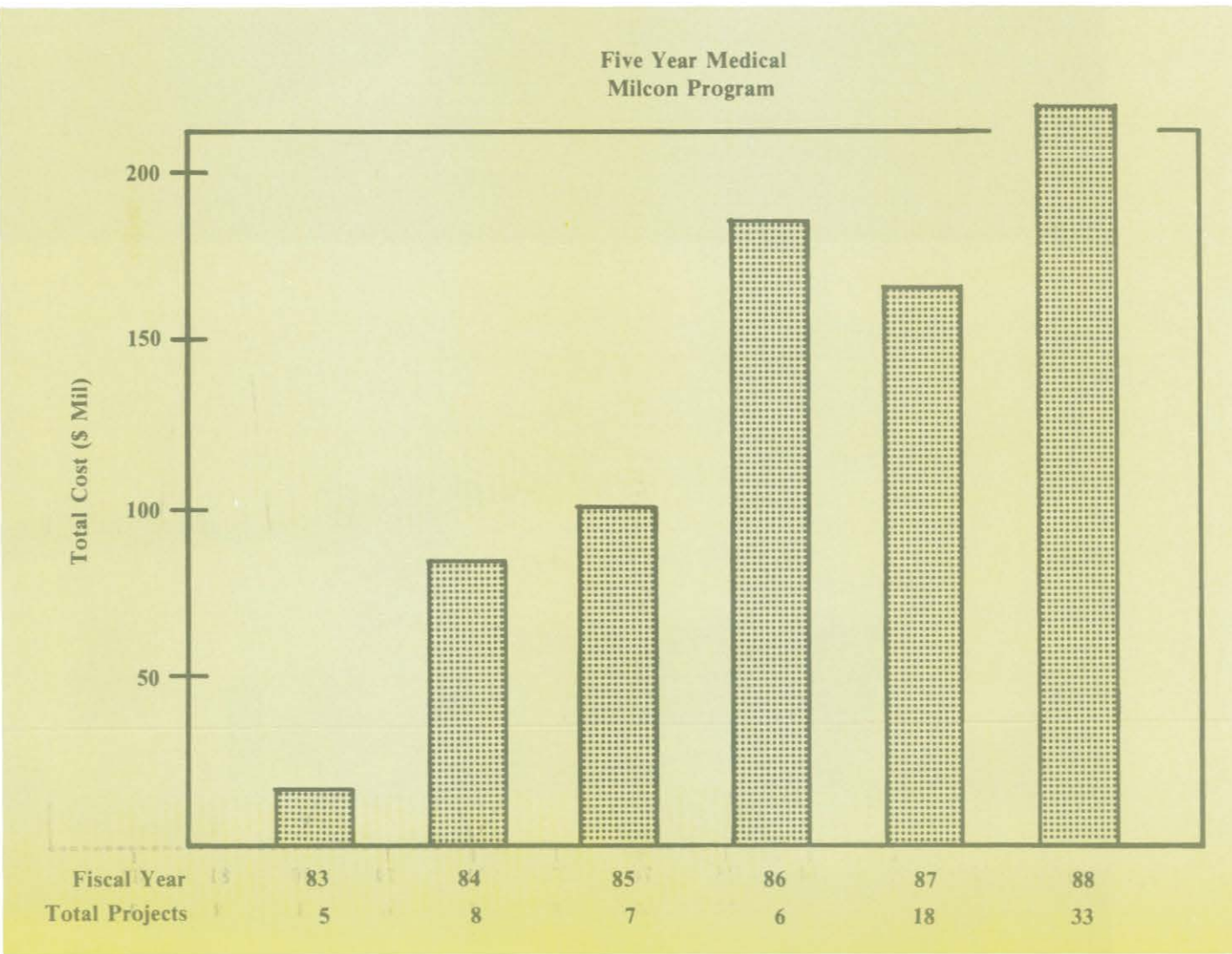
NRMC Orlando, FL, was funded in FY77 and eight other smaller clinical projects were authorized the same year including clinics at Brunswick, ME, Newport, RI, Athens, GA, Jacksonville, and North Island, CA.

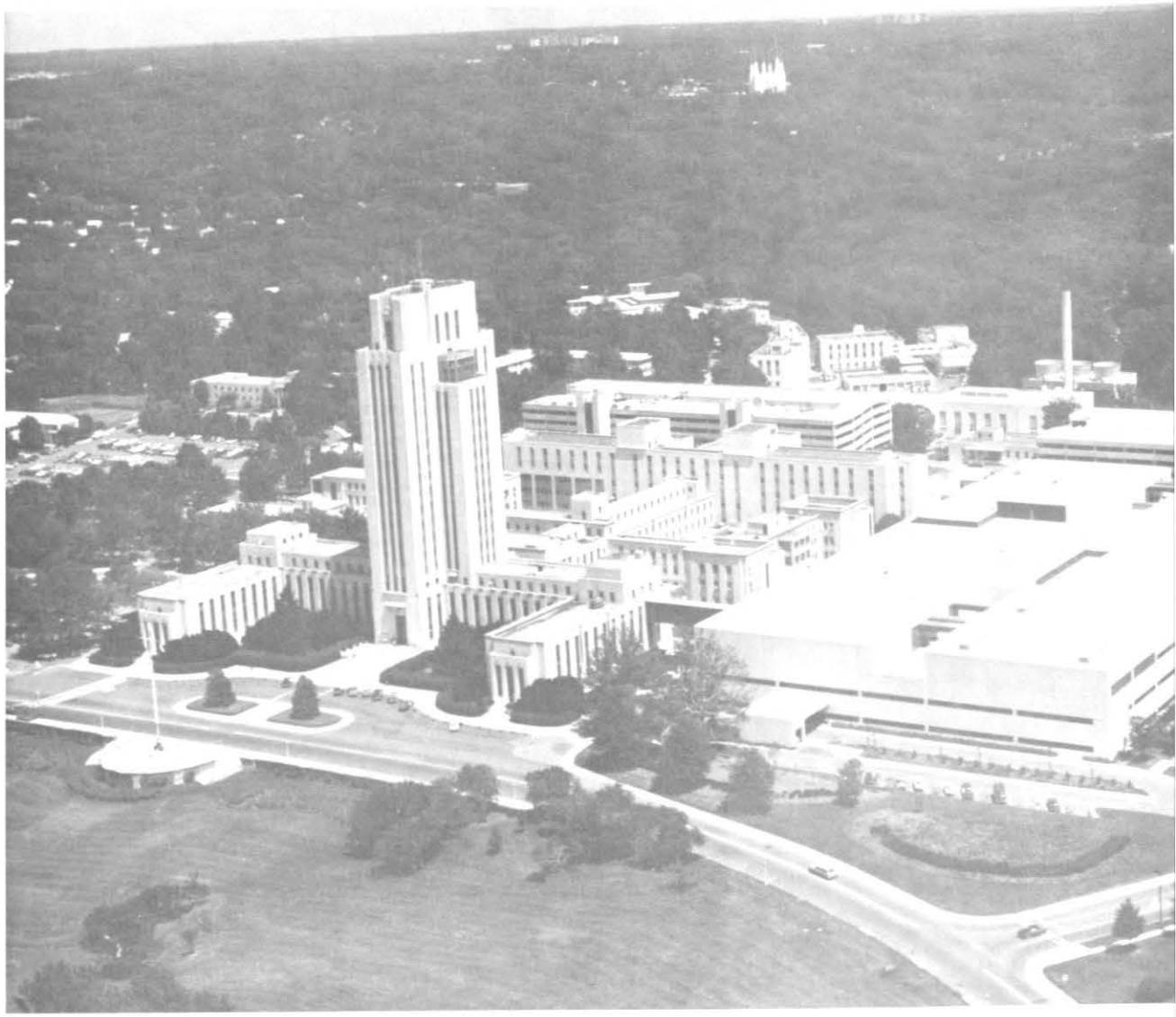
The first significant problem for the Navy medical construction program occurred in FY78. This was the initial programming year for the replacement hospital at San Diego and controversy concerning the site caused deferral of that project. Once San Diego was eliminated from the FY78 program, only two projects remained —a clinic at Midway Island and utility work at Portsmouth, VA.

The following fiscal year, $70 million was authorized to include the replacement hospital at Camp Lejeune, NC, and clinics at Norfolk, VA, Cherry Point, NC, and Quantico, VA. The new hospital at Camp Lejeune will be completed in the next few months and should open by spring 1983.

Funding decreased to $11 million in FY80, again due to a San Diego project deferral. Authorization was sufficient only for two clinics (NAS San Diego and Naval Submarine Support Base, Kings Bay, GA), and a mechanical project at Camp Pendleton.

In FY81 Congress authorized $293 million for the 760-bed replacement hospital project at San Diego. The initial appropriation that year was $25 million for site preparation. At this






NAVAL
MEDICAL AND DENTAL
CLINIC

*The 500-bed, 881,000-square-foot tertiary care facility at NNMC Bethesda opened in the winter of 1980. The Tower complex is presently being renovated and will be used for hospital support services. Bottom: Branch Dental Clinic at NAS Cecil Field.*

time, the site work is complete and the construction contract for the outpatient clinic has been awarded. Design of the nursing towers and ancillary building portion of the project will be completed in early 1983. BUMED's replacement hospital project at San Diego is the Navy's largest shore facility construction project ever undertaken, surpassing the project at Bethesda, previously the largest. The FY81 authorization also included $23 million for the first phase of the rehabilitation of existing space in the Bethesda Tower complex for hospital support services. Several energy improvement projects were also approved. The total authorization for FY81 was $318 million.

Appropriation for the San Diego project ($204 million) occurred in FY82. Due to the previous year's large program, only three small projects were earmarked for construction in FY81 including renovation work for the Bancroft Hall clinic at the Naval Academy.

The FY83 program, authorized but not yet appropriated, includes projects at San Nicholas Island, CA, Mare Island, CA, and Thurso, Scotland.

Although limited resources and competing priorities often prevented BUMED from moving as quickly as desired, several significant projects have been initiated since 1972. Congress approved over 100 projects totaling $800 million. To maintain this momentum, BUMED is pursuing an ambitious construction program for the next 5 years. In addition to the massive redevelopment initiative underway at San Diego, there will be emphasis on the following projects:

- Modernization for Philadelphia, PA, Rota, Spain, Portsmouth, VA, Newport, RI, Subic Bay, Republic of the Philippines, and Guam.
- Clinic expansion at New London, CT, Jacksonville, Whidbey Island, WA, and Bremerton.
- Engineering improvements for Oakland, CA, Charleston, SC, and Quantico.
- Replacement clinics at Port Hueneme, Kaneohe Bay, HI, Puget Sound, WA, Willow Grove, PA, Twentynine Palms, CA, Miramar, CA, and Terminal Island, CA.
- Aviation physiology training units at Cherry Point, Pensacola, and Patuxent River, MD.

One of the Navy Medical Department's goals is to provide properly-sized hospitals, clinics, and support facilities that will satisfy recognized standards of the medical, dental, and engineering communities.

Naval health care delivery occurs in a sophisticated field particularly sensitive to technological advances. Keeping medical facilities up to date with these advances is essential if we are to provide Navy and Marine Corps active duty personnel, their dependents, and other authorized beneficiaries the highest level of health care possible. With hard work, the next 10 years can be as fruitful as the past 10. □

# Bremerton Wins Design and Energy Awards

Photo by Tim Gohrke

*Bremerton's design reflects the region's Northwest Indian heritage.*

Last March Secretary of Defense Caspar Weinberger announced NRMC Bremerton the winner of the 1981 Department of Defense Design Awards Program for Military Construction. Recipient of the highest honor, the "Secretary of Defense Blue Seal Award" for the most outstanding design, Bremerton was also accorded the Merit Award in Architecture for Energy Conservation. The awards jury was specifically impressed with the good design, environmental planning, cost-effectiveness, and innovation.

Numerous features contributed to Bremerton's selection:

**Site.** The naval regional medical center rests on a sloping site overlooking Ostrich Bay surrounded by the wooded environment of the Kitsap Peninsula.

**Environment.** The natural setting is the theme for integrating the interior and exterior of the building.

**Color.** A rich composition of earth tones, plants, and wood recalls the facility's external environment.

**Exterior.** A light-colored, precast concrete exterior defined by dark bands of bronze-tinted glass creates a warm appearance. Sculptured concrete panels using symbols from Northwest Indian art and natural landscaping further

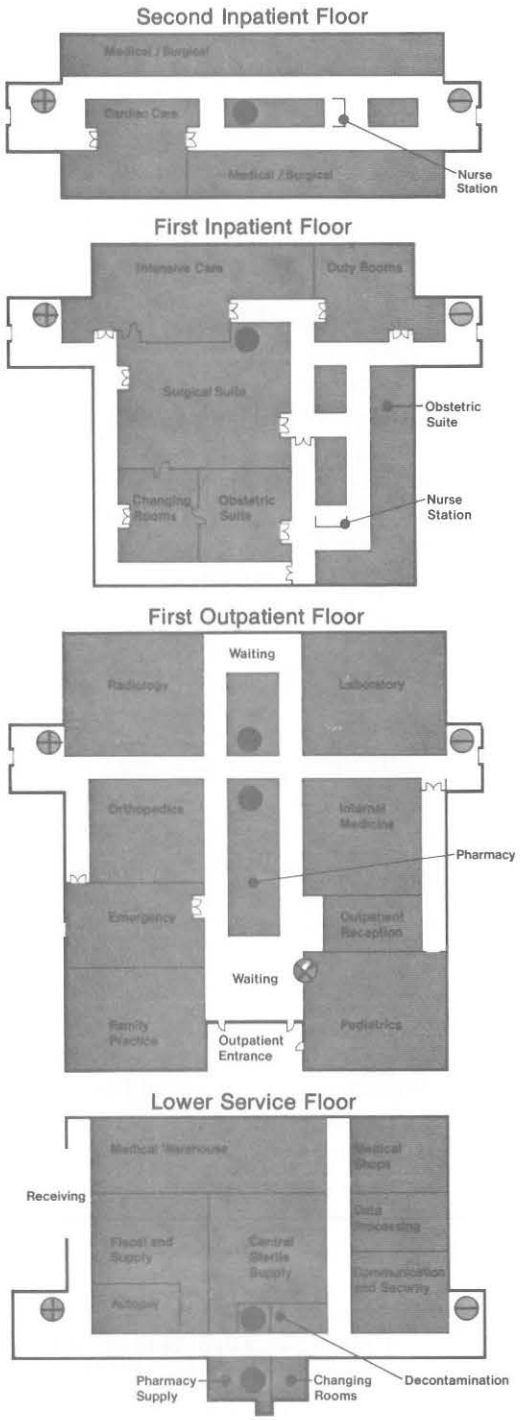
reinforce the indigenous theme of the medical center.

**Interior.** A warm, comfortable atmosphere is exemplified by spacious waiting areas with earth-tone carpets and suedelike vinyl wall coverings complimented by large areas of wood on the walls and ceilings.

**Directional Graphics.** Carefully designed signage directs patients to various clinics and other services. Wood patterns, variable-height ceilings, incandescent lighting, and carpeting mark entrances to clinics.

**Visual Orientation.** Design layout of circulation maintains natural lighting at the end of all patient corridors, focusing awareness of interior relationship to outside environment. Visible from within the structure are the Olympic Mountain Range and Mount Ranier.

NRMC Bremerton's design also contributes to the efficient use of energy. The integration of the lower floors into the partially excavated slope provides natural insulation. The low profile and orientation of the building reduce exposure to afternoon sun. Overhangs and double-glazed windows, heat-recovery equipment, and an energy management control system for reducing energy use promote further energy savings.




An automatic cart-lift system midway between the staff and visitor elevators transports materials, food, and pharmaceuticals throughout the medical center. One cart lift delivers clean materials from the central sterile supply area, kitchen, and pharmacy, and the other returns soiled materials to the decontamination area. To prevent cross-contamination, access to the cart lifts is from separate areas.

Aside from being concerned with the efficient delivery of medical services, the design team was also concerned with the efficient use of energy. The integration of the lower floors into the slope provides natural insulation, while the low profile and orientation of the building reduce exposure to afternoon sun. Overhangs and double-glazed windows, heat-recovery equipment, and an energy management control system for reducing energy use promote further energy savings.

Cost-conscious design created a flexible, modern medical facility that supports a comprehensive health-care program for the Navy population in the Pacific Northwest. The warm, comfortable interiors blend with the natural setting to provide a reassuring atmosphere for patients at the naval regional medical center.

Legend
Outpatient Elevator
Staff Elevators
Visitor Elevators
Cart Lifts
Pharmacy Lift

# Computer-Assisted Diagnosis of Acute Abdominal Pain for Submarine Corpsmen*

LCDR Donald C. Arthur, MC, USN

Medical evacuation from a patrolling nuclear submarine is costly in terms of risk to the patient, the expense of evacuation, and the compromise to the mission of the submarine. The medical responsibilities are borne by the Independent Duty (8402) Corpsman who must independently diagnose and manage any serious illness which presents during patrol. This includes making recommendations regarding evacuation to a shore-based facility. His diagnostic task is complicated by mission constraints which often prevent communication with shore-based medical facilities and by the limited medical diagnostic equipment aboard nuclear submarines; lacking, for example, are X-ray facilities and an electrocardiograph as well as many laboratory tests normally relied upon in the hospital or dispensary setting.

Since abdominal pain is the most frequently encountered serious illness, emphasis has been placed on development of a system which will aid the corpsman in diagnosis, triage, and management of such cases. The Naval Submarine Medical Research Laboratory (NSMRL) has developed this system and is currently evaluating its effectiveness in sea trials. Hospital and preliminary sea trials have reportedly indicated that the system is medically sound, operationally relevant, and will provide a valuable resource to the submarine corpsman and his commanding officer.

## The System

Using the Tektronix 4051 desktop computer already aboard, this diagnostic program will aid in the diagnosis of five specific causes of acute abdominal pain: acute appendicitis, renal colic, perforated duodenal ulcer, acute cholecystitis, and small bowel obstruction. In addition, the category of nonspecific abdominal pain includes those entities which are vague and general and which are amenable to symptomatic treatment. This category is not meant to cover all illnesses not included in the remainder of the program, but rather is intended to include those illnesses which are nonsurgical, not life-threatening, and, therefore, not reasons for evacuation.

These diagnoses cover the majority of commonly occurring serious causes of acute abdominal pain. Entry of data about a patient with a serious abdominal illness which is not included as one of the specific diagnostic categories will result in a high program-generated probability for the specific diagnostic category whose symptom complex most closely resembles that presented by the patient. In this manner, the corpsman is keyed to the seriousness of the illness and must use his clinical judgment in determining the final diagnosis. The program can reliably calculate probabilities based on information entered and can differentiate serious illnesses from those which can be easily managed by the corpsman. However, it lacks the ability to think and cannot perform the subjective evaluation of subtle findings which are so important in medical diagnosis. Thus, *when in doubt, the corpsman's judgment must take precedence.*

The diagnostic interaction with the computer results in the generation of a case summary page similar to the one represented in Figure 1. Reference information is listed at the top, the patient's symptoms are listed under "history," and the physical examination items in the next column. The program-generated probabilities are displayed below the sign and symptom lists and are also graphically represented at the far right. The horizontal line across the bar graph represents the 50 percent confidence level. The corpsman is taught that if the program-generated probability is above the 90 percent confidence level and he agrees, a high degree of confidence can

*See "New Medical Tool for Submarine Corpsmen: Computer Ready for Sea Trials," *U.S. Navy Medicine,* November 1981.

Dr. Arthur is on the staff of NRMC Branch Clinic, NAS Cubi Point, Republic of the Philippines, FPO San Francisco 96654.

1200 04 JAN 82
NAVSUBMEDRSCHLAB

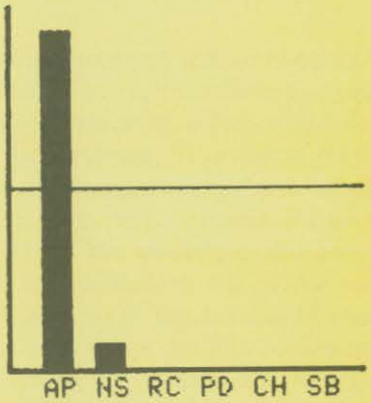
PATIENT SSN: 000 00 0000
AGE: 32

HISTORY:

AGE 30-39
PAIN ONSET GENERAL
PAIN NOW RLQ
PAIN INTERMITTENT
PAIN IS SEVERE
PROGRESS - WORSE
DURATION <12 HRS
MOVEMENT AGGRAVATES
VOMITING RELIEVES
NAUSEA PRESENT
VOMITING PRESENT
APPETITE DECREASED
NO JAUNDICE
DIARRHEA PRESENT
URINATION NORMAL
PREVIOUS INDIGESTION
NO PREV. SIM. PAIN
NO PREV. ABD. SURG.
NO PREVIOUS ILLNESS
NOT TAKING MEDS

PHYSICAL EXAM:

TEMP 98.6 - 100.2
PULSE 80-99
SYST. BP 90-129
DIAST. BP 70-89
WBC 12,100-15,000
MOOD DISTRESSED
COLOR PALE
ABD INSPECT. NORMAL
BOWEL SOUNDS ABSENT
NO ABDOMINAL SCARS
NO ABD DISTENTION
GUARDING PRESENT
NO RIGIDITY
NO ABD MASSES
MURPHY'S NEGATIVE
CENTRAL TENDERNESS
REBOUND PRESENT
RT RECTAL TENDERNESS




NEXT INTERACTION

1. Change Input Data
2. Another Diagnosis
3. Display Treatment
4. Obtain Definition
5. End Interaction

CHOICE:

SIMULATED CASE

| 92.9% APPEND | 7.1% NONSAP | 0.0% RCOLIC | 0.0% PERFDU | 0.0% CHOLE | 0.0% SMBOBS |
|---|---|---|---|---|---|

*FIGURE 1*


PROGRAM TO AID IN DIAGNOSIS OF ACUTE ABDOMINAL PAIN

TEACHING PROGRAM FOR ACUTE ABDOMINAL PAIN

CASE NUMBER : 6

DIFFICULTY : 2

LCDR PERRY SCOPE is a 31 year old submariner who presents with pain in his abdomen which began in the middle of his belly but spread out all over and is now located mostly in the middle (he puts his finger on his navel when asked to point to the pain) and it just won't seem to go away. The pain is worse when he tries to climb ladders and he prefers to stay in his rack since the pain is less then. He has felt sick to his stomach all day and has vomited a couple of times. He states that food is distinctly unappealing to him. He hasn't appeciated any change in the color of his eyes. He has seen some white, stringy material in his stool lately and he complains of having to urinate every 45 minutes. He hasn't been bothered by stomach upset and he has never had this same pain before. Correction of pyloric stenosis as a child has been his only hospitalization. The patient hasn't had any major illnesses since childhood and denies the need for medication at this time.

Press RETURN to continue

*FIGURE 2*

be ascribed to that diagnosis. In contrast, no confidence can be ascribed to probabilities below 50 percent. Probabilities between 70 percent and 90 percent are highly suggestive if the corpsman concurs. The most challenging interpretations are for those cases where the probability lies between 50 percent and 70 percent. The corpsman's clinical experience and judgment are crucial, especially in these cases. Again, the corpsman's judgment must take precedence.

## Recent System Advances

The diagnostic system was designed by Dr. F.T. de Dombal,(*1*) who constructed his data base from the presentation of thousands of acute abdominal pain patients in 2 percent of England's hospitals over a 10-year period. From these presentations, a data sheet was constructed with 32 categories of history and physical examination items of particular relevance to the diagnosis of acute abdominal pain. Combining the reliability of the data base with the thoroughness of the data sheet, a rough computer program was constructed to allow the data to be input and analyzed through a desktop computer terminal. The data sheet is used like a history and physical exam form. Items pertaining to the patient are circled, then serially entered into the computer. This triad of data base, data sheet, and rough computer program was presented to NSMRL for tailoring to the unique requirements of the Submarine Service.

Initial investigative emphasis was directed toward the tailoring of the data base to specific Submarine Service requirements and initial trials of its efficacy and compatibility within the operational system. This task reportedly accomplished, the direction has shifted to expansion of the system to encompass the total spectrum of diagnostic and treatment aids for

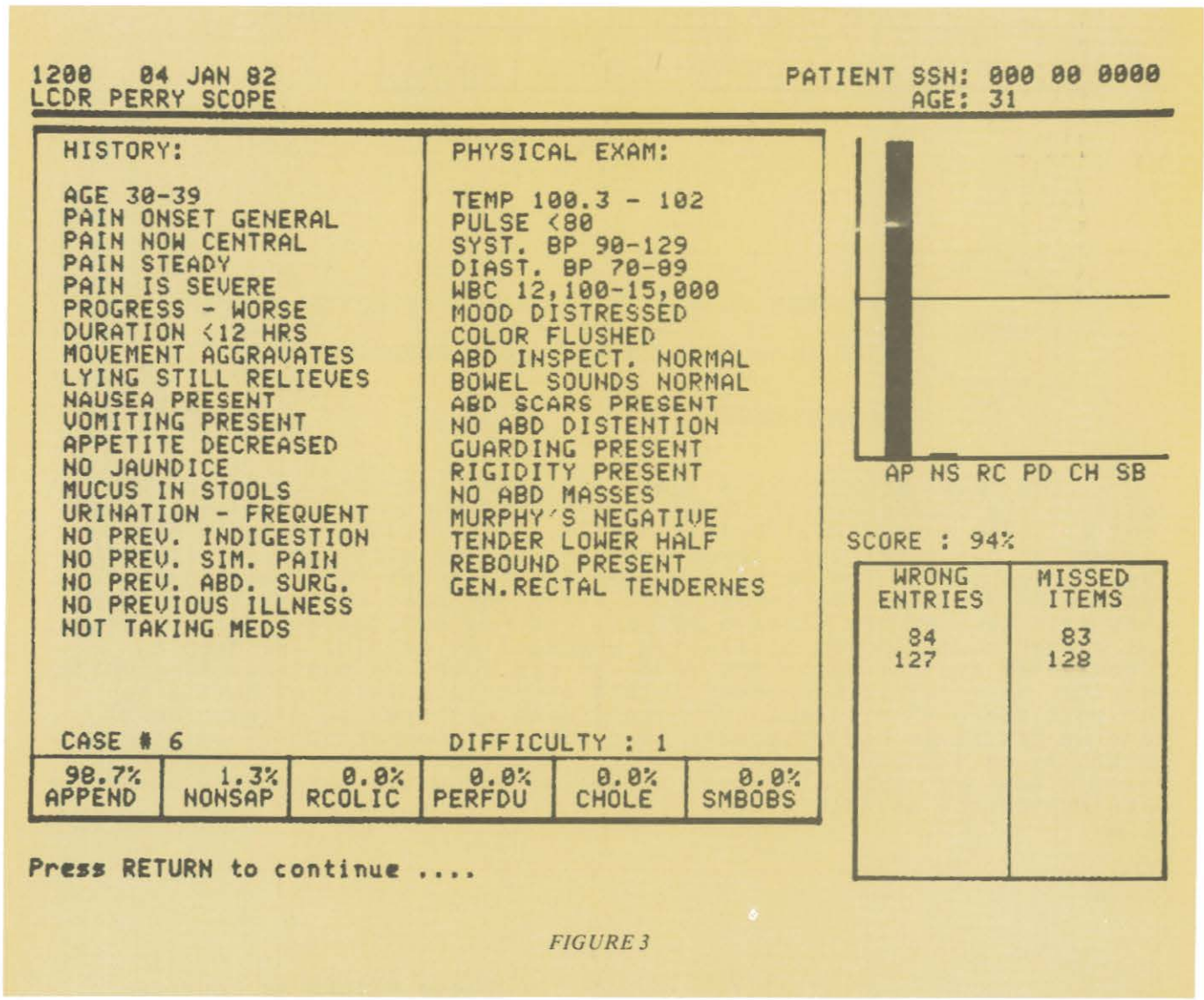



*FIGURE 3*

diagnosis and management of the patient with acute abdominal pain and to make it easy and appealing to use. This transformation has four facets:

- expansion and organization of program components and program flow;
- organization and cosmetic modification of the displays;
- development of user training programs; and
- deployment in full sea trials.

## The Programs

The greatest portion of the transformation is internal and involves the program flow and display options. The following changes have made the program extremely functional and easy to use:

**Definition Displays.** Although definitions of the data sheet items were formerly available early in the computer interaction, once passed, the option was denied for the remainder of the program. Presently, the new definitions with graphic displays can be presented at the beginning and also while viewing the case summary page. This is of great importance to the corpsman who finds that the case summary page and the program-generated probabilities do not truly reflect his patient's presentation. The corpsman can now be sure that his entries conform to the standard data sheet definitions upon which accurate results are predicated and then return to the presentation of the case summary page.

**Input Change Routine.** After all input has been made and the case summary page has been displayed, if the corpsman's impression differs or if the corpsman feels that some of the items entered do not accurately reflect his patient's presentation, he may use the input change routine. This routine allows previously entered items to be deleted and other items to be entered in their place.

PATIENT NAME: _____ AGE: _____

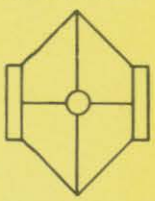
SSN: _____ DATE/TIME: _____

# HISTORY

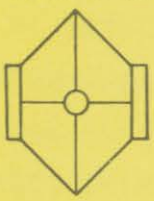
PAIN

SITE

AT ONSET (most significant when it began)



AT PRESENT (most significant at time of exam)



| | | | |
|---|---|---|---|
| (11) | RUQ | (24) | |
| (12) | LUQ | (25) | |
| (13) | RLQ | (26) | |
| (14) | LLQ | (27) | |
| (15) | UPPER HALF | (28) | |
| (16) | LOWER HALF | (29) | |
| (17) | RIGHT HALF | (30) | |
| (18) | LEFT HALF | (31) | |
| (19) | CENTRAL | (32) | |
| (20) | GENERAL | (33) | |
| (21) | RIGHT FLANK | (34) | |
| (22) | LEFT FLANK | (35) | |
| (23) | NO PAIN | (36) | |

TYPE OF PAIN:
*(at times free of pain = intermittent; constant = steady; constant and varying in intensity = colicky)*
INTERMITTENT (37) STEADY (38) COLICKY (39)

SEVERITY OF PAIN:
*(do not ask; obvious distress = severe; everything else = moderate)*
MODERATE (40) SEVERE (41)

PROGRESS OF PAIN:
*(at the time of examination)*
BETTER (42) SAME (43) WORSE (44)

DURATION OF PAIN:
*(duration of this episode of pain)*
12h or less (45) 12-24h (46) 24-48h (47) 48+h (48)

AGGRAVATING FACTORS:
*(ask specifically about each; have the patient move and cough)*
MOVEMENT (49) BREATHING (51) OTHER (53)
COUGH (50) FOOD (52) NONE (54)

RELIEVING FACTORS:
*(ask specifically about each)*
LYING STILL (55) ANTACIDS (57) OTHER (59)
VOMITING (56) FOOD (58) NONE (60)

OTHER SYMPTOMS

NAUSEA: YES (61) NO (62)
*(feeling sick to stomach)*

VOMITING: YES (53) NO (64)
*(being sick to stomach)*

APPETITE: DECREASED (65) NORMAL (66)
*(recent change in appetite)*

JAUNDICE YES (67) NO (68)
*(history of yellow color to skin or sclera)*

BOWELS: *(recent change in bowel habits)*
NORMAL (69) DIARRHEA (71) MUCUS IN STOOL (73)
CONSTIPATED (70) BLOOD IN STOOL (72)

URINATION: *(recent change in urination)*
NORMAL (74) PAINFUL (76) BLOOD IN URINE (78)
FREQUENCY (75) DARK URINE (77)

PAST HISTORY

PREVIOUS INDIGESTION: YES (79) NO (80)
*(regular problem in the past)*

PREVIOUS SIMILAR PAIN: YES (81) NO (82)
*(pain like this before)*

PREVIOUS SURGERY: YES (83) NO (84)
*(abdominal surgery or trauma - must be intraperitoneal)*

PREVIOUS ILLNESS: YES (85) NO (86)
*(any pertinent illness, not just abdominal; i.e., requiring hospitalization)*

TAKING MEDICATIONS: YES (87) NO (88)
*(medication for this pain only)*

*FIGURE 4*

**"Last Case" Option.** At the end of each interaction, the case is entered into a small memory. When this option is selected, the case summary page is reconstructed for the previously run case. Update of a patient's presentation can then be accomplished using this option in conjunction with the input change routine. A patient can now be followed, his history and physical exam data continually updated, and his diagnostic probabilities recalculated.

**Computer Training Program.** A major advance is the addition of a patient simulation training program. After selecting this option at the beginning of the program, the user chooses one of two degrees of interpretive difficulty, the computer randomly selects one of 50 cases in its memory, and a narrative of the patient's history and physical examination is constructed. The degree of difficulty corresponds to the ease of interpretation of the phrases which represent the simulated patient's signs and symptoms. Figure 2 is the history portion of one patient presented with a moderate degree of difficulty. The user fills out a data sheet on the simulated patient, then enters the data into an accompanying diagnostic program which scores the accuracy of input and lists any errors. Figure 3 is an example of a case summary page for the simulated patient diagnostic program. This patient simulation program allows the corpsman to continually hone his diagnostic skills while at sea.

**Treatment Advice.** The treatment suggestions(*2*) are totally new additions to the diagnostic system and are intended to aid the corpsman either in management of the common causes of acute abdominal pain or temporization while awaiting medevac. There are five sections to each treatment plan. The first is a discussion of each diagnostic category—how the typical patient presenting with each diagnosis should appear. The second lists and describes the different diagnoses to be considered. The third details the treat-

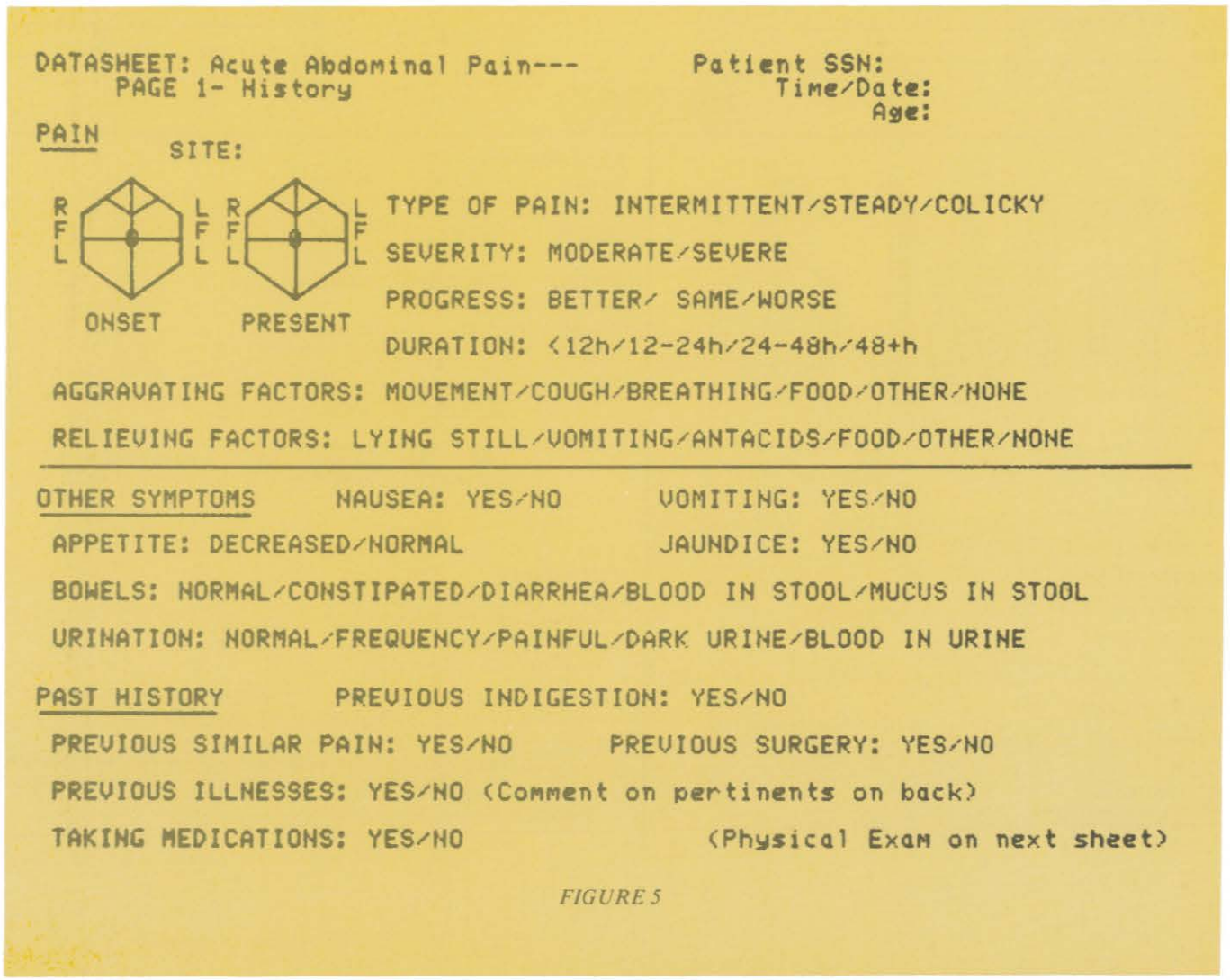



*FIGURE 5*

ment of each diagnostic category, listing each modality and, for example, giving specific dosage recommendations for antibiotics and rates of flow for IV's. Medevac considerations are also given in this section. Section four details the usual course of each diagnosis if the suggested treatment is implemented. The final section details complications and their management with additional medevac discussion.

**Program Protection.** Input of inappropriate data (a letter instead of a number or an entry not within the expected parameters) formerly resulted in an automatic system-generated program abort requiring the user to reload the entire program and begin anew. Presently, an entry error results in display of an error message informing the user of the type of error and requesting reentry without interruption of the program. Program flow and input accuracy are, thereby, enhanced.

**Data Processing.** Finally, a comprehensive data processing program has been developed to analyze the data collected during the upcoming full sea trials.

### The Displays

The newly organized data sheet (one-half of which is reproduced as Figure 4) is in marked contrast in ease of use and interpretation to the previous version (Figure 5). Figures 6 and 7 are displays from the initially presented system illustrating the computer display of one portion of the data sheet as it appeared after data entries and the old case summary page. In contrast, Figure 8 illustrates the revised data sheet computer display which allows the corpsman to detect readily omissions or erroneously entered items. The items entered are circled and the pain or tenderness locations are filled in as the entries are made. The new case summary page (Figure 1) provides a more organized display of data entries as well as an enhanced representation of diagnostic probabilities in the bar graph. This

```
ABDOMINAL EXAM: Part 2---

TENDERNESS- RUQ(104) LUQ(105) RLQ(106) LLQ(107) UPPER1/2(108)
            LOWER1/2(109) RT.HALF(110) LT.HALF(111) CENTRAL(112)
            GENERAL(113) RT.FLANK(114) LT.FLANK(115)
            EPIGASTRIC(116)  NONE(117)

MURPHY'S SIGN- PRESENT(126) ABSENT(127)

BOWEL SOUNDS- NORMAL(128)  DECREASED(129)  HYPERACTIVE(130)

RECTAL EXAM- NORMAL(135)

    TENDERNESS: ON LEFT(131)  ON RIGHT(132)  GENERAL(133)

    MASS FELT(134)  NONE(135)

-------------------------------------------------------------------------------

ENTER SYMPTOM CODES (Key RETURN for next section):

CODE: 112
CENTRAL TENDERNESS
CODE: 127
MURPHY'S NEGATIVE
CODE: 129
DECREASED BOWEL SNDS
CODE: 132
RT RECTAL TENDERNESS
CODE:
```

*FIGURE 6*

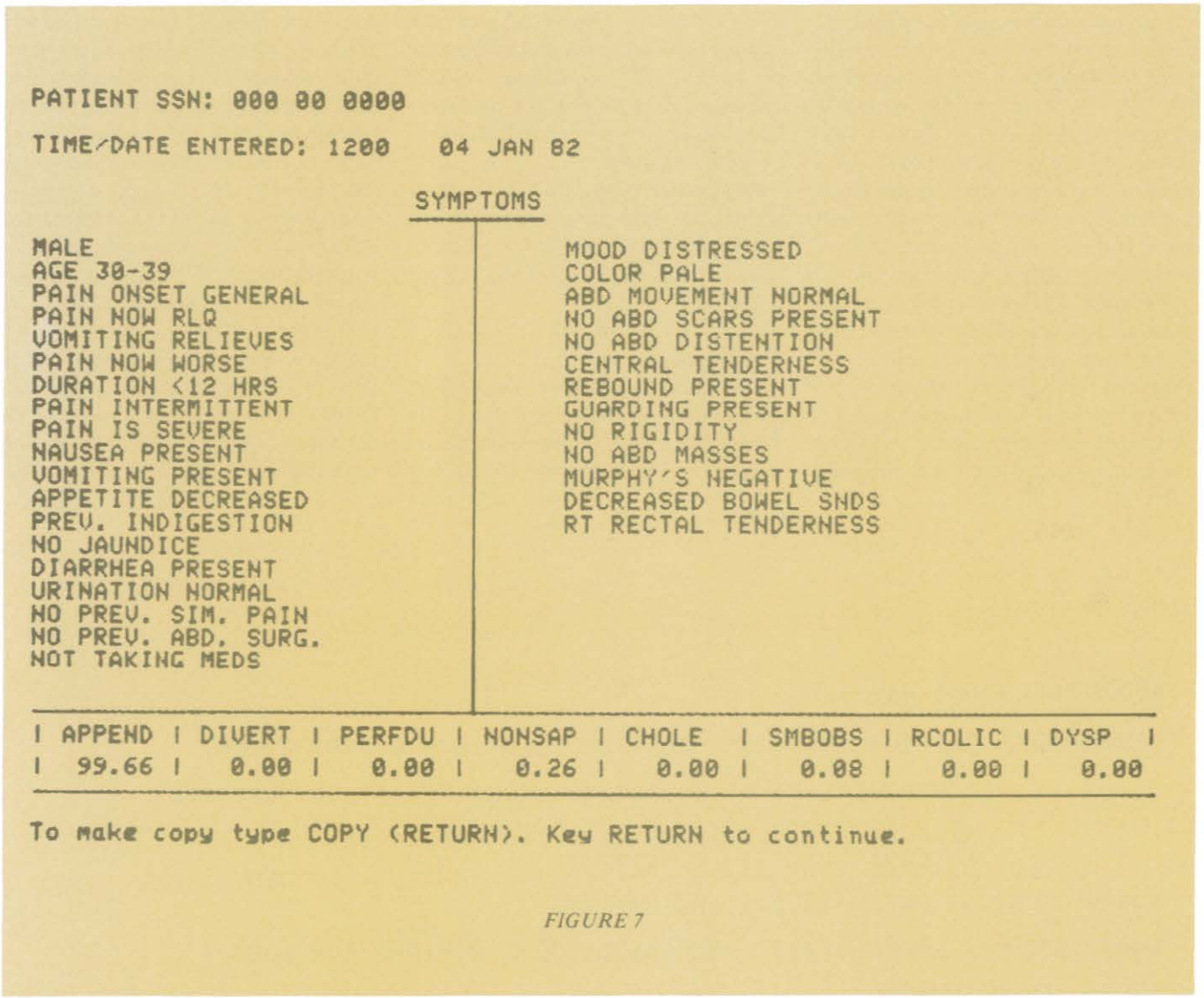



*FIGURE 7*

display is particularly amenable to inclusion in the patient's health record by making a copy on the hardcopy unit normally attached to the computer and adding the designation "SF-600," the patient's name, and the corpsman's signature.

**User Training**

While the training emphasis had been aimed at instruction of physical diagnosis techniques and inspiring user motivation, training now concentrates on proper system use and output interpretation, allowing the system's utility and inherent appeal to motivate the user. The backbone of user training and system use is a reference manual(*3*) which details every facet of the system from its background to actual computer operation as well as listing each data sheet definition and reproducing each treatment protocol for easy user reference. The 1-day course of lectures and computer interactions thoroughly familiarizes the users with the systems and has resulted in requests for the system aboard each participant's boat. A complete training package has been developed which will allow squadron medical officers to train the corpsmen now serving aboard submarines and to brief the submarine commanding officers and executive officers on the system. Newly designated submarine corpsmen will continue to receive their initial training from NSMRL staff at the Naval Undersea Medical Institute.

## Sea Trials

The purpose of the sea trials is to determine the effectiveness and compatibility of this system during sustained deployment aboard all nuclear submarines. Each corpsman will receive training in system use, but only half will receive the diagnostic

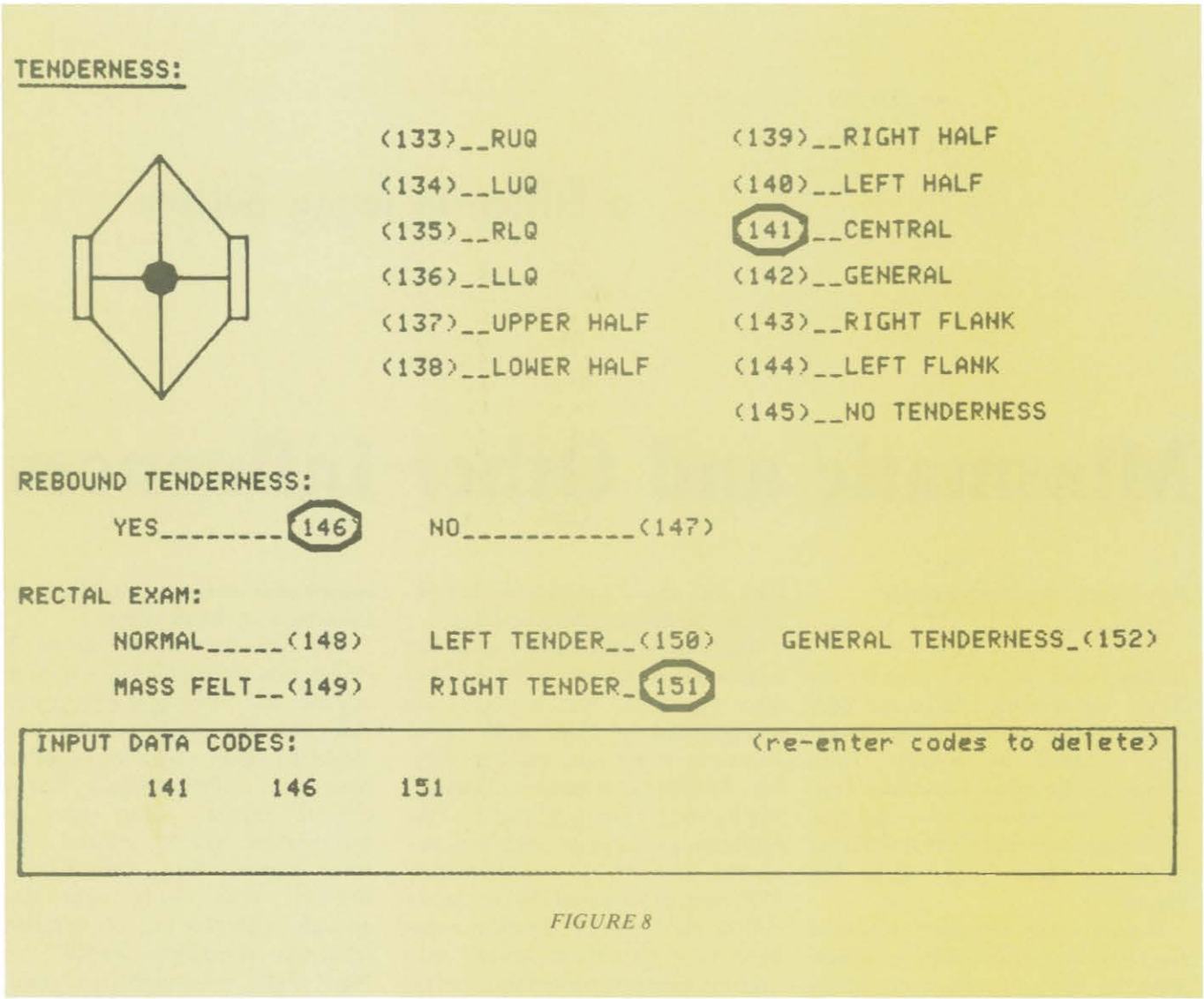



*FIGURE 8*

tapes; the other half will serve as the control group. After each patrol the corpsmen will return the data sheets and, if in the experimental group, the diagnostic tapes in exchange for new ones. Each corpsman and his commanding officer will complete a short questionnaire about the system's utility and compatibility. The cases stored on each tape will be analyzed using the comprehensive data processing programs to assess both the performance of the system at sea and the incidence of serious abdominal illnesses. All information collected will be used to update and improve the system for eventual deployment as a regular part of the Medical Department representative's armamentarium.

Future systems will consider the diagnosis of chest pain and psychiatric disorders as well as aid the corpsman with the ever-increasing administrative functions such as the DD-1141 (Record of Exposure to Ionizing Radiation), the health record, sanitation records, and periodic report organization and information retrieval.

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Home of BUMED

a hilltop in foggy bottom

# Miasmatic and Other Influences

*Part six in a continuing series*

Summer 1877 was crisis time for the Naval Observatory. Euphoria over Asaph Hall's moons of Mars discovery faded as RADM John Rodgers, the new Superintendent, presided over an institution that was becoming more and more a victim of ill health, both symbolically and literally.

A controversy simmered over how the Observatory should be governed. Was the Navy to remain in control and, if so, would a Navy line officer continue as Superintendent? Would a civilian scientist make a better administrator, as many of the Nation's astronomers thought? The uncertainty and distraction were already having a negative effect on the staff and its productivity.

The physical environment had steadily worsened over the years, ever since nearby riverfront businesses began to impede the natural flow of the Potomac River. The marsh at the foot of Observatory Hill was expanding and during low tide a large portion of it lay exposed as wet mud.

An open sewer ran along neighboring B Street (Constitution Avenue), depositing human waste into Tiber Creek and eventually onto the flats just above the yet to be completed Washington Monument.

That the neighborhood had grown unpleasant could not be denied, but what "progress" had wrought was compounded by the work of a voracious insect—the malaria-carrying Anopheles mosquito. Matthew Maury and his family had suffered the debilitating symptoms of malaria, and all who followed him to Observatory Hill became sickened by it. James Gilliss, his successor, found it expedient to dose himself heavily with quinine. Superintendent Davis and his wife caught the seasonal "chills." The Navy surgeons who attended both Gilliss and Davis attributed malaria as the underlying cause of their deaths. All the astronomers, without exception, suffered fevers each year from May through the middle of October to the extent that the Observatory's history is a litany of premature death, chronic sickness, and lost workdays.

Ironically, the winged tormentors that bred in the marsh and then swept into the Superintendent's unscreened residence and through the Observatory's open observing shutters were seen as nothing more than obnoxious pests. The link between mosquitoes and malaria had yet to be discovered. Nevertheless, the perception was indeed correct. The "miasma" that wafted up from the Potomac flats was the source of the pestilence.

The river also seemed to be the origin of the late night and early morning fogs that often gave Observatory Hill the appearance of an eerie Yorkshire moor. Why the neighborhood was called Foggy Bottom became apparent every time the astronomers had to suspend work when swirling mists obscured the heavens. Few nights were clear enough to operate the two refracting telescopes effectively. By 1877 the "bad" nights outweighed the "good." Ten years later records kept by the night watchmen showed 168 nights of the year too cloudy for observations; 133 were judged as poor. Only 63 were fair and 19 good. But two were classified as very good.(*1*)

## RADM John Rodgers

Superintendent Rodgers and others saw the relocation of the Observatory as the only solution to its problems. But obtaining the new home would not be easy; the Secretary of the Navy had to be consulted. Congress had to appoint a commission to study the options and authorize the relocation. The commission would solicit and evaluate competitive bids for new property. Congress might then appro-

priate funds for its purchase, appoint another commission to study architectural plans for new buildings, and appropriate more funds to construct the new Observatory.

If anyone was up to this formidable challenge it was John Rodgers. Like Admirals Davis and Sands before him, his too had been a long, productive naval career enhanced by meritorious service as a commanding officer during the Civil War. He ended that chapter of his life a commodore and, now, 12 years later, was Superintendent of the Observatory. Although not a scientist, he nevertheless showed great promise as an able administrator of a scientific institution, fighting for its appropriations, insuring the publication of its astronomical observations, and insulating the astronomers from the interruptions that always seemed to plague their work.

Rodgers was an eminently fair and sagacious man, traits that earned him the respect and trust of his employees. Disputes and professional jealousies he handled with aplomb. Scientists, like artists, possess fragile egos.

In September 1877 the Superintendent launched the first salvo in the campaign to find the Observatory a new home. Little did he know then that the fight would drag on for 15 years and that he, like the biblical Moses, would not live to move to the promised land.

His chief argument for the removal was the Observatory's less than ideal location. Rodgers had influential allies. Quartermaster-General of the Army Montgomery Meigs pointed out that the Hill had little value and its presence actually blocked the commercial growth of the Capital city. He had his own solution. "... high ground of Camp Hill, about the Observatory, should be spread over the surface, covering the mud of the flats . . . and the United States Naval Observatory should be removed to the high ground north of the city . . ."(2)

Rodgers agreed that the Observatory be moved north of town but not near factories or dwellings where chimney smoke "would obscure the clearness of vision, the traffic would shake the instruments, and some high structure if placed upon the meridian near our instruments might hide a useful part of the heavens."(3)

He also enlisted the professional opinions of six Navy surgeons who had cared for the employees over the years. All concurred with Surgeon George Clymer "that the location of the Observatory is unhealthful, caused, as I think, by the malaria from the shores of the Potomac, from which no artificial means will secure it."(4)

On 20 June 1878 after heavy lobbying by Rodgers and the Secretary of the Navy, Congress passed an act appointing a three-man commission to search for a new site and to ascertain the cost of moving the Observatory. The commission invited sealed proposals from Washington residents with land to sell. Seventy-eight proposals came in; all but five were eliminated.

Rodgers sent five of the Observatory's astronomers to examine the choices. After what they had suffered in the past it was no wonder that healthfulness headed their list of requirements for the new site.

## A Most Dilapidated Condition

The Superintendent and his astronomers made their choice, the commissioners made theirs, but for Congress a new home for the Observatory was low priority. Another year and a half went by before that body appropriated money to purchase the Barber Estate north of Georgetown. However, that was as far as the legislators were prepared to go. No money was earmarked for construction of a new institution.

With plans to move the Observatory eventually, little money was set aside to maintain the old facility. It had indeed fallen on hard times. The west wing Transit Circle room was in terrible shape and required nothing short of an entire remodeling of the roof and shutters to make it safe. The 9.6-inch refractor needed a new driving clock, the 26-inch Great Equatorial dome had warped and was difficult to operate, and the rest of the instruments were "in a most dilapidated condition."(5)

Morale was equally dilapidated. There were rumors that Congress planned to reorganize the Observatory. This was due in part to a nationwide feeling among astronomers that the Naval Observatory should be run by a civilian scientist, one of their own, who understood the importance of astronomy and could bring prestige to the institution.

Another proposal would remove the Navy from the operation entirely. It could then truly become a National Observatory.

Rodgers canvassed his professionals for their opinions. All wanted the facility to remain under Navy control, and a minority wished to see a civilian director. The majority argued for the status quo. Rodgers, speaking for the majority, was of "the opinion that the present organization under

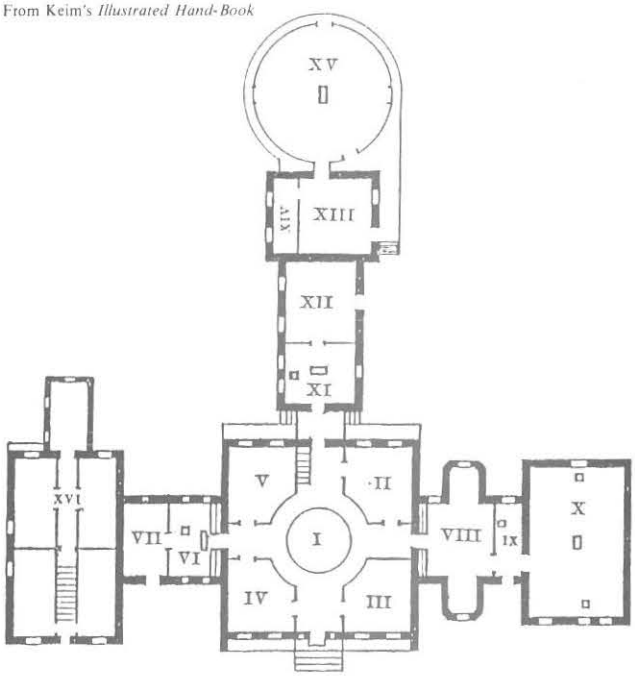
Editor's collection

*Superintendent John Rodgers launched the campaign that eventually found a new home for the Observatory.*

*The Observatory as an artist saw it in 1884 . . .*

Editor's collection

From Keim's *Illustrated Hand-Book*




*. . . and a floor plan of the same year*

I. Pier of 9.6-inch refractor
II. Superintendent's Office
III. General Office
IV. Office of naval officer in charge of chronometers
V. Packing room
VI. Mural Circle and Transit
VII. Chronometer Room
VIII. Library
IX. Siderial Clock used as the standard clock of the Observatory
X. Transit Circle
XI. Prime Vertical
XII. Machine Shop
XIII. Office of individual in charge of the 26-inch refractor (Great Equatorial)
XIV. Bedroom
XV. 26-inch refractor (Great Equatorial) When mounted in 1873, this was the largest refracting telescope in the world.
XVI. Superintendent's Residence

U.S. Naval Observatory

*The solar eclipse of 1878 took the institution's astronomers to the roof of the Teller Hotel in Central City, CO. Below: Four years later the Transit of Venus found another team camped in Argentina's Patagonia region.*

Courtesy of Ruth Stines

*A photograph taken from atop the newly-completed Washington Monument in 1885 puts Observatory Hill (left center) in the context of its Foggy Bottom environment. In the left foreground is B Street (Constitution Avenue) with its infamous open sewer. The Aqueduct Bridge connects the Virginia shore to Georgetown in the center background. Below: Closeup view of the same scene shows the two telescope domes. A dredge in the right background works to deepen the heavily silted river channel.*

U.S. Naval Observatory Photos

which the Naval Observatory has in a short time attained so very high a place amongst the Observatories of the world, is the most eligible one. 'Let well alone,' is a safe motto . . ."(6)

Another rumor suggesting that the civilian astronomers would be replaced by line officers generated even more turmoil.(7) Rodgers' successors then recommended that a board of visitors be appointed to oversee the astronomers' work. Nothing immediate came out of any of this, but the embers of controversy continued to smolder into the 1900's.

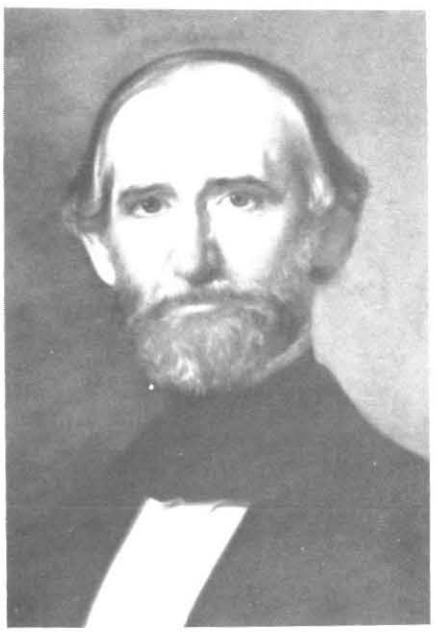
## Eclipses, Transits, and Timekeeping

Despite the uncertain times, the Observatory continued its programs. Astronomers updated star catalogues. Professor Mordechai Yarnall was nearly finished with his, having worked on it for over 25 years. Asaph Hall still operated the 26-inch Great Equatorial, observing satellites, double stars, nebulae, and several comets. Other astronomers used the old 9.6-inch telescope to observe comets and minor planets.

The Observatory continued to aid in the telegraphic determination of longitude and the timekeeping function expanded. By 1884 its clocks remotely regulated two time balls, the fire alarm bells in Washington, DC, five bells in Government offices there, and 25 other clocks in the Capital and other cities. By 1888 the number of regulated clocks had risen to 347.

Its scientists studied celestial phenomena in Washington and by expedition. On 6 May 1878 Mercury transited the Sun as did Venus 4 years before. The event was observed in Washington and Austin, TX.

But the big event of that year was the solar eclipse of 29 July. Eight well-equipped teams went to stations on the line of totality stretching from Creston, WY, through the Colorado Rockies to Dallas, TX. This ambitious undertaking required the shipment of much equipment and the pro-



*Professor of Mathematics Mordechai Yarnall had just finished his star catalogue when he became victim of Foggy Bottom's "malarial influences."*

Columbia Historical Society

*With several of its windows smashed by vandals, the vacant Observatory awaits a new future.*

tection of the U.S. Army; there were rumors of Indian unrest.

The weather on the day of the eclipse was perfect and what photographs the astronomers took gave a very detailed picture of the solar corona, that mysterious band of light about the edge of the Sun.

Two years later Venus again transited the Sun. The Observatory broke out the old equipment, added some new instruments, and observed the event from Washington, the Cape of Good Hope, two stations in South America, New Zealand, Texas, New Mexico, and one of the Florida Keys.

## Worn Threadbare

On 5 May 1882 Superintendent Rodgers died while staying in the Barber house at the newly acquired site. "I am of the opinion that R.ADM John Rodgers became effected [sic] with Bright's Disease of which he died . . . from exposure to Malarial poisoning at the 'Naval Observatory' while Superintendent of the Same."(*8*) According to Passed Assistant Surgeon Presley M. Rixey, attending physician, the Potomac flats had claimed yet another victim.*

In fact, the "malarial influences" had already taken Professor Yarnall 3 years before. Since then, health conditions had deteriorated further. Moreover, the buildings and grounds were more rundown than ever. By 1886, 250 feet of the perimeter wall had fallen down. Only enough money could be scraped together to buy temporary fencing to fill the gaps.(*9*)

Each year Rodgers pleaded for Congress to appropriate funds for construction to begin at the new site. They were ignored. The pleas seemed a monotonous routine for Superintendent George E. Belknap. "The disadvantages of the present location have been so often and so forcibly described that the subject is worn almost threadbare."(*10*)

*Dr. Rixey was later to become White House physician to Presidents McKinley and Roosevelt, and Surgeon General of the Navy.

By 1886 Congress acted. Architect Richard M. Hunt of New York City prepared plans and, 2 years later, construction finally began. But natural and manmade delays caused the work to fall behind schedule.

By spring 1890 excessive rains and the flooding of the Chesapeake and Ohio Canal brought work to a standstill. And then there were contractor and labor troubles, concrete that could not pass strength tests, and "procrastination in the delivery of marble."(*11*)

Yet by the fall of that year the main building at least was closed to the weather, the grounds were being graded, and plans for remounting the instruments were underway.

On 15 May 1893 the old building "was formally abandoned as an observatory and the new site on Georgetown Heights . . . officially occupied."(12) It was the end of an era. Forty-nine years before, the United States was struggling to achieve a scientific identity of its own. Now that independence was assured largely through the efforts of the men who had turned Reservation Number 4 into one of the world's leading scientific institutions.

The building where they had labored was empty now, instruments gone, windows broken, and weeds sprouting up where there once had been manicured lawns and flower gardens. But the vacancy would only be temporary. The high ground beside 23rd Street was not destined to become a gravel quarry, plundered in a wild scheme to fill the Potomac flats. The Navy had other plans for Observatory Hill and the domed edifice that had served the Nation so well. —JKH

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(To be continued in the November issue)

# A Case of Capgras Syndrome

LT Paul Giannandrea, MC, USNR William Howell, Ph.D.

The Capgras syndrome was first described by the French psychiatrists Capgras and Reboul-Lachaux(*1*) in 1923 as "l'illusion des sosies," i.e., the illusion of doubles. This was derived from Plautus' play "Amphitryon" in which the god Mercury assumes the appearance of Sosie, the servant of Amphitryon, and thus becomes his double. So, too, the patient believes that an exact double has replaced a person in his life. The following recent case is presented as a basis to discuss this rare delusional syndrome.

## Case Report

The patient is a 30-year-old seaman with 2 years active duty in the Navy who was transferred to the Psychiatry Service at NNMC Bethesda, MD, with a diagnosis of paranoid schizophrenia. He had recently left his ship on unauthorized absence and sought his parents' home but drove to his sister's house instead because he "forgot" his parents' address. He was agitated and accused his sister of being replaced by a CIA agent. After subsequently calling his parents he developed the idea that they too were impostors. He talked about a "doctor" who had placed him in a hypnotic state.

On admission his physical and all indicated laboratory examinations were normal. He was alert, uncooperative, and mildly agitated. He said that he had been in a hypnotic state for several months. He alluded to being influenced by the television aboard ship. He was actively delusional about his family, stating that they looked and acted the same but had been replaced by actors who had been sent to an excellent acting school. He believed that the interviewer knew all the details involving his case. Routine screen for detecting organic illness* was unremarkable and no symptoms of affective disorder were elicited. He denied hallucinations or drug and alcohol abuse.

The patient is the oldest of four children from an intact family. When talking about his parents he expressed considerable anger toward the "impostor parents." He denied serious relationships and dated rarely. He married after an accidental pregnancy and divorced after a turbulent marriage of only a few months. After dropping out of college, he joined the Navy, was trained to be an air traffic controller, failed the qualifying examination, and was stationed aboard ship as a deck crewman.

At the Psychiatry Service the patient was administered chlorpromazine 150 mg t.i.d., resulting in a marked resolution of his schizophrenia-like thought disturbance, i.e., thought fragmentation, blocking in thought association, paranoia, and predominance of primary process thinking. Although he made marked progress in terms of his ability to relate to others and with the above described thought disturbance, he remained fixed in his belief that his parents and sister had been replaced by impostors. He concluded that it was something he had to learn to live with.

## Discussion

This case illustrates the distinguishing clinical features of Capgras syndrome:

- the delusion centers around close figures in the life of the patient, usually the spouse, a parent, or a sibling (in this case the latter two);
- the delusion is firmly fixed with the same person(s) being implicated and persistently misidentified;
- it occurs within the setting of clear consciousness, although it can occur simultaneously with features of other psychotic illness; and
- the delusion of doubles, unlike accompanying symptoms, remains resistant to psychopharmacological intervention and may persist without suppression by the patient for many

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*Screen included CBC with differential, SMA6/II, VDRL, T4, ESR, and neuropsychological testing battery (Halstead-Reitan).

years after the resolution of accompanying symptoms.

The delusion of doubles can be viewed as a solution to the problem of ambivalence,(*2*) i.e., having both positive and negative feelings about a particular person. Thus, with the creation of the bad object (the double), the patient can express his hated and aggressive feelings toward it without experiencing guilt or anxiety which would result if such anger were directed toward a loved and respected object (the original).

The process can be conceptualized as a projected, and thus a more primative and developmentally earlier, version of the more familiar intrapsychic process of splitting, which is a characteristic defense mechanism used by borderline individuals.(*3*) Borderline individuals are notorious for seeing everyone they contact as either all good or all bad, and they rule their lives according to this distorted perception. This is seen as a developmentally derived inability to maintain angry feelings toward someone they simultaneously feel dependent upon for their well-being. This resembles the relationship of the infant with its mother. These people in general do not alter this early form of interpersonal relationship. The described patient solves the same dilemma only in a psychotic manner by maintaining discrete good and bad external objects reflecting a two-fold pathology: (1) an inability to maintain internalized images of objects (people) and (2) an inability to maintain ambivalent feelings toward internalized or external objects. In the presented case it is speculated that the delusion represents the psychotic solution to the conflict resulting from his craving for reassurance, love, and acceptance from his family during a highly stressful period of his life aboard ship. It also represents his simultaneous fear of losing this craved-for love because of his intense unconscious hatred toward them.

## Conclusions

There are many theories about the etiology of Capgras syndrome.(*2,5,6*) One proceeds from the notion that it is an entity within the paranoid disorder category due to its characteristically fixed and encapsulated delusion which may minimally interfere with the patient's normal functioning in society. Another theory ascribes to the idea that it represents a neurologic disorder similar to prosopagnosia, i.e., the inability to recognize faces. However, most clinicians have considered Capgras syndrome within the context of paranoid schizophrenia. In any event, Capgras syndrome continues to be an intriguing illness, especially when one approaches it from the perspective of intrapsychic processes.

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# Summer Duty Aboard USS *Yellowstone*

ENS Jill E. Gustafson, MC, USNR

When I requested the shipboard orientation program for summer ACDUTRA (active duty for training), I was interested in experiencing Navy life firsthand and hoped for a change after 2 years of basic sciences. As the time approached for my trip to Norfolk, however, I began to have doubts. I had been told that because I was a woman I would be assigned to a tender, and a tender would probably not be going to sea. I envisioned long, boring hours with nothing to do and doubted that a summer spent sitting at the pier would provide much insight into life out in the fleet. The last thing I did before I left for Norfolk was to pack an extra bag full of textbooks and notes. I reasoned that I could at least put the summer to good use in preparation for the National Boards. Well, the books remained untouched in my stateroom; that last-minute addition to my luggage would have been better left in Boston.

I was assigned to USS *Yellowstone,* a new destroyer tender, commissioned 2 years ago. Contrary to popular opinion, tenders do go to sea occasionally and *Yellowstone* was scheduled for 10 days underway during my time aboard. But even sitting at the pier, *Yellowstone* was an excellent classroom. As is the case on most tenders, more than half the officers are former enlisted men and women with more years of Navy experience than I have of cognizant thought. I cannot imagine better officers from which to learn all aspects of naval experience than those I encountered in *Yellowstone*'s wardroom. In spite of my inexperience and my temporary status, I was gratified at how quickly I was accepted as a shipmate.

Most mornings were spent with the corpsmen in the treatment room of the Medical Department, where patients are seen first when they report to sick call. The variety of injuries and illnesses seen over the course of a week amazed me. Nearly all the injuries were work-related and I learned to appreciate the necessity of safety precautions such as goggles and hardhats. The illnesses seen in sick bay consisted primarily of mycoplasmic pneumonia, gastroenteritis, and upper respiratory infections. But with the large patient population served by *Yellowstone,* we saw a number of less common conditions such as Bell's Palsy, gout, and kidney stones. Here again, not only did I gain valuable clinical experience, but I learned a lot about the peculiar medical problems of a shipboard population and came to appreciate the difficult job that a medical officer has as the only doctor aboard ship.

For a student about to start the clinical years of medical school, Navy corpsmen can be good teachers and, having watched them at work, I have a clearer understanding of their role and range of duties in the fleet. Having trained in a civilian environment, I had no other opportunity to see how the corpsmen fit into the picture of medical care in the Navy.

In the afternoons when sick call had dwindled somewhat I saw patients individually under the supervision of the medical officer. I had enough time to talk to the patients about their work, pressures they were under, and their perspective on the Navy. I do not believe that anything else could have helped me as much in terms of understanding a patient's illness in the context of the particular lifestyle of naval personnel. I do not expect to always have as much time as I would like talking with patients so I was very glad to have had the chance without the time pressures that most doctors work under.

In addition to seeing patients, I observed fire drills, watched a nuclear accident drill from one of the decontamination stations, and spent one memorable afternoon following the sanitation inspector from bow to stern, and from the dining areas to the sewage pipe system on the lower deck. I was tremendously impressed with the level of cleanliness that we saw everywhere. When *Yellowstone* was underway I stood bridge watches with one of the watch sections. I learned firsthand about the effort and energy that is required of the crew and officers when the ship is at sea and saw for myself what a serious business it is to pilot a ship safely.

Since I lived aboard when the ship

*Destroyer tender USS* Yellowstone *(AD-41)*

was moored at the pier, I had a chance to talk with shipmates in the evening when routine was more leisurely. I made it a point to ask them what they thought of Navy medicine and of the Medical Corps. I heard several times that Navy doctors need to be more caring, that too often they seem to perform their duties as if marking time until they can get out to a civilian practice, and that they are too casual about customs, courtesies, and military responsibilities as officers. To whatever degree these charges are true, I think that a better understanding of the working environment and lifestyle of the regular Navy can make a big difference in which we in the Medical Corps practice our profession. My summer was very valuable in this respect and I strongly urge medical students to participate in the shipboard orientation program if at all possible. After being aboard *Yellowstone* I am more interested in and excited about being a Navy doctor and have a greater pride in being in the Navy than I had before. □



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