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# MEDICAL NEWS LETTER

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HISTORICAL FUND  
of the  
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

Treasurer, N. M. D. Historical Fund  
Bureau of Medicine and Surgery (Code 23)  
Department of the Navy  
Washington 25, D. C.

Committee

F. R. MOORE, Rear Admiral, MC USN, Chairman  
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### Total Cystectomy

This investigation was undertaken in an attempt to evaluate the results of treatment of carcinoma of the bladder by simple cystectomy. For this purpose, a follow-up period of at least 5 years is essential; therefore, the cases selected were those that had been contributed to the Bladder Tumor Registry of the American Urological Association at the Armed Forces Institute of Pathology prior to May 1, 1951. The earliest cystectomy reported to the Registry was performed in June 1931. Of the total of 312 cases registered, only 225 included sufficient data to make them acceptable for the present study.

Of the 225 cases, 110 were submitted by government hospitals and the remaining 115 by civilian contributors. Original clinical records were borrowed from civilian hospitals and Armed Forces repositories and follow-up questionnaires were sent to physicians or to patients. Histologic sections were again reviewed and the tumors reclassified pathologically. Autopsy protocols—when available—were studied.

Only 4 patients in the group were untraced after cystectomy; thus, information subsequent to operation was available for 221, or 98%, of the patients. Three of the 221 were lost to follow-up less than 5 years after cystectomy; 37 survived 5 years or longer and 21 of these were living at last report.

This study considers pathologic classification, clinical data, methods of ureteral disposition, survival rates, and causes of death.

Eighty percent of all patients were 50 years of age or over. The youngest patient was a man 22 years of age with papillary and infiltrating carcinoma, grade 2.

The four major symptoms of bladder tumor—hematuria, dysuria, frequency, and urgency—were investigated in relation to the ages of the patients at onset. Total gross hematuria was the sole symptom in 59 cases. Statistical evidence of an association between age at onset and hematuria, with or without other urinary symptoms, is seen in this study.

The 5-year survival rate of 17% for the 225 patients from the Bladder Tumor Registry treated by total cystectomy—while discouragingly low—is comparable with those reported by Jewett and Strong; Ferris and Priestley; Colby and Kerr; Flocks; Marshall and Whitmore; Drinker and O'Connor.

The survival rates are better than those for untreated patients. Welch and Nathanson reported survival rates of 50% and 10% for 14 and 60 months respectively for such patients. Prout and Marshall in viewing the literature on the subject and including their own 59 cases reported survival rates of 38% and 4% for 1 and 5 years respectively.

The survival rates of the patients with carcinoma of the bladder treated by total cystectomy are lower than those of patients with bladder tumor (regardless of therapy) reported from the Registry. Dean and associates reported a 5-year survival rate of 39% for the first 1400 cases in the Bladder Tumor Registry (all cases received prior to 1935). Only a few of the patients

in that series were treated by total cystectomy. From a study of 135 consecutive cases of cancer of the bladder treated by various methods, Royce and Ackerman reported a 5-year survival rate of 28%. For the 77 patients with definitely malignant tumors (excluding those with tumors graded 1) the average length of survival was 1 year and 7 months; only 9% survived 5 years.

Recently, Brice, Marshall, Green and Whitmore have reported on survival of 156 patients after simple cystectomy. The survival rates ranged from 75% and 47.2% for 1 and 5 years respectively in tumors of low grades of malignancy (grades 1 and 2, stages O, A, or B) to 39.2% and 8.8% for 1 and 5 years respectively in tumors of higher grades of malignancy (grades 3 and 4, stages B, C, or D). For their stage D patients, the 1-year survival was 33.3% and the 5-year, 4.2%. These rates, although distinctly better than those reported as well as those of others referred to in this discussion compare unfavorably with the survival rates for patients with bladder carcinoma treated by simple segmental resection. Marshall and associates reported survival rates of 60.4% and 29.1% for 1 and 5 years respectively after segmental resection in 48 patients with "high grade and high stage" carcinoma of bladder; Mostofi reported survival rates of 43% and 34% respectively for patients who had initial carcinoma of bladder, grades 2 and 3, infiltrating types, and who were treated by segmental resection alone.

An analysis of the surprisingly high mortality rates must take into consideration the type of patients selected for cystectomy, the specific justification for the operation, the period in which the operation was performed, the experience and dexterity of the urologist, and the adequacy of the pre-operative preparation, operative technique, and postoperative care.

Analysis of the causes of death in the present series shows that of the 172 patients for whom information was at hand, 68 has no evidence of carcinoma of bladder at the time of death, 14 died of cardiovascular accident, 16 of extrarenal infection, and 38 of kidney infection. One hundred and four patients died of carcinomatosis, but in 3 of these, the primary tumor was not of the bladder: in 1, it was of the prostate; in 1, of the liver; and in a third, of the colon. Thirty-eight of the remaining 101 patients had renal infections and 63 did not.

A certain proportion of the deaths among patients with total cystectomy may be considered preventable either by early and complete removal of the tumor or by control of infection. Cordonnier and Lage have pleaded for more accurate evaluation of tumors with earlier decision for cystectomy. Leadbetter and Cooper and Whitmore and Marshall have advocated more radical procedures to include dissection of lymph nodes and pelvic exenteration. However, Marshall and Whitmore consider the presence of more than one or two positive lymph nodes or evidence of distant metastasis a contraindication to radical surgical procedures.

Improvement in survival rates is certain in this age of antibiotics and isotopes. Surgical mortality rates have already been reduced materially

with advances in anesthesia, availability of whole blood, better understanding of blood electrolytes, and more thorough preparation of patients. Cordonnier and Lage reported 53 consecutive operations without an operative death.

The use of isolated bowel segments as urinary receptacles may reduce infection of the urinary tract, and earlier cystectomy should have the effect of preventing recurrence and metastases in some instances. Whether such measures will materially improve the survival rates of patients after total cystectomy is yet to be determined. (Schwartz, J. W., et al., Total Cystectomy - Analysis of 225 Cases from the Bladder Tumor Registry: J. Urol., 78: 41-52, July 1957)

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### Intraductal Papilloma of the Breast

Discharge from the nipple is frequently encountered in the management of diseases of the mammary gland. Recognition and proper interpretation of the various forms of nipple discharge as distinct physiologic or pathologic entities guide the physician in the treatment of this problem. Only physiologic changes associated with lactation are normal; others are indicative of either a hormonal or pathologic process in the mammary gland.

This discussion presents the findings in 208 patients with intraductal papilloma observed between the years, 1933 and 1951. This report includes clinical history, operative and pathologic findings, and therapy administered, with follow-up reports on 92% of the patients. The survey was undertaken to determine if intraductal papilloma is associated with malignant disease and if a patient with papillary cystic disease of the breast shows a greater tendency to develop carcinoma than a normal individual.

During a period of 18 years, 208 patients with intraductal papilloma were encountered in 1361 patients who had operative procedures performed on the mammary gland. The presenting symptom in most of these patients was serosanguineous or bloody discharge from the nipple. During the latter years of this period of observation, there was a greater frequency of patients presenting themselves for examination with various types of nipple discharge than in the earlier years. This fact is believed to be due to the instructive work carried on by several agencies distributing information on the problem of cancer control.

The ages of patients with intraductal papilloma varied widely. The youngest patient in this group was 17 years of age and 2 patients were over 80 years of age. The greatest incidence occurred between the ages of 30 and 50 years which is approximately 5 years younger than the average age of 452 patients with primary carcinoma of the breast observed by the author during the same period. There was no appreciable race predilection. Twelve patients developed intraductal papilloma in both breasts. Three of these

were present bilaterally when first observed; 9 developed a second lesion in the opposite breast from 2 to 16 years later. Three other patients developed a second intraductal papilloma in another quadrant of the same breast after a period of 5 to 14 years. Haagensen, Stout, and Phillips have stated that bilateral benign papillary disease of the breast is rarely observed.

The most frequent lesion producing serosanguineous or bloody nipple discharge is intraductal papilloma or benign papillary disease of the breast. This is a benign disease; however, many authors are of the opinion that it is a precancerous condition and should be treated by simple mastectomy.

Haagensen, Stout, and Phillips state that disagreement in the treatment of intraductal papilloma or papillary cystic disease of the breast probably results from lack of knowledge of the pathology of the disease on the part of surgeons. These authors also pointed out that young pathologists with limited experience have difficulty in distinguishing—both grossly and microscopically—between benign papilloma or papillary disease and papillary carcinoma of the breast with the result that when there is doubt the less courageous pathologist will tend to report many benign lesions as malignant. Adequate experience in pathology by both the pathologist and surgeon will prevent an error in diagnosis. On a frozen section of biopsy material, it is not uncommon for the pathologist to be unable to make a correct diagnosis. The greatest problem is to differentiate between intraductal papilloma and papillary carcinoma of the breast; however, this type of carcinoma accounts for only 1 to 3% of breast carcinomas.

The more extensive are the surgeon's experience and knowledge of the pathology of the mammary gland, the more conservative is his attitude toward radical procedures for benign breast lesions. The old dicta, "When in doubt about the nature of a breast lesion, operate"; "Better to remove a hundred normal breasts than to overlook one malignant one"; or "It is better for a woman to lose her breast than her life" are correct and logical statements if malignancy is present, but the loss of a breast is a tragedy and psychic shock to women whose breasts are unnecessarily sacrificed for benign lesions. This practice does not represent modern surgery.

In this group of patients with intraductal papilloma or papillary cystic disease of the mammary gland, it is demonstrated that there is no greater likelihood of these patients developing carcinoma than a comparable number of patients without papillary cystic disease. It is estimated by Goldberg and associates that breast carcinoma develops in approximately 5% of the female population.

Ninety-two percent of the patients in this group have been followed from 5 to 18 years; 2 developed carcinoma in the opposite breast; 1 patient had an intraductal papilloma removed from the right breast at the age of 44 years and developed an adenocarcinoma in the opposite breast 8 years later. A second patient had papillary disease in the upper outer quadrant of the left breast at age 46 and 13 years later developed carcinoma in the central area of the opposite breast.

In the management of patients who have clinical evidence of intraductal papilloma or benign papillary disease of the breast demonstrated by a sero-sanguineous or bloody discharge from the nipple, with or without a palpable tumor, the author locally excises the duct and contributory system shown to be involved by the appearance of bloody nipple discharge produced by point pressure over the areolar area. The result of this method of treatment was demonstrated by the fact that following surgical excision there was no further bleeding from that area of the breast structure. Simple mastectomy was performed on 1 of the 208 patients with bloody nipple discharge who also had a small tumor in the region of the areola, multiple nodules throughout the breast, and a history of mammary carcinoma in three members of her immediate family. (Hendrick, J. W., *Intraductal Papilloma of the Breast: Surg. Gynec. & Obst.*, 105: 215-223, August 1957)

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### Mediastinal Tumors

There has been a striking change in medical thought concerning the diagnosis and management of mediastinal tumors during the past 12 years. This fact became evident from a review of 141 mediastinal lesions occurring from 1944 to 1956. At the beginning of this period, there was still widespread belief that many of these enlargements should be watched or given radiation therapy without benefit of specific diagnosis. During this period, the trend has been to early surgery with removal or adequate diagnosis of these lesions. Occasionally, the attitude that thoracotomy must be undertaken in any event has led to a bypass of certain valuable diagnostic measures and resulted in an unnecessary operation.

In the authors' experience, scalene lymph node biopsy and angiocardiology have solved certain of these problems and have assisted in avoiding unnecessary or premature operations. Scalene node biopsy has been of diagnostic value in a sufficient percentage of lymphomas, certain granulomas, and tumors of both pulmonary and mediastinal origin to warrant its routine use. Angiocardiology has reduced the number of instances in which thoracotomy is necessary to diagnose a non-correctible vascular lesion. Also, it has prevented the unfortunate situation in which the chest is opened in the face of a remediable condition—i. e., aneurysm, coarctation—which the surgeon is untrained or unprepared to handle.

The vast majority of mediastinal enlargements require thoracotomy for positive diagnosis. This larger group which included benign neoplasms, cysts, and certain malignancies of the mediastinum, has resisted present-day methods of diagnosis except for exploration. When the usual diagnostic studies have shown that the lesion probably is in this latter group, thoracotomy should be undertaken at once. Procrastination does not serve the best interests of the patient.

During the past 12 years, 141 mediastinal enlargements were observed. In order of frequency the most common tumors were lymphomas, neurogenic tumors, bronchogenic cysts, teratoderroids and pericardial cysts. The age distribution of the 95 benign and 46 malignant lesions was the same. Three-fourths of the patients were in the age group of 18 to 45 years.

The lesions were divided into two groups for clarity in discussing certain diagnostic conclusions. Group A included 125 primary mediastinal neoplasms, cysts, and granulomas; Group B consisted of 16 neoplastic, non-neoplastic, and vascular lesions which were originally thought to be primary mediastinal tumors.

One-half of the 141 mediastinal masses produced no clinical manifestation of intrathoracic disease and were discovered on routine radiologic examination of the chest. In the other half, the presence of symptoms was of little value in making a specific diagnosis. Twice as many patients with malignant lesions had symptoms as those with benign lesions and had a greater frequency of constitutional symptoms, pain, marked shortness of breath, and signs of venous obstruction. All too often, definite clinical signs of mediastinal mass indicated an incurable state. However, the abrupt onset of symptoms due to obstruction of the food or air passages more often indicated enlargement of a benign cyst from hemorrhage or infection rather than malignant change. Obstruction in such cases may progress so rapidly that thoracotomy may be imperative to save the patient's life.

The most important means of discovering a mediastinal mass is the routine chest roentgenogram. One-half of the present cases were discovered in this manner. Careful interpretation of routine views and special exposures are necessary to avoid overlooking masses of indefinite appearance. Information of practical importance as to the diagnostic possibilities and choice of therapeutic approach was obtained by determining size, position, and contour of these masses with various positional views and special radiologic studies. Certain tumors virtually could be eliminated from consideration by these studies, but in no instance could the diagnosis be limited to less than two or three possibilities. The preoperative diagnosis was more accurate in tumors with well-known radiologic characteristics such as the lymphomas, neurogenic tumors, and teratoderroids. Even these frequently presented atypical features. Because of their wide distribution and non-specific appearance on roentgenograms, bronchogenic cysts were more often misdiagnosed than any other type of tumor. No lesion in this series produced symptoms, physical signs, or findings on ordinary roentgenograms that could be said to be pathognomonic.

However, a specific preoperative diagnosis was reached in about one out of five cases by the use of lymph node biopsy and the angiocardigram despite the fact that these procedures were not generally used until the latter half of the period of this report. Twenty-three of the 141 cases were diagnosed by lymph node biopsy. In five cases of doubtful diagnosis, the angiogram



gave a correct preoperative diagnosis which if used in four others would have prevented an unnecessary operation.

Although radiation therapy has a definite place in the management of mediastinal tumors, its use as a diagnostic measure may be confusing and dangerous. A microscopic diagnosis obtained beforehand allows intelligent planning and administration of the therapy. In that group of mediastinal tumors wherein radiation is most indicated—the lymphomas—over one-half can be diagnosed by lymph node biopsy.

Because early microscopic diagnosis is the only means of eliminating guesswork in diagnosis and treatment, thoracotomy frequently is indicated as a diagnostic as well as a therapeutic measure. The safety of thoracotomy is evidenced by the zero mortality in 97 cases in the present series. The increased use of thoracotomy is due chiefly to the fact that a significant percentage of undiagnosed tumors is malignant. Of 89 tumors in Group A in which thoracotomy was the only means of establishing a diagnosis, 17% were malignant. Only one of these malignancies was removable; yet in only one case of benign tumor was there a failure of surgical removal.

The mediastinal tumor which remains undiagnosed (treated by observation) is a dangerous lesion for two reasons: the ever-present threat of malignancy, and the possibility that life-threatening complications might occur in benign tumors. Early thoracotomy is thoroughly justified in the management of mediastinal tumors not only because of its low mortality, but also because of the virtual assurance of a cure when benign lesions are encountered. (Major T.G. Nelson MC USA, Shefts, L.M., M.D., Colonel W.F. Bowers MC USA, Mediastinal Tumors - An Analysis of 141 Cases: Dis. Chest, XXXII: 123-152, August 1957)

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#### Bronchogenic Carcinoma and Pneumonia in Older Persons

Although the final results of surgical resection of bronchogenic carcinoma are discouraging, it is still the best method of treatment. Attempts to improve survival rates by early diagnosis have proved far from satisfactory. One of the most difficult diagnostic problems is differentiating between pneumonia and bronchogenic carcinoma in middle-aged and elderly patients. It is a common occurrence for patients in this age group with pneumonia to be seen at chest conferences for consideration of thoracotomy because of the possibility of bronchogenic carcinoma. Even at the time of surgery, it is difficult for the surgeon to be certain that a small hidden tumor is not present in an area of infection. Most thoracotomies result in resection of lung tissue. Pulmonary resection in elderly patients may cause more respiratory crippling than resection in younger patients. Thoracotomy

should not be undertaken until all other diagnostic procedures have been exhausted. With the hope that some difference in the two diseases might be found, an analysis of the authors' cases is presented.

The most helpful finding in this study in differentiating bronchogenic carcinoma from pneumonia was the regression of the lesion roentgenographically in pneumonia. Various criteria are used as indications for thoracotomy in slowly clearing pneumonia. A common belief is that thoracotomy should be done if clearing is not satisfactory in 2 or 3 weeks. However, the term, "satisfactory clearing," is difficult to define. Of the 62 patients with pneumonia, 26% had a residual roentgenographically of 25% or more at the end of 4 weeks; 21% had a residual of 25% or more at the end of 6 weeks. If 50% or more residual roentgenographically is considered "unsatisfactory clearing," then the percentage of patients with pneumonia with "unsatisfactory clearing" would be 8% at 4 weeks and 6% at 6 weeks.

Review of the roentgenograms of patients with pneumonia revealed that if a decision as to "unsatisfactory clearing" (50% or more residual) had been made 2 weeks after admission, 27% would have had "unsatisfactory clearing." If this decision had been made 3 weeks after admission, 19% would have had "unsatisfactory clearing." Therefore, in the group of patients with pneumonia, it seems that if exploratory thoracotomy is to be held to a reasonable figure a delay of about 4 weeks is necessary. Because only 9% of the group of 22 patients with bronchogenic carcinoma resembling pneumonia revealed more than 50% clearing roentgenographically, this also appears to be a fairly accurate indication for thoracotomy in this group.

Planigrams often were helpful in revealing a tumor mass that could not be seen with ordinary roentgenography. In selected patients, angiography would probably be of value, but it was not used in this study. Gradual onset of symptoms, hemoptysis, and fever of more than 3 weeks' duration following the start of antimicrobial therapy tended to be more common in bronchogenic carcinoma and might occasionally be helpful in differential diagnosis.

Pneumonia in older patients often clears slowly because chronic bronchitis, emphysema, bronchiectasis, mixed infection, et cetera, are common and interfere with resolution. Therefore, to assume that slowly clearing pneumonia in older patients is due only to bronchogenic carcinoma is unwarranted.

That exploratory thoracotomy should be performed whenever there is a suspicion of bronchogenic carcinoma has been stressed repeatedly. At this hospital, there has been only one instance of a patient with pneumonia in whom a so-called exploratory thoracotomy was done and nothing resected. With all other patients, the surgeons were not able to rule out definitely a small hidden tumor and the lesion was resected. The present writers believe, therefore, that every effort should be made to select patients carefully for thoracotomy. However, there will be patients with pneumonia in

whom the suspicion of bronchogenic carcinoma is so strong that waiting to see if regression of the lesion takes place is not justified. Even if "satisfactory clearing" does take place in older patients with pneumonia, frequent roentgenograms must be taken to prevent misdiagnosis of unusual cases of bronchogenic carcinoma with infection.

The opinion is stressed that if a decision is made to delay thoracotomy for a few weeks to see if roentgenographic clearing will occur, the patient must remain in the hospital. Patients should be bronchoscoped, secretions taken for observation of tumor cells, and frequent roentgenograms should be made. Planigrams should be obtained to determine whether a tumor mass or bronchial obstruction is present. However, bronchial obstruction frequently can be better demonstrated by localized bronchograms made with a soluble opaque solution and the use of spot roentgenograms to give better detail. The patient should be discharged from the hospital only after all of the evidence is in favor of a slowly clearing pneumonia and against a bronchogenic carcinoma. Even after discharge from the hospital, patients must be recalled for frequent follow-up examinations.

Chronic pulmonary suppuration simulates bronchogenic carcinoma so closely that it is difficult or impossible to differentiate between the two and thoracotomy is usually indicated.

Gradual onset of symptoms, hemoptysis, slow defervescence, and physical findings of obstruction are suggestive only in differentiating pneumonia and bronchogenic carcinoma. Even when a positive histologic diagnosis could not be made following bronchoscopy, the presence of thickening, fixation, and constriction appeared to be strongly suggestive of bronchogenic carcinoma. (Shields, D. O., et al., *Differential Diagnosis of Bronchogenic Carcinoma and Pneumonia in Patients More than Forty Years Old: Am. Rev. Tuberc.*, 76: 48-62, July 1957)

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### Paraplegic Pressure Sores - Treatment and Prevention

Paraplegic pressure sores are a direct result of pressure with resulting ischemic necrosis and ulceration of the skin. The pressure and sores occur over bony prominences below the level of spinal cord injury. The bony prominences are the sacrum, spines of the ileum, ischial tuberosities, patella, heels, and malleoli.

All pressure sores can be prevented by good nursing care with medical supervision while the patient is in the hospital. Good nursing care consists of frequent change in position, massage to the skin, and exercise of the extremities to prevent contractures. However, good nursing care is relatively rare and decubitus ulcers are the end result. The usual picture in a small general hospital—and even in larger hospitals—is that of a paraplegic

who deteriorates rapidly due to pressure sores, mainly due to the lack of strict medical discipline. Ischial ulcers occur after the previously bed-ridden patient is allowed to sit in a wheel chair. These ulcers come from the lack of instruction as to how to sit and on what to sit.

The main concern is the ischial ulceration. Because the cord has been cut, the gluteal muscles lose their innervation and atrophy takes place. There is also severe weight loss and the tuberosities become extremely prominent. However, these bones must bear the weight of the sitting paraplegic and they measure only about one square inch on each side. The average paraplegic trunk weighs 120 pounds and so each tuberosity must support 60 pounds.

To get around this tremendous sitting pressure, a board with the central posterior portion cut out, overlaid with a 3-inch foam rubber cushion has been devised. This transfers the pressure to the posterior aspect of the femurs which are relatively flat and measure about 10 square inches. This board reduces the sitting pressure from 60 pounds to 6 pounds per square inch. The foot pedals are dropped as low as possible until the paraplegic's heels barely touch; thus, moving the center of gravity off the head of the femur down onto the shaft. Each board is measured 1 inch lateral to the tuberosities of the ischii and enough clearance is given forward to allow for scrotum, catheter, et cetera.

At Woodrow Wilson Rehabilitation Center in Fishersville, Va., over 800 paraplegics have been measured for boards without a single incidence of ulceration. It is felt that the board is as important as the catheter, the antibiotic, or the wheelchair. "Wheelchair discipline consists in the paraplegic doing "push-ups" or completely raising his buttocks from the chair by "standing on the heels of his hands." This allows for circulation and reoxygenation of the tissue of the buttocks.

Various attempts have been made to correct these ulcers, none of which have been too successful due to the periostitis and osteomyelitis present. Shaving the tuberosity is not the answer because the bone is triangularly shaped and this leaves even a sharper edge to cause pressure later. Some have done subperiosteal resection, hoping that new bone would regenerate along the periosteal guide. However, a definite periostitis is present and this technique leaves infected material behind.

In the last 4 years, the author developed a radical approach consisting of removing the ulcer and the ischial bone with the inferior pubic ramus from the lesser sciatic notch to the symphysis.

The sacrum is attacked in the same radical manner. The coccyx, lower sacrum, and ulcer are removed followed by primary closure. The great trochanter is removed at the neck of the femur with the ulcer and again primary closure can be accomplished. The patellas, spines of the ileum and malleoli can also be removed with relative impunity. (O'Hanlan, J. T., Paraplegic Pressure Sores - Treatment and Prevention: Virginia M. Month., 84: 131-132, March 1957)

### Gingival Massage for Mouth Health

Current scientific studies by dental research workers have shown that far more benefit may be expected from the proper use of the toothbrush than only cleanliness and improved appearance, important as these are.

Many patients have offered the information that a clean mouth which permits smiling and speech without self-consciousness and fear of bad breath is important to happy living and is a factor in social and business acceptance. Good mouth care contributes to these. In addition, professional principles of prevention of dental diseases place toothbrushing and gum massage at the top of the list.

Neglected periodontal disease has made many people toothless. Only 9% of people with periodontal disease are aware of the condition, probably because it rarely causes pain. Even those who know they have some gum disturbance are seldom aware of the harm it may initiate. Periodontal disease is often responsible for bad breath, bleeding, and other signs of gingivitis, uncleanliness, and infection both in the mouth and possibly in various organs of the body.

Periodontal disease was recognized and treated in ancient times by the methods then known. Yet today, as in the past, more teeth are lost from the pathology of periodontal disease than from accident, aging, tooth decay, or any other cause. Fortunately, enough is now known about periodontal disease to eliminate the fear that it must necessarily cause tooth loss or poor health. Laboratory research and clinical experience in this field have advanced greatly in the past 35 years.

What can you do to protect your teeth, your general health, and the health of your mouth and gums? What follows is important to you at age 25 or 60. It is important, also, for young children as well as adolescents when gum health may be affected by increased function of endocrine glands.

The best start a child can have toward high dental health is to be born of a healthy mother whose nutrition was good during pregnancy for the baby's primary teeth begin their development before birth. Later, with good health and nutrition and with regular check-up by the dentist, cleaning and motivation in toothbrushing from the age of two onward, the start will have been made toward assuring the child's future dental health. The dentist's aim is to have the child reach adult life with high gum health and with all his teeth in good masticatory function.

The individual is fortunate if he is naturally endowed with good heredity, high physical resistance and normal masticating function. These contribute to the possession of healthy gums and periodontal tissues. It is commendable to assist nature by eating foods of a well-balanced diet and taking good care of the teeth and gums by frequent and careful toothbrushing and gum massage. With this start, the individual has learned from experience that regular check-up visits to the dentist are painless, pleasant, and not too time-consuming.

Such regular sessions for a dental prophylaxis and occasional restorative service are usually enough to keep the teeth and gums in good health.

Some general suggestions can be made as a guide for home care. Choose a brush with a small enough bristle head to be fully effective and safe to use. The type called "professional" is the right shape and size and has bristles one-half inch long. For a mouthwash and dentifrice, mix equal parts of salt and bicarbonate of soda and dissolve a half-teaspoonful of this mixture in a glassful of water. Use this solution as a mouth rinse and dip the brush into the solution from time to time during brushing and massage.

Have your dentist show you the best way to brush the teeth and massage the gums. But remember that scrubbing with the points of the brush is injurious; side-to-side, up-and-down or circular scrubbing are equally harmful. The method of brushing-massage your dentist will most likely approve will massage the gums as it cleans the teeth, yet will not injure the most delicate gum tissues or tooth or root surfaces. Scrubbing can wear grooves in the tooth surfaces and it can scratch, abrade, inflame the gums, and cause their recession.

Properly nourished, healthy individuals who receive regular dental care can usually maintain high gum health by proper toothbrushing and gum massage. It must be emphasized that brushing can be harmful if acute gingivitis with bleeding and pain is present or if dental calculus is deposited on the teeth under delicate gum margins. Either of these conditions should have professional attention before the brushing discipline is begun.

Proper toothbrush massage of the gums improves their health by carrying away waste products and bringing necessary oxygen and food elements to the cells. It improves the health of the gums and their resistance to disease and toughens the surface layers of the gum tissues to enable them to protect the underlying bone and tooth structure during mastication of the hard, tough foods essential to high health. Also, it removes food deposits and bacteria from the tooth surfaces and from the spaces between the teeth where they would later form irritating, infective dental calculus if allowed to remain. This last reference to calculus suggests the care required in toothbrushing and gum massage to reach every surface of each tooth and gum margin each time it is carried out. (Blass, J. L., *Gingival Massage for Mouth Health*: J. Dent. Med., 12: 123-126, July 1957)

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#### Civilian Physicians at a Naval Industrial Activity

Because of the critical shortage of military medical officers, the Secretary of the Navy, on 13 August 1954, authorized the employment of civilian physicians at Naval Industrial activities. Early in October 1954, the Bureau of Ships implemented the directive of the Secretary of the Navy

of 13 August 1954 and of BuMed Instruction 6260.3 of 24 September 1954, and directed that the eleven Naval Shipyards under its cognizance immediately initiate steps to employ desirable civilian physicians.

For the past 2 years, the author has served as the Medical Officer at the Philadelphia Naval Shipyard and has been intimately associated with the problem of recruitment, screening, and employment of civilian physicians in the Medical Dispensary at Philadelphia.

The Bureau of Ships estimated that a minimum full-time equivalent of 10 civilian physicians should be recruited and hired at the earliest possible date by the Philadelphia Naval Shipyard. The first civilian physician was employed on 6 December 1954; by 1 May 1955, the "quota" of 10 civilian physicians was filled. Thirty-eight interviews were given to prospective civilian physician candidates during the first 6 months and 32 additional doctors were "screened" during the past year.

Experience to date covers many months and by and large has been quite satisfactory. Three years ago, in the summer of 1954, there were 10 military medical officers aboard and no civilian physicians on the payroll of the Medical Dispensary at the Philadelphia Naval Shipyard. At the time this is written, in February of 1957, the number of military medical officer billets has been reduced to 2; 11 civilian physicians were on board, 10 of whom were on full time employment (40 hours per week). One is on part-time duty (20 hours per week). Since inception of this program, however, a total of 19 physicians (including the 11 employed) have been on the payroll at the Philadelphia Naval Shipyard. Nine civilian doctors have resigned of their own accord; 2 because of employment elsewhere, 6 to continue private practice on a full-time basis, and 1 whose resignation was accepted because of inadaptability. By and large, cooperation of civilian physicians with military doctors has been excellent. There has been little or no friction between these two categories of professional men and the civilian doctors have adjusted well to the requirements of both civilian and military sick call.

The civilian census at the Philadelphia Naval Shipyard averages approximately 10,000 people of whom some 650 to 700 are females. The military census varies from 4000 to 5000 officers and men depending upon the number of ships in port for repair, overhaul, and modernization. Nonetheless, military sick call exceeds civilian sick call by a ratio of approximately 3 to 1 and it is, therefore, necessary for civilian physicians to treat military patients, especially since there are only two authorized duty billets for military medical officers at the Dispensary and sick call averages between 250 and 300 patients per day.

The question of authorization for civilian doctors to treat military patients has been carefully considered and discussed at some length. On 22 November 1955, the Chief of the Bureau of Medicine and Surgery indicated that civilian physicians employed by the Navy are not authorized to sign reports and forms having to do with promotion, commissions, active duty, or flight

physical examinations; neither can civilian doctors sign the reports of medical survey boards, clinical or physical evaluation boards, nor serve as members on Boards of Medical Examiners required by the provisions of the Naval Supplement to the Manual of Courts-Martial. It is a matter of record at the Philadelphia Naval Shipyard that such reports and forms have not been, and are not, signed by civilian physicians, nor do they serve as members of statutory boards. All such reports, forms, and health record entries are signed by a military medical officer only.

In order to provide a more flexible program to cope with the rapid turnover of civilian physician personnel, 18 billets have been authorized for civilian doctors at the Philadelphia Naval Shipyard. Twelve are full-time appointments and 6 are on a part-time basis. However, it has not been possible to obtain more than 11 civilian doctors for any one period even though there are five medical schools located in Philadelphia. The majority of civilian employees are young men; 2 are in residency training in Philadelphia hospitals, 2 others are mature career physicians in the Government Service, while 7 younger doctors have recently completed their residency training and are about to open private offices. As their private practice increases and their time becomes more remunerative, their interest in industrial medicine lags and sooner or later they leave Government employment of their own volition. For example, to supply 11 active civilian medical billets and keep the quota replenished, it has been necessary during the past 24 months to hire 20 civilian doctors and to release 9 of them at their own request.

In resigning without stigma or prejudice, the 9 doctors stated that they enjoyed the experience in military medicine and profited by association with a Naval industrial activity, but that the Civil Service pay ratio is entirely inadequate compared to a physician's earning power in civilian private practice. The cream of the younger medical crop will not accept Government employment at current salary ceilings.

Logically, the only way to secure top-flight physicians, to reduce this rapid turnover of professional talent, and to keep good doctors on the payroll is to reward them according to their ability and productivity. This could be done, presumably, by augmenting their remuneration in proportion to their earning power in private medical practice or by increasing their "wages" comparable to those lucrative salaries paid to physicians by private industry or commerce which are better than GS-14, GS-15, and GS-16 Government Service appointments. (CAPT C. C. Shaw MC USN, Civilian Physicians at a Naval Industrial Activity: Military Medicine, 121: 109-112, August 1957)

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The printing of this publication was approved by the Director of the Bureau of the Budget, 16 May 1955.



Naval Research in Tissue Preservation  
and Transplantation

The practical importance of tissue preservation and transplantation has increased markedly since World War II. A realistic evaluation would doubtless reveal that this field is one of the most rapidly advancing and prolific disciplines in medicine today. New surgical skills and techniques are being developed. Fundamental principles attending the chemistry and physiology of cellular systems are being advanced and more clearly understood. Metabolic processes of organs are being elucidated to the point where transplantation of these vital entities seems feasible.

The military is confronted with a serious responsibility for the treatment of casualties, particularly during wartime. An enormous number of the casualties require reconstructive surgery. To cope with future problems of such magnitude and importance in the Navy, the Office of Naval Research has placed considerable emphasis on tissue preservation, transplantation, and related problems as a part of its program in biologic research. The tissue program is an organized, cooperative, and collaborative venture with the Bureau of Medicine and Surgery and the medical research facilities under its cognizance, such as the Navy Tissue Bank and the Naval Medical Research Institute.

In sponsoring research in this area, the Office of Naval Research is hopeful of accomplishing the following: (1) continued augmentation of the research being conducted in naval facilities through its contract research program in nonprofit civilian institutions; (2) the application of the results of clinical research in an attempt to provide answers to many of the immediate problems; (3) continued promotion of basic research which might ultimately result in a major "break-through" in one of those problems of vital importance, but of extreme fundamental complexity and "resistance" to solution.

Currently, the research program of the Office of Naval Research includes seventeen studies (two of which are concerned with the preservation of blood) of which two-thirds deal with sound basic problems related to this field. These studies are concerned with problems dealing with blood vessel homografts and synthetic prostheses; the clinical evaluation of freeze-dried tissues from the Navy's Tissue Bank; the long-term preservation of skin in the viable state; basic studies in bone metabolism, its development and natural repair; the development of a plastic "artificial" cornea; basic mechanisms attending the calcifying processes in bone; fundamental investigations for determining the composition of bones and teeth; the clinical evaluation of bovine embryo skin as a temporary biologic dressing and mechanisms involved in the tolerance of the host to tissue grafts. The experimental investigations concerned with the preservation of whole blood and the components of blood are included in this program inasmuch as it is believed that

much of the information gained from blood studies has been, and will, continue to be applicable to the preservation of tissues. Five of these contracts are supported by funds made available by the Bureau of Medicine and Surgery.

The bulk of the effort in laboratories under the direction of the Bureau of Medicine and Surgery is concentrated in the activities of the Navy Tissue Bank. Aside from studying methods of preservation and storage, this group is utilizing various tissues for surgical reconstruction and rehabilitation in an attempt to clinically evaluate preserved tissues in humans. Experimental surgical methods, procedures, and materials are being studied in animals at the Naval Medical Research Institute. One of the major experimental studies currently in progress at the Institute is the one dealing with anorganic bone—bone from which more than 99% of the organic components have been removed. To date, the clinical evaluation of anorganic bone in humans is being pursued primarily by personnel in the Navy Dental School.

By virtue of continued support at both the basic and applied level, improved methods of tissue preservation and transplantation will evolve. The continued application of these principles will lead ultimately to a reduction of morbidity and mortality rates among persons with extensive tissue damage sustained from injuries of various sorts and magnitude. Perhaps, the "life-saving process" which is being sought can become a wide-scale reality.

(J. F. Saunders, Office of Naval Research)

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### Principles of Medical Ethics

Following are the revised Principles of Medical Ethics as adopted by the House of Delegates at the 1957 Annual Meeting of the American Medical Association. These principles are intended to aid physicians individually and collectively in maintaining a high level of ethical conduct. They are not laws but standards by which a physician may determine the propriety of his conduct in his relationship with patients, with colleagues, with members of allied professions, and with the public.

1. The principal objective of the medical profession is to render service to humanity with full respect for the dignity of man. Physicians should merit the confidence of patients entrusted to their care, rendering to each a full measure of service and devotion.
2. Physicians should strive continually to improve medical knowledge and skill, and should make available to their patients and colleagues the benefits of their professional attainments.
3. A physician should practice a method of healing founded on a scientific basis; and he should not voluntarily associate professionally with anyone who violates this principle.

4. The medical profession should safeguard the public and itself against physicians deficient in moral character or professional competence. Physicians should observe all laws, uphold the dignity and honor of the profession and accept its self-imposed disciplines. They should expose, without hesitation, illegal or unethical conduct of fellow members of the profession.

5. A physician may choose whom he will serve. In an emergency, however, he should render service to the best of his ability. Having undertaken the care of a patient, he may not neglect him; and unless he has been discharged, he may discontinue his services only after giving adequate notice. He should not solicit patients.

6. A physician should not dispose of his services under terms or conditions which tend to interfere with, or impair, the free and complete exercise of his medical judgment and skill or tend to cause a deterioration of the quality of medical care.

7. In the practice of medicine, a physician should limit the source of his professional income to medical services actually rendered by him, or under his supervision, to his patients. His fee should be commensurate with the services rendered and the patient's ability to pay. He should neither pay nor receive a commission for referral of patients. Drugs, remedies, or appliances may be dispensed or supplied by the physician provided it is in the best interests of the patient.

8. A physician should seek consultation upon request; in doubtful or difficult cases; or whenever it appears that the quality of medical service may be enhanced thereby.

9. A physician may not reveal the confidences entrusted to him in the course of medical attendance, or the deficiencies he may observe in the character of patients, unless he is required to do so by law or unless it becomes necessary in order to protect the welfare of the individual or of the community.

10. The honored ideals of the medical profession imply that the responsibilities of the physician extend not only to the individual, but also to society where these responsibilities deserve his interest and participation in activities which have the purpose of improving both the health and the well-being of the individual and the community.

(J. A. M. A., July 27, 1957)

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Change of Address

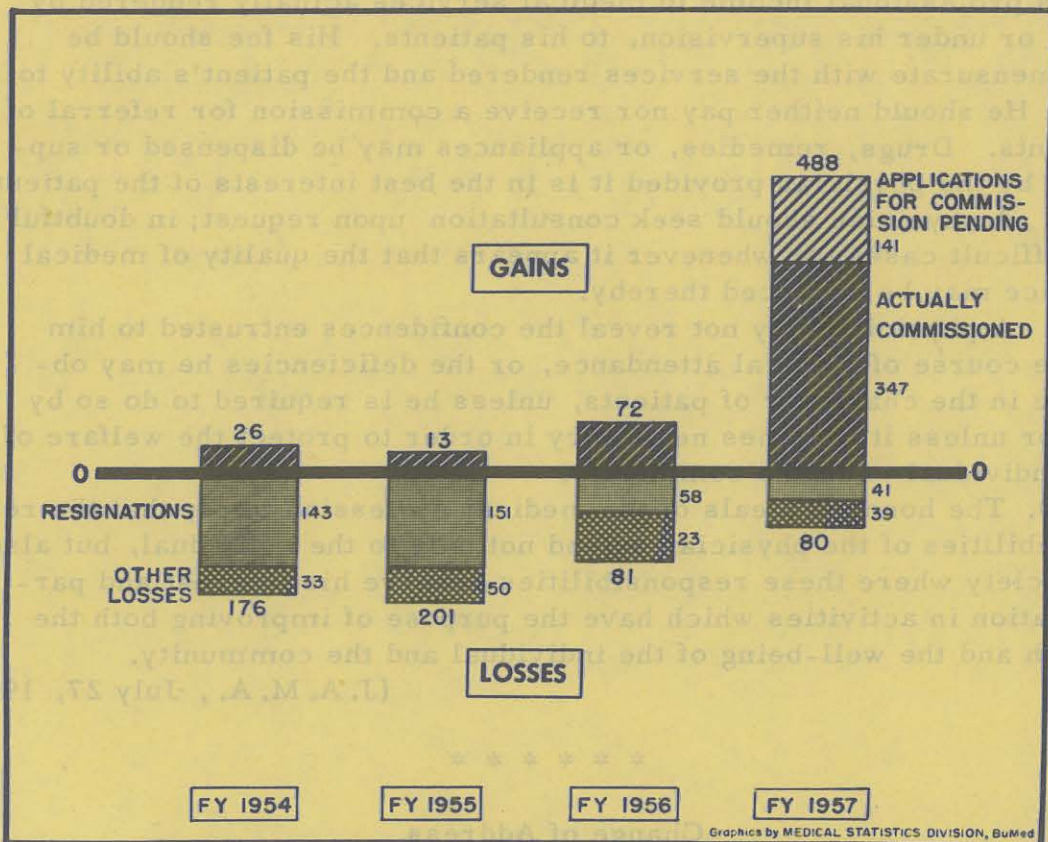
Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

Results of Pay-Incentive Law

During fiscal years 1954 and 1955, the Medical Corps of the Navy had no significant input of physicians and suffered such major losses through resignation that, if allowed to continue, would have placed that branch of the Navy in serious jeopardy.

One of the twelve major objectives enunciated by Rear Admiral B. W. Hogan MC USN, upon taking his oath of office as Surgeon General of the Navy, was enactment of remedial legislation to increase the pay-incentives of service physicians and dentists in order to make a Navy career more attractive to those professional groups. His program carried the active support of the Secretary of the Navy, the Chief of Naval Operations, and the Chief of Naval Personnel.

The chart below shows quite graphically the fine response to enactment of Public Law 497—84th Congress which became effective on 30 April 1956.



(ProfDiv, BuMed)

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From the Note Book

1. Rear Admiral B. W. Hogan, Surgeon General of the Navy, has announced the opening of a new Station Hospital at Subic Bay, Philippine Islands. The new 58-bed hospital has complete maternity and dental facilities, operating room, treatment room, morgue, diet kitchen, storeroom buildings, garage, general laboratory space, and offices. (TIO, BuMed)
2. The President has approved the report of the selection board which recommended Captain E C. Kenney MC USN for promotion to the rank of Rear Admiral. Captain Kenney has been Commanding Officer of the U. S. Naval Hospital, National Naval Medical Center, Bethesda, since September 1955. (TIO, BuMed)
3. LT F. L. McGuire MSC USN, former Head of the Psychology Branch, U. S. Naval Hospital, Philadelphia, Pa., has been granted a Ph. D. degree in Psychology from New York University. LT McGuire completed the work for his degree by attending a part-time outservice course of instruction during his tour of duty at this hospital. (USNH, Philadelphia)
4. The National Bureau of Standards now provides a calibration service for laboratory standard neutron sources. By calibration and certification of such standards, accuracy and intercomparability are promoted in the measurements of neutron flux which play an important part in current research. The service should be of particular assistance to those concerned with fundamental nuclear experiments, design and control of nuclear reactors, problems of protection from neutron radiation, and industrial applications of neutron beams. (NBS)
5. In a summary of the influenza situation in California as of August 8, 1957, the State Department of Public Health stated that since early June, 49 outbreaks of influenza-like disease have been reported in California. Six of these have been identified by isolation of influenza A viruses similar to the A/Japan/305/57 strain. Identification of influenza Type A by the Complement Fixation test was obtained in 5 outbreaks. In 1 of these, it appears that 2 influenza viruses were causing illness in an institution. The number of cases reported in the outbreaks listed involving civilians was 900 and among military personnel the total was 14,750. The probability that the total number of cases might be considerably higher was suggested. As of August 10, the number of outbreaks had increased to 50 and a total of 2350 civilians and 15,550 military cases were involved in the outbreaks identified as "Asian influenza." (Morbidity and Mortality Report, 16 Aug 1957, PHS, HEW)
6. Indications for scalene node biopsy are: (a) in obscure intrathoracic conditions, to attempt to establish a diagnosis as in carcinoma or sarcoidosis

of the lung; (b) in cases in which the diagnosis is certain, but in which involvement of these nodes will affect the prognosis, treatment, or management of the patient as when carcinoma of the lung has metastasized to the scalene nodes; (c) for diagnosis of disease involving lymph nodes as in leukemia, Hodgkin's disease and lymphosarcoma. (Dis. Chest, August 1957; P. Schiff, B. A. Warren)

7. A study of the routine curettage of the uterus immediately postpartum in 715 patients is presented. The evidence tends to show that it is not a dangerous procedure. The morbidity rate may be moderately improved, blood loss at delivery is reduced, and 7.8% of patients were found to have retained tissue at delivery which might have caused later hemorrhage. Postpartum lochia is both lessened and shortened and subsequent menstruation and fertility are not adversely affected. (Am. J. Obst. & Gynec., August 1957; J. B. Lounsbury, M. D.)

8. The development of a postpartum breast abscess constitutes a significant percentage of the over all morbidity associated with the puerperal state. This article reports clinical observations made concerning the management of a series of women who developed acute suppuration of the breast in the postpartum period. (Surg. Gynec. & Obst., August 1957; E. L. Sarason, M. D., S. Bauman, M. D.)

9. Malacoplakia is most frequent in the urinary bladder, but can involve the ureters and pelvis. It is a granulomatous process of unknown etiology, self limited in course, and does not require excision or resection. Cases have responded well to fulguration. (J. Urol., July 1957; M. M. Melicow)

10. Two cases of segmental emphysema are presented. It is suggested that these abnormalities are congenital and best explained by the concept that the lung is derived from two sources, mesoderm and endoderm. (J. Thoracic Surg., August 1957; A. Breckler, M. D.)

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#### Appointments as Assistant Chiefs of Bureau

Captain O. W. Chenault MC USN has been appointed Assistant Chief for Aviation and Operational Medicine and shall be responsible for the duties of Code 5. Captain Chenault will continue to be Director of the Aviation Medicine Division (Code 53).

Captain O. D. Yarbrough MC USN has been appointed Assistant Chief for Research and Medical Military Specialties and shall be responsible for the duties of Code 7. Captain Yarbrough will continue to be Director of the Research Division (Code 71). (Bureau of Medicine and Surgery)

### New Navy Training Program

A new 2-year residency in Proctology has been established at the U. S. Naval Hospital, St. Albans, L. I., N. Y. It includes medicine and surgery of the anus, rectum, and colon. Residents will be required to perform surgery, conduct proctologic daily and grand weekly rounds, attend lectures by visiting proctologists, attend basic science lectures and meetings in area. Approval of the program by the American Board of Proctology will be requested.

Naval Medical officers meeting the following criteria are eligible to apply for this training program:

Graduation from an approved medical school  
 One year's accredited internship  
 Three years' accredited training in General Surgery, or two years of General Surgery if unusual experience in colonic surgery has been obtained. The latter is subject to the approval of the chief consultant in Proctology and the American Board of Proctology.

Application should be made to the Chief, Bureau of Medicine and Surgery in accordance with BuMed Instruction 1520.10.(ProfDiv, BuMed)

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### Correspondence Course Exemptions

Several questions have been raised by MSC officers on active duty pertaining to correspondence course exemptions from professional examinations, with reference to BuMed Instruction 1416.1A. Each question has concerned the substitution or elimination of certain correspondence courses in the current examination plan and, in general, has been based on similarity of course content.

In each case to date, the questions raised have had definite merit and have served to assist the Bureau in improving the examination plans now under revision. In fairness to all officers concerned, however, and particularly those eligible for selection in the current fiscal year, the tenor of replies thus far has been to adhere to the plan as promulgated. It is considered inadvisable to authorize individual exceptions which would have the effect of lessening uniformity in administration of the professional fitness for promotion examination plans.

Examination plans for both the Medical Service Corps and Nurse Corps contained in BuMed Instructions 1416.1A and 1416.3 are in process of revision. Since these instructions were written, correspondence courses have

become available which are more appropriate in determining professional fitness and more useful as study material for the officer concerned. Some courses now listed have been eliminated, others completely revised.

When promulgated, the revised plans will allow full credit for having completed courses under the current instructions. Where new courses are prescribed in the revised plans, the phasing by fiscal year will be such that no officer will be unduly burdened. (MSCDiv, BuMed)

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### Military Medico-Dental Symposium

The First Annual Medical Department Symposium for Combined Armed Forces Medical Department Reserve officers under the auspices of the Commandant, Fifth Naval District, will be held at the U. S. Naval Hospital, Portsmouth, Va., 16 - 18 October 1957. The three-day program will have as its theme, Advances in Operational Military Medicine.

The meeting on the first day will be conducted at the U. S. Naval Hospital with a special afternoon program at the U. S. Naval Dental Clinic, Naval Station, Norfolk, Va., for members of the Dental Corps. There will be separate meetings for members of the Nurse Corps and of the Medical Service Corps. The meeting on the second day, held at the Fleet Training Center, U. S. Naval Base, Norfolk Va., will be highlighted by a talk on Advances in Medical Defense Against Thermonuclear Injuries by Rear Admiral C. F. Behrens MC USN (Ret). Lectures on the third day will be held at the U. S. Naval Hospital, Portsmouth, Va.

Among the prominent guests and speakers on the opening day will be Major General J. P. Cooney, Deputy Surgeon General of the U. S. Army; Rear Admiral F. M. Hughes, Commandant, Fifth Naval District; Rear Admiral O. B. Morrison, Jr., District Medical Officer, Fifth Naval District; Captain G. W. Berry, District Dental Officer Fifth Naval District; Captain D. J. O'Brien, Director, Reserve Division, Bureau of Medicine and Surgery; Captain W. Leona Jackson, Director, Nurse Corps, U. S. Navy; Colonel Inez Haynes, Chief, Nursing Service, Army Nurse Corps; LtCol Grace J. Hayden, Chief Nurse, U. S. Air Force.

The symposium has been approved for retirement point credit for those in attendance who are on the Active Status List in the Armed Services Reserve Program provided they register with the authorized military representative assigned the duties of recording daily attendance. Programs and additional information may be obtained by addressing the District Medical Officer, Fifth Naval District, Naval Station, Norfolk, Va. (USNH, Portsmouth Va.)

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Nominations to Committees of the American  
Hospital Association

The Surgeon General has nominated the personnel listed below to serve on the committees of the AHA:

Professional Practices Committee  
Captain E. V. Jobe MC USN

Hospital Planning Committee  
Cdr A. P. Daul MSC USN

Hospital Administration Committee  
Cdr L. J. Elsasser MSC USN

Hospital Finance Committee  
Mr. Thomas Hickey

Medical Research Committee  
Captain O. D. Yarbrough MC USN

(Bureau of Medicine and Surgery)

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Recent Research Projects

Naval Dental Research Facility, NTC, Bainbridge, Md.

1. Hyaluronidase Activity of Saliva. V. Caries Susceptibility Tests, Hyaluronidase Activity of Saliva and Dental Caries Experience. NM 008 027.01.06, 20 April 1957.
2. Metabolic Significance of Collagen in Tooth Structure. NM 008 027.01.07, 1 May 1957.
3. Dental Status of Naval Recruit Personnel. Rep. 1. NM 75 01 26, 1 May 1957.

Naval Medical Research Institute, Bethesda, Md.

1. Effect of Some Synthetic Anticholinesterases of the Substituted Ethylenediamine Type on Isolated Ileal Segments from Rabbit and Guinea Pig. NM 000 018.12.10, 14 January 1957.
2. Population Consequences of a Sustained Yield Program for Norway Rats. NM 004 005.08.07, 4 February 1957.
3. Reduced Resistance in Mice to the Intravenous Toxicity of Influenza Virus Following Cortisone Administration. NM 005 048.23.04, 14 February 1957.
4. Osmotic Pressure, Protein Solutions and Active Transport. I. NM 000 018.06.50, 4 March 1957.

5. Heating Characteristics of Laboratory Animals Exposed to Ten-Centimeter Microwaves. NM 001 056.13.02, 21 March 1957.
6. Variation in Liver Glycogen Levels of Intact and Adrenalectomized Mice. NM 007 081.11.09, 1 April 1957.

Naval Medical Research Unit No. 3, Cairo, Egypt

1. Pharmacodynamic Studies in the Pulmonary Hypertensive Syndrome of Bilharziasis. A Preliminary Report on the Response to "Priscol" and Hexamethonium. NM 007 082.34.02, October 1956.
2. Results of the NAMRU-3 Southeastern Egypt Expedition, 1954. I. Introduction, Itinerary, and Environmental Conditions. NM 005 050.39.49, January 1957.
3. Results of the NAMRU-3 Southeastern Egypt Expedition, 1954. Six Observations on Non-Domesticated Mammals and Their Ectoparasites. NM 005 050.39.51, January 1957.
4. Bat Ticks of the Genus Argas (Ixodoidea, Argasidae) 2. Secretargas New Subgenus and A. Transgaripepinus White, 1846, Its Adult and Immature Stages, with a Definition of the Subgenus Argas. NM 005 050.39.47, January 1957.
5. Review of Libyan Mammals. NM 005 050.39.60, January 1957.
6. Studies on the Pathology of Knemidokoptic Mange of Budgerigars (*Melopsittacus Undulatus*) NM 52 08 03.6, May 1957.
7. Identity, Classification, and Distribution of Egyptian Mammalian Hosts of Parasitic Arthropods. Part I. The Jerboas. NM 52 08 03.7, June 1957.
8. Gerbils of the Subgenus *Dipodillus* from Egypt. NM 005 050.39.46, October 1956.
9. Streblidae from Yemen, with Description of One Subspecies of *Asco-dipteron* (Diptera), NM 005 050.39.61, February 1957.
10. Behavior of *Ornithodoros Erraticus* (Lucas 1849) (Small Form) (Ixodoidea, Argasidae) Towards Certain Environmental Factors. NM 005 050.29.30, October 1956.

Naval Dental Research Facility, Great Lakes, Ill.

1. Histologic Response of Amputated Pulp to Calcium Compounds and Antibiotics. NM 008 013.10.06, May 1957.

Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Development of a Lightweight, Compact Pneumatic Splint for Forward Area Combat Use. NM 91 01 09.1, May 1957.
2. Effect of Pentobarbital Sodium and Bilateral Hepatic Venous Sampling upon the Hepatic Blood Flow of the Dog. NM 61 01 09.1.7, July 1957.

Naval School of Aviation Medicine, NAS, Pensacola, Fla.

1. Some differences among Naval Aviation Cadets Who Attrited During

- Pre-Solo Stage, Later Basic Air Flight Training, and Advanced Air Flight Training. NM 14 02 11, Subtask 1, Report No. 20, 1 February 1957.
2. The Prediction of Anxiety in Aviation Students. NM 16 01 11, Subtask 11, Report No. 1, 15 March 1957.
3. Measurement of Color Blindness, Monograph Series. Report No. 2. 31 August 1956.

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BUMED NOTICE 6320

22 August 1957

From: Chief, Bureau of Medicine and Surgery  
To: U. S. Naval Hospitals; U. S. Naval Dispensaries; Activities Having Station Hospitals; Activities Having Authorized Dispensary Beds; District Medical Officers; Staff Medical Officers  
Subj: DOD-HEW Joint Directive for Implementation of the Dependents' Medical Care Act (P. L. 569, 84th Congress)  
Ref: (a) BuMed ltr BuMed-1-eh M3-2 of 26 Oct 1956  
(b) Subject joint directive (encl (1) to ref (a) )  
(c) SecNavInst 6320.8, Subj: Dependents' medical care  
(d) SecNavInst 6320.9, Subj: Fiscal procedures, dependents' medical care  
Encl: (1) Revised pages 5 and 6 of reference (b)

This notice forwards change No. 6 to holders of subject directive.

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BUMED INSTRUCTION 6260.3A

22 August 1957

From: Chief, Bureau of Medicine and Surgery  
To: Commandant of the Marine Corps  
Chiefs of Bureaus and Offices  
Subj: Utilization of civilian physicians at industrial activities  
Ref: (a) SecNavInst 6260.1A

This instruction delegates authority to addressees to determine the need for civilian physicians and to determine the adequacy of their qualifications. BuMed Instruction 6260.3 is canceled.

**DENTAL****SECTION**

Testimonials from American Association  
of Clinical Chemists

Captain William E. Ludwick, DC USN, Medicine and Dentistry Branch, Biological Sciences Division, ONR; Mr. Joseph F. Saunders, Medicine and Dentistry Branch, ONR, and Dr. John E. Flynn, ONR, New York, were presented testimonials from the American Association of Clinical Chemists in recognition of valuable services rendered in connection with the First International Congress of Clinical Chemistry held in New York, September 9 - 14, 1956.

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The Care of Your Dentures

A new publication, The Care of Your Dentures, (NavMed P-5058), prepared by the Dental Division, Bureau of Medicine and Surgery, and the U. S. Naval Dental Clinic, Naval Base, Norfolk, Va., will soon be available for procurement by dental activities. A forthcoming BuMed Notice will provide information regarding procurement of the booklet for distribution to prosthetic patients upon completion of treatment.

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Procurement of Dental Outfitting Materiel

BuMed Instruction 6750.2A describes the procedure for obtaining initial outfits of dental materiel (except prosthetic items) when submission of detailed requisitions is not practicable.

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Conversion of Operating Units to Higher Speed Operation

BuMed Notice 6750 announces the continuation in fiscal year 1958 of the program to convert dental operating units to higher speed operation. It also furnishes information, guidance, limitations, and instructions relative to procurement of nonstandard items required for conversion; and to replace items worn out by use.



## RESERVE SECTION

### Medical Ensigns Aboard Ship

"The Medical Ensign Program is now in its seventeenth year of operation. We, the Medical Ensigns, belong to the inactive reserve; we receive pay when on active duty during the summer, and during our senior year if we are enrolled in the Navy's Senior Medical Student Program. As a rule we were not members of an ROTC during our undergraduate training. From the student's point of view the reasons for joining the Navy Program are to prevent coasting along until called up by the selective service, to insure future service with the Navy (preferred over the Army and Air Force), and to begin a possible naval career at an early age.

If you're wondering why you've never seen us around before, it is because prior to this summer of '57 a medical student who was interested in the Navy was offered only shore billets at a limited number of naval research installations and naval hospitals. Taking the long view, naval planners found this to be inadequate. A doctor who enters the Navy today scrambles from a hectic internship headlong into a year of sea duty for which he is unprepared, knowing nothing of the ships or the men on them. This summer 50 Medical Ensigns were authorized as a test group to go to sea to gain knowledge of the seagoing Navy.

We have the opportunity to familiarize ourselves with the medical problems and facilities afloat of the modern Navy, to absorb as much as we can of all phases of the seagoing Navy with the purpose of creating a better understanding of how we particularly fit into the scheme of things, and of developing an appreciation for the work of the Navy personnel afloat so that we may better understand and treat them in naval hospitals and to enjoy a memorable Midshipman Cruise.

Besides our duties in the Medical Department we are being introduced to all the departments on this man-of-war by means of lectures, on the spot observations, and limited participation in activities such as taking the helm of the Forrest-Royal, we've toured all supply's spaces, perused their records, and noted its particular function under medical scrutiny. We've ridden in the 5 inch mounts during firing practice, participating in Captain's inspection, saw the grandeur that was Rio with the Shore Patrol; lunched and laughed with Admiral McManes; experienced mal de mer and esprit de corps, simultaneously aboard "Tin cans"; been picked up by the sling of the whirlybird; met with the Captain, Exec, and heads

of departments to listen to their sea stories as well as their sincere feelings concerning duty, their careers, and their Navy lives. All in all, we are enjoying the manifold experiences which constitute our indoctrination from epsom salts to Navy salts." (Ensign Kenneth C. Morley, Jr., 1995 (Medical) USNR: "The Postrider" - USS NORTHAMPTON)

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### Blood Transfusion - Revised Correspondence Course

The correspondence course, Blood Transfusion, Methods and Procedures, NavPers 10998-1 is a revision of the course, Special Clinical Services - Blood, NavPers 10998. The latter has been highly praised by physicians who are directors of blood banks in both the military and civilian fields and by those who have responsibility of instructing personnel in blood bank techniques and in the operation of blood banks. However, in view of additions to the knowledge concerning immunohematology and transfusion practice, a more timely presentation of the course was indicated.

The purpose of the course, NavPers 10998-1 is to acquaint MD personnel with basic principles and techniques for the collection and storage of blood, preparation of plasma, laboratory procedures including blood grouping and crossmatching, and administration of blood and blood substitutes. This course increases the enrollee's knowledge of blood transfusion and may provide an incentive for further study and research in increasing the safety of transfusion. Those who successfully complete this course will better appreciate the true indications for blood and blood substitute transfusions and the safety of blood transfusion. The latter is dependent upon various factors, the knowledge, skill, and responsibility of personnel assigned to blood bank techniques and the operation of blood banks. In emergency or national catastrophe, this additional source of personnel with knowledge of venipuncture and transfusion processes will be appreciated by those assigned to the organization of transfusion teams and treatment of survivors.

To complete the course, two text materials are required and supplied: Blood Transfusion by DeGowin, Hardin and Alsever, the classical text on blood transfusion; and Technical Methods and procedures of the American Association of Blood Banks which presents the proper methods and procedures of blood banking prescribed by the Association.

Consisting of eight (8) objective type assignments, the course is evaluated at twenty-four (24) NR promotion and nondisability retirement points. Because it is a minor revision of the correspondence course, NavPers 10998, additional points will not be credited to NR personnel who have previously completed the course, NavPers 10998. Applications should be submitted on Form 992 (Rev2-56) to the Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., via the applicant's respective command. (NavMedSchool, NNMC, Bethesda, Md.)



## PREVENTIVE MEDICINE SECTION

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### Asian Influenza

Reproduced below is a brief summary of current information on influenza which was handed out at a recent meeting held by the Surgeon General of the Public Health Service, U. S. Department of Health, Education, and Welfare, and represents composite information compiled from military and civilian sources.

### Influenza - 1957 A Fact Sheet

#### Introduction

During recent weeks, the eyes of the health and medical profession of this country have been on the influenza epidemic which swept through the Far East. Although, thus far, only sporadic outbreaks have occurred in this country, affecting roughly some 13 thousand people, the important consideration is what will happen during the fall and winter months. Experts in the field say the distinct possibility of an influenza epidemic in the United States this coming winter cannot be ignored. This fact sheet generally summarizes the most important aspects of the situation as of this date.

#### Asian Influenza

Influenza has been known for centuries under a variety of names, but except for the pandemic of 1918, the illness was regarded lightly. Over the past 25 years, certain strains of Type A virus and Type B virus have been the causative agents of cyclic outbreaks of influenza.

The current epidemic in the Far East and sporadic outbreaks in the United States and elsewhere are caused by a new strain of Type A virus known as the Asian strain. There is a distinct probability that the current influenza epidemic will increase and may develop into pandemic proportions by late fall or winter. It has already touched on every continent. There is also the possibility of an increase in virulence of the at-present mild infection. (No such increase in virulence has been noted to date.)

A properly constituted vaccine containing the new strain of Type A virus has been developed, It represents the only preventive tool at our

command. Six manufacturers, licensed to produce it, are working now on accelerated production schedules.

Influenza vaccines have been proven effective and safe in controlled studies conducted by the military services. The Public Health Service, in cooperation with the State and Territorial Health Officers Association and the American Medical Association is promoting a nationwide voluntary program of vaccination against the prevalent strain of influenza. The first 8 million cc. of the new vaccine will be available by mid-September. No priorities will be set at the Federal level. The vaccine will be available on the open market. The cost per shot to the individual is not known at present.

#### Historical Aspects

Outbreaks of influenza have attracted attention for centuries. The disease has been known through the ages under a variety of names - the jolly rant, gallant's disease, "the fashionable illness," and, more recently, as the flu or the virus.

Sudden appearance and widespread involvement of all ages and kinds of people have always been characteristic of the illness. The first epidemic with origin in America was described in 1758. The usual high morbidity and low mortality features of the disease were in evidence. Asia and Europe were hit with a pandemic in 1782. In the 19th and 20th centuries, recurrences were highlighted by the pandemics of 1890 and 1918. The pandemic of 1918-19 which swept over nearly every continent and island of the globe has been described as one of the great human catastrophes of all times. For the first time in the recorded history of the disease, mortality was high.

Unusual features accompanying the current epidemic of Asian influenza have reawakened interest in events just preceding the 1918-19 holocaust.

#### The 1918 Pandemic

In January 1916, influenza was reported to be epidemic in 22 States, but was described as a mild type of illness. In December 1917, influenza was prevalent in Camp Kearny, Calif., and by January 1918, had reached other Army camps. It was still said to be mild. In the spring, localized outbreaks occurred in the civilian population and mortality from pneumonia rose sharply in certain cities.

Mild epidemics of influenza were reported in various localities in Western Europe in April and May of 1918 and in June and July more extensive outbreaks occurred in Great Britain and in Europe, China, India, and the Philippine Islands, and Brazil. In these countries, mortality rose moderately.

During August 1918, epidemics of influenza were reported in Greece, Sweden, Switzerland, Spain, the West Indies, and late in the month, it appeared almost simultaneously in Camp Shelby, Miss., and in Boston, Mass. In September, it appeared in rapid succession in other cities and



Army camps along the Eastern Seaboard and the Gulf of Mexico and spread rapidly westward across the country. By October, the epidemic had involved the entire United States except for a few isolated areas.

The interval between the peaks of the epidemic in Boston and San Francisco was about 4 weeks, and the peaks in the number of deaths usually were reached in about 1 month following the beginning of the epidemic in a community or area. In some areas there was a return of the epidemic in January and February 1919. It was marked in the cities where the autumn epidemic had been less severe. Thus, the influenza epidemic of 1918-19 was characterized by a relatively mild phase in the spring of 1918, an explosive outbreak with high mortality in the fall, and a third phase of recrudescence early in 1919.

In the Army, over a million men were hospitalized for influenza and pneumonia; of these, there were more than 44,000 deaths. There were some 5000 deaths among Naval personnel.

It has been estimated that there were 20 million cases of influenza and pneumonia in the United States in 1918-19 with approximately 850,000 deaths. The latter figure includes deaths reported in the military.

#### Since 1918

In recent years, mortality from all causes has not shown a marked rise during influenza epidemics and deaths attributed to influenza and pneumonia have been decreasing in numbers. The principal impact of influenza epidemics since 1940 has been seen in an excess of deaths during an epidemic from causes other than influenza and pneumonia, such as heart disease and other chronic diseases. As expected, these deaths occur in the older age groups.

Little is known of the true prevalence or incidence of influenza in recent years because reporting of individual cases is unreliable. The disease cannot be clinically differentiated from other types of upper respiratory infections which may also be occurring during an epidemic of influenza and it is not practicable to obtain laboratory diagnosis of all suspect cases. Absenteeism rates in schools, in industrial or other working groups, may rise, but such indices are more useful in alerting health officers to the possibility of an influenza epidemic than in providing figures on incidence.

Since 1948, the Influenza Study Program, sponsored by the World Health Organization, has maintained a system of reporting specific diagnoses of influenza in the United States, Canada, South America, and Europe. Approximately 40 collaborating laboratories are located in universities, hospitals, Public Health Service, and military installations.

#### Etiological Aspects

The virus of human influenza was isolated in 1933 and 1934 following intranasal installation of throat washings in ferrets by Smith, Andrews, and Laidlaw. Since that time, several strains and types of influenza virus

have been isolated. Three immunologically distinct types of influenza virus (A, B, and C) have been identified with some four serologically intersecting groups of Type A strains.

Such viral isolations have made it possible to recognize the cyclic nature of certain strains of influenza virus as well as to chart the course of an epidemic. In the United States during the 10-year period, 1933-43, combined clinical, epidemiologic, and microbiologic studies have revealed six definite epidemics of Influenza A. In 1947, A-prime viruses completely replaced the earlier groups and the etiologic agents of Influenza A have been variants within the A-prime set during the last 10 years on a world-wide basis. A new strain of A-prime virus now termed the Asian Influenza A-virus is responsible for the current epidemic.

#### Present Epidemic

The current epidemic was first reported in Hong Kong and Singapore during the latter half of April 1957. Then in rapid succession, epidemics occurred in Taiwan, the Philippines, the Malayan States, Japan, India, and other areas.

Army medical teams in Japan investigating the early epidemics noted that the isolated virus appeared unusual in laboratory tests and sent the virus to this country for antigenic analyses. These analyses demonstrated that the virus is Type A, but is antigenically different in the hemoagglutination inhibition test from any previously known Type A strain. Information to date suggests that little protection against the new virus is gained by previous vaccination with existing influenza vaccine.

Laboratory confirmation of sporadic outbreaks of Asian influenza in both the military and civilian populations have been received from a number of different areas of the United States. Beginning June 2, 1957, a series of influenza outbreaks were reported among ships which had been berthed in Narragansett Bay, Newport, R. I. The means of introduction of the virus to this population could not be ascertained and spread of the epidemic was erratic. Subsequently infections with Far East strain influenza virus have been reported in San Diego, Monterey, Davis, and San Francisco, Calif., Cleveland, Ohio; Lexington, Ky., and Salt Lake City, Utah.

The highest attack rates (70%) have occurred among recruits in the military services. The other large outbreaks reported in the United States have been predominantly in groups of young people living or brought together in environments that favor the spread of infection. The Asian strain was found at the Boy Scouts' International Jamboree at Valley Forge, Pa., and among delegates attending a young people's church camp at Grinnell, Iowa. Since their return home from these meetings, reports of "respiratory and influenza-like illness" have come in from Scouts and delegates in Texas, New Mexico, South Carolina, Connecticut, Massachusetts, Missouri, Louisiana, Michigan, New York, Rhode Island, Maryland, Illinois, Indiana, Kentucky, and Minnesota.

To date, there has been little variation in severity of the illness and only two deaths have been reported in the United States resulting from complications of influenza.

#### Clinical and Public Health Aspects

The experience in Asia and in the United States since the new type of virus was introduced provides no basis for predicting an increase in severity of infection in the coming fall and winter or during the next year or two. The present concern arises largely from the possibility that a more virulent variant of the Asian type may emerge. The severity of the 1918 influenza epidemic is believed to have been due to some such mutation which exposed the population to a virus or viruses with antigenic properties radically different from those strains to which they have been previously exposed.

Clinically, influenza is usually characterized by abrupt onset, prostration, fever as high as 104 degrees, headache, myalgia, cough, and sore throat. X-ray examinations of the chest usually show no abnormal findings. Leukopenia is common in uncomplicated cases. The febrile period usually lasts 3 to 5 days, following which the patient may complain of extreme weakness for several more days.

In laboratory diagnosis of individual cases, the virus may be isolated from secretions of the nose and throat taken early in the course of the illness. Because laboratory procedures necessary to confirm diagnosis cannot be completed in the short time the patient is still acutely ill, they are of little value to the physician in prescribing treatment. However, they are necessary to confirm the presence or absence of influenza in a community.

Even when considered mild in terms of fatality, influenza epidemics cannot be regarded as innocuous. Illnesses usually are prostrating for 2 or more days and are often followed by a period of lassitude and weakness. In an epidemic, medical care facilities may be temporarily overtaxed, attendance in school interrupted, and the entire economy disrupted by absenteeism in all types of industry—some of them in critical areas.

#### Immunological Aspects

When a new variant appears whose antigenic structure is widely different from that of previously isolated viruses, a vaccine which has been satisfactory hitherto may be relatively ineffective against the new strain. This happened in 1947 when the A-prime influenza virus was identified. The same problem has confronted manufacturers of vaccine today; the introduction of the new Asian virus making a new vaccine necessary.

Influenza vaccines have been used most extensively in special population groups, such as military personnel, schools, and certain employee groups. Studies in the military reveal that a properly constituted vaccine is 70% effective under epidemic or endemic conditions and that reactions to the vaccine are quite rare. Individuals known to be sensitive to egg are not given the vaccine because virus is grown in embryonated eggs.

In recent years, the nature of influenza in this country has not warranted the use of influenza vaccine except on a group basis to minimize absenteeism or in so-called priority groups. However, the present influenza epidemic with its rapidity of spread and high attack rate is sufficiently unusual to press for immunization against the new strain of influenza virus. As a properly constituted vaccine is the only preventive for this disease, the Public Health Service with the Association of State and Territorial Health Officers and the American Medical Association plans to promote the use of the vaccine as soon as it becomes available.

For the first time in history, authorities are in the fortunate position of being ahead of an impending epidemic of influenza. On the basis of past experience, it seems probable that influenza will continue to spread for the remainder of the summer months, but will not be highly epidemic in this country until fall or winter when outbreaks may be anticipated. Even though this is still only a possibility, any preparations which need to be made to meet it must be accomplished now. After a pandemic starts, it will be too late.

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#### Cross-Infections from Thermometers

The following editorial from the Journal of the American Medical Association 164: 669, June 8, 1957, is reprinted and commended to the attention of all Navy Medical Department activities.

Although the main sources of cross-infections in hospitals are other patients, doctors, attendants, and visitors, the clinical thermometer should not be overlooked. In most hospitals, all patients have their temperatures taken at least twice daily whether they need it or not; although this practice may be justifiable, there is no justification for using 5 or 6 thermometers to take the temperatures of 30 patients with only a brief immersion of the thermometer in a fluid of doubtful bactericidal properties between uses. Such practice—still all too common on busy wards with a shortage of nurses—may facilitate the spread of tuberculosis, diphtheria, scarlet fever, poliomyelitis, nonspecific upper respiratory infections, and influenza. It may also help to disseminate antibiotic-resistant strains of micrococci. A 1:10,000 solution of bichloride of mercury used to sterilize thermometers was found to contain 7 million organisms per cubic centimeter. Mirvish collected 109 thermometers that had been immersed in a 1:1000 solution of biniodide of mercury for about 4 hours from wards where this solution was changed 2 or 3 times weekly; 63 were found to be contaminated with various viable organisms including Micrococcus pyogenes var. aureus, hemolytic streptococci, and Escherichia coli. The percentage of contamination

would undoubtedly have been higher if the thermometers had been picked up just before being used half-way through a nurse's round of taking temperatures on a large ward.

In a search for a better sterilizing solution, a 1:1000 solution of benzalkonium chloride in 70% alcohol and a 0.5% solution of iodine also in alcohol were found to sterilize thermometers completely in 10 minutes. Alcohol alone was not effective, but alcohol solutions gave better results than aqueous solutions. Isopropyl alcohol is cheaper than ethyl alcohol and is just as good for this purpose. Results are improved with any solution used if the thermometer is wiped with a soapy pledget before immersion. Benzalkonium chloride and other quaternary ammonium compounds have the advantage over iodine that they are nonirritating. Important as it is to use an effective sterilizing solution and to change the solution often enough to insure proper sterilization it is even more important to discontinue the hazardous practice of using communal thermometers. An individual thermometer should be provided for each bed. There are many disadvantages to keeping the thermometer at the bedside, but a tray with individual containers for separate thermometers marked so as to correspond with a given bed—a system used in some hospitals—would eliminate at least one source of cross-infection. Every known means of preventing such infections should be scrupulously observed.

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Public Health Service Vending Machine  
Ordinance and Code - 1957

In recent years, the dispensing of foods and beverages through coin-operated vending machines has undergone phenomenal growth. As a result of technical developments during the past decade, the variety of products dispensed through such machines has expanded to include many items of a readily perishable nature. The sale of perishable foods and beverages to the public by this means has introduced new problems in food protection not normally encountered in conventional food-service operations. Because of the public health significance of the problems involved and in the interest of uniformity, State and local health authorities and the industry requested the Public Health Service to undertake the development of a suggested ordinance and code for the guidance of those jurisdictions which were concerned with the sanitary control of vending machine operations.

As a result of these requests, field studies were made of current practices in vending machine design, construction, and operation. The problems encountered were discussed with Federal, State, and local food sanitation authorities, industry, and others concerned. A review was made of the existing ordinance and regulations specifically concerned with the sanitary control of vending machine operations. With this background, a

working draft of the suggested ordinance and code was developed. The working draft was submitted for review and comment to all State and a representative number of local health departments, interested Federal agencies, the vending machine industry, and others in order that the recommendations reflect the views of those primarily concerned with the public health aspects of vending machine operations. All proposals for changes were carefully considered and many were incorporated into the document. This suggested ordinance and code, therefore, embodies the best information currently available on sanitary practices applicable to the design, construction, maintenance, and operation of vending machines.

It is assumed that this Ordinance will be adopted only by jurisdictions having established food sanitation programs. Accordingly, acceptability of foods, beverages, and ingredients; acceptability of commissaries from which foods, beverages, ingredients, supplies, and equipment are obtained; and acceptability of methods of cleaning and bactericidal treatment of product contact surface are predicated on the criteria established under such existing food sanitation program. For fully attended vending machine locations, the health authority may find it desirable to include such operation under the existing food-service establishment regulations. Where this is the case, such operations should fully conform to the requirements for food-service establishments. (The Vending of Foods and Beverages, A Sanitation Ordinance and Code, 1957 - Recommendations of the Public Health Service: PHS Publication No. 546, Department of Health, Education and Welfare)

NOTE: Salient requirements of the Public Health Service recommendations will be incorporated in a forthcoming revision of Chapter I, Food Service Principles, Manual of Naval Preventive Medicine, NavMed P-5010-1.

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#### Hygienic Standards in the Field of Occupational Health

The primary objective of industrial hygienists, physicians, chemists, engineers, toxicologists, health physicists, and those in all other sciences in the occupational health field is the prevention of occupational disease. An important aid in attaining this objective is a group of norms or standards which may be used to evaluate exposures to toxic materials or physical agents. These values provide guidance in establishing engineering control of hazardous or obnoxious conditions in working environments. They are generally applied on the basis of the concentration-time dosage concept. Industrial operations provide many potential sources of occupational disease. It would be desirable if these operations could be conducted with no exposures. This is virtually impossible. Furthermore, it has been well established that the human organism can tolerate certain minimal exposures to toxic materials

and physical agents. It is the purpose of standards in occupational health to designate levels which can be tolerated without injury. These values are established in the United States by committees under the sponsorship of several independent scientific and technical organizations, such as the American Standards Association, American Conference of Governmental Industrial Hygienists, American Industrial Hygiene Association, and the National Committee on Radiation Protection and Measurement. As a result of this cooperative effort, the standards are widely accepted.

Because of the varied approach to the problem, there are several names applied to such standards, including threshold limits, maximum allowable concentrations, maximum acceptable concentrations, damage risk criteria (noise), tolerance doses, and maximum permissible radiation exposures. Most of these have the implication of legal regulation, but can also be interpreted as meaning that concentrations up to these levels are perfectly acceptable. Actually, these are maximum values which should not be exceeded, not levels to be attained.

The mere publishing of a list of values is not sufficient. They must be accepted and followed if they are to accomplish their function. They must be based on all available data both from animal experiments and from experience. Where there are inadequate data on new materials, considerable judgment must be exercised in the development of tentative values. Because there must be agreement among authorities, supporting data are essential. These standards are considered basically as guides rather than specific values which can be used to draw a sharp line between what is safe and what is unsafe. Variations in exposures, individual susceptibility, and possible synergistic effects of multiple exposures all complicate the problem. Thus, it is important to remember that these numbers refer to the toxicity of the material, not necessarily the hazard of an exposure for hazard involves many additional factors.

The development of standards for noise, radiation, and community air pollution requires a basically different approach than that for toxic materials. For noise, the problem is complicated by the fact that perceptive hearing loss occurs in the general population from many causes unrelated to noise. In the case of radiation, possible genetic effect is an important factor in consideration of safe levels for industry. Air pollution is primarily a problem in public health, but its control is an industry problem. There has been little progress in developing standards in this field.

The proof of the value of any group of standards of this type are the results obtained from their application. The very low occupational disease rate in the United States is ample evidence of the effectiveness of these standards. Cases which have occurred have generally resulted from exposures far in excess of established values. (Williams, C. R., (U. S. A.) Hygienic Standards in the Field of Occupational Health: Summaries of papers presented at the XII International Congress on Occupational Health, Helsinki, Finland, 1 - 6 July 1957, 2: 13)

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### Human Engineering

The objective of human engineering is to secure an over all design and arrangement of work conditions such that the stresses imposed by the job upon the worker are not in excess of his capacity to deal with without undue strain and without forcing the equipment which he operates to function below the level of its design capacity.

This objective is not wholly new to occupational health specialists who have made great progress in the discovery and elimination of many different kinds of industrial health hazards. Human engineering is new mainly in its scope of coverage. In concept, it deals with much more than elimination of gross hazards that lead to frank illness. It is concerned as well with job stresses which may result only in subclinical physiological and psychological disturbances with or without long-term cumulative effects upon man. It places great emphasis on the interactions in the man-machine system and recognizes that this system has an essential unity which can be gained only by drawing, in the course of design, jointly and equally upon an understanding of both man and machine.

The need for application of human engineering in industry has developed as the more direct health hazards have been eliminated. This need increases in proportion to advances in mechanization and automation. It aims to safeguard human values in the modern world of technology. (Hatch, T. (U. S. A.) Symposium on Human Engineering: Introduction - Summaries of papers presented at the XII International Congress on Occupational Health, Helsinki, Finland, 1 - 6 July 1957, 2: 19)

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