RETIREMENT FOR CAPT. LEE-Capt. and Mrs. C. R. Lee are shown admiring a silver tray which was presented to the couple by the Supply Department on the occasion of Capt. Lee's retirement party, held August 22 at the Community Center. Capt. Lee ends two years as Director of Supply at NWC, and 26 years of Naval service. The Captain and his wife Lois will retire to San Diego, Calif. Capt. E. M. Wieseke will assume the duties of Director of Supply on September 1.

### **Holiday Hours**

will be open from 12 N to 11 p.m., and the China Lake Golf Course will be open from sunrise to sun-

ming pool will be open from 1 to 5 p.m., and the Auto Hobby Shop will be open from 9 a.m. to 5 p.m. The following facilities will be closed on Labor Day: Center Library, Ceramics Hobby Shop, Electronics Hobby Shop, Carpenter Hob-by Shop, Youth Center, and Community Center.

ployees Service Board will These include: FEDCO Service Station, Shopping Bag, Barber Shop, Senn's Coiffures, Fashion Dry Cleaners, Malt Shop, Center Restaurant, Child Care Center, Center Pharmacy, and Cobbler

All Navy Exchange facilities will be closed on Labor Day with the exception of the Snack Bar at the China Lake Bowl and the Enlisted Men's Club; both will be open at regular hours.

Store will be closed Labor Day.

stellation launched on a single booster was the Navy 4A-Injun-Greb III combination launched

The following special holiday hours of operation have been announced for China Lake facilities over Labor Day, September 1. The Center Theater will

be open as usual. The China Lake Bowl

The gymnasium and swim-

Jr., recently reported aboard All facilities of the Emthe Center as the Assistant Operations Officer at NAF. strikes in Vietnam, is a graduate of Kent State University, in Kent, Ohio. The Wooster, O., native, and his wife Barbara, have three children: Michael, 15, Rodney, 11, and Randal, 6. LCdr. Crater, who came to NWC from VA-22 on the USS Bon Homme Richard, has been awarded the Silver Star, 20 Air Medals,

LCDR. GEORGE H. CRATER,

and the Navy Commendation Medal, as well as various other service ribbons. The Crater family resides at 56-B Burroughs on the Center. The Navy Commissary SCHOOL SEASON IS HERE --

#### WATCH OUT FOR CHILDREN! TRIPLE-THREAT

The first three-satellite con-



#### **PROCEDURES**

Future ratings for motion picture hown at the Center Theater will be ased on two different types of rangs, and the new MPAA (Motio icture Association of America) ratings (The Parents' Magazine ratings wil entually be superceded completely by e MPAA ratings.)

(C)-Children 8-12 (M)-Mature for Y & C

DECLINE AND FALL OF A BIRDWATCHER Robin Phillips, Genevieve Page 7:30 P.M.

(Comedy) Here's a riot of satire about absurd adventures of a teacher who is hired by a school with questionable standards, and of its most generous donor, a kooky ady-white-slaver! Way out, wild comedy \*(M) \*\*(A, Very MY)

Short: "All Fowled Up" (7 Min.

--MATINEE--

"EIGHT ON THE LAM" (106 Min.) 1:00 P.M.

Shorts: "To Beep or Not to Beep" (8 Min.)

--EVENING--"HELL'S BELLES" (95 Min.) 7:30 P.M.

(Adventure) His newly-won cycle was stolen and he tracked it to the wild Arizona desert—and bought more trouble that he could handle! His only ally was a debu tante in a leather-mini, \*(M) \*\*(Adult) Short: "Ski America" (20 Min.)

SUNDAY-MONDAY AUG. 31-SEPT. 1 "MY SIDE OF THE MOUNTAIN" (100 Min.) Theodore Bickel, Ted Eccles

7:30 P.M. (Adventure) Engrossing story of a teenager's search for self-knowledge by sustaining himself, and a pet raccoon, in the wilds of Canadian mountains. Could YOU live off the land, pure and simple? \*(G)

Short: "Three Little Pigs" (10 Min.)

TUESDAY-WEDNESDAY SEPTEMBER 2-3 "DOCTOR DOLITTLE" (145 Min.) 7:30 P.M.

(Musical/Fantasy) Fun film of the year has the kooky doctor join a circus with his tow-headed llama in order to finance his hunt for the Great Pink Sea Snail. \*\*(A, Y, C)

HURSDAY-FRIDAY SEPTEMBER 4-5 "THE FIRST TIME" (90 Min.) Jacqueline Bisset, Wes Stern

(Comedy/Drama) Teener's brag about his 'conquest" at a non-existent house in Niagara, Canada brings his buddies who want proof. Their meeting with a lady-ofthe-evening (who isn't) results in a comic sortie. \*(M) \*\*(A)

"Pink Fink" (Pink Panther, 8 Min.)

### **NWC Credit Union Declares 10-Year** Loan Moratorium

A memortorium on 10-yearloans was declared at the NWC Federal Credit Union, according to Jesse E Goza, Credit Union Manager. Goza stated that this is a temporary measure and that the Credit Union expects to begin making these loans again at a later date.

Goza would also like to remind Center residents that the phone number in the Center telephone directory and the CIT directory for the Credit Union is wrong. The proper phone number is: 446-



RESCUE GROUP COMMENDED-Dr. Carl A. Heller (r) accepts, on behalf of the China Lake Mountain Rescue Group, a \$100 check and letter of appreciation from the Inyo County Board of Supervisors, presented by Inyo County sheriff, Merrill Curtis (I). The \$100 donation was in appreciation for rescue work that the group has been doing in Inyo County and the letter of appreciation was in recognition of their recent assistance with the Gambler Special recovery operations. The \$100 check was one of a number of recent donations the group has received from various civic groups and individuals.

### Charles H. Wood New Conductor Of Desert Community Orchestra

ersfield College, has been ate at UCLA. hired to conduct the Desert He has studied conducting Community Orchestra.

Wood is no stranger to Bakersfield College Symphon- Read. ic Wind Ensemble at the Stations Theatre in performanc- ing concert season include a es held over the past two

Wood, a versatile musician, enjoys performing all music; from jazz and rock to the classics, both as conductor and as trumpet player. He held on Sunday afternoon or currently is the Concert Man- evening at the NWC Theatre. ager, lead trumpeteer, and Specific programs will be an-

in Bakersfield. During the past summer field College production of "West Side Story."

Degree in Music Education Mary Bischel at 375-5039, or

Charles H. Wood, Music De- his Master's Degree from Colpartment Chairman and Di- umbia University. He is prerector of the Bands at Bak- sently working for a Doctor-

and composition with two highly esteemed composers, Ernst NWC, having conducted the Von Dohnanyi and Gardner

Tentative plans for the comclassical concert on October 19, followed by a semi-classical performance on January 25, and ending with a "Young People's Concert" on March 15. All performances will be trumpet soloist with the Kern nounced at a later time, as Philharmonic Orchestra well as information on season tickets.

Wood would like to invite school session, Wood was mus- all local musicians interested ic director for the Bakers- in performing with the Desert Community Orchestra, including Naval personnel stationed Wood received a Bachelor's at NWC, to contact either from Ohio University, and Paul Riley, at 446-3869.



го	rom	PLACE STAMP HERE
	o	

# Fall Semester Course Schedule - Pages 5 to 8

## First Man On Moon Stamp Spawns Envelope

NASA Manned Spacecraft Center has announced that it will publish a special souvenir envelope to coincide with the issuance of the "First Man on the Moon Stamp" 10cent airmail to be released by the Post Office Department some time in August.

Noted artist Milton Caniff has created the design which will appear on the cover in four-color lithography. The reverse of the envelope will carry a reprint of the plaque which was left on the moon and the flap will bear the insignia of the Apollo 11 flight—an eagle with an olive branch, about to land on the



The cover will be cancelled with a special postmark duplicating the "Moon Landing" cancellation which was affixed to the letter carried on Apollo 11 which was postmarked on the moon.

Collectors desiring to acquire this cacheted cover should write to the MSC Stamp Club, Box 58328, Houston, Texas 77058, enclosing 50 cents for each, together with a self-addressed 91/2 inch return envelope carrying sufficient return postage (6 cents for each three covers ordered). Inquiries regarding special services to dealers and specialist collectors will be answered, if a return envelope accompanies the request.



Vol. XXIII, No. 34

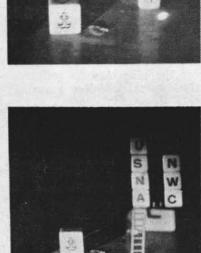
Naval Weapons Center, China Lake, California

Fri., Aug. 29, 1969

# Three — Dimensional Holograms **Produced At Corona Laboratories**



VIEWS HOLOGRAM-Leslie T. Long, of the Applied Physics Division at Corona, views a developed hologram which has been produced using a magnifying glass to photograph the scene. Holograms are used at the



Center to study rocket exhaust dispersion. From Long's position, he sees the picture as recorded in the top insert. The bottom insert shows the picture from the camera's

# Incorporates 'Magnifying Glass' Scene A hologram which incorp-

orates a magnifying glass as part of the photographed 'scene" has been produced at the Naval Weapons Center Corona Labortories. In addition, the magnifying glass can be used to actually magnigy within the hologram

Holograms are three-dimensional pictures used to enhance the analysis of many phenomena such as studies of the formation and dispersion of rocket exhausts.

The hologram itself is much like a window. It is a photographic n e g a t i v e which in normal light looks like a big fingerprint. But when 'lighted" by a laser beam, three-dimensional objects on the other side can be seen as though they were actually

In the new hologram, both the subject and the magnifying lens can be seen in normal perspective by looking through the left side of the plate. They appear in the same manner as they were when the hologram was made, If the viewer moves to the

(Continued on Page 4)



CHECKING SUN RADIATION—Master Sergeant Don Elwell, USAF, is shown above operating a radio telescope used to monitor X-Ray emissions from the sun. NWC Corona is one of a series of world-wide locations that the Air Force uses to continuously check the sun's radiation. The telescope is also used by the Center's Space Geophysics Division for solar flare studies.

### Safety Advises **Precautions To Be Taken For** Safe Driving **Over Holiday**



Monday, September 1, is a national holiday-Labor Day. Many families will take advantage of this last three-day holiday, before the kids go back to school, by taking a trip of With respect to the latter, the Safety Department advises

that there are a number of common sense precautions that individuals can take to ensure that the holiday trip is both enjovable and accident-free.

Some of the most inportant precautions to take before going on the road are: inspect all tires to ensure that they are sound, including the spare tire; check all lights and headlight adjustment; and check the brake linings as well as the brake adjustment.

Avoid alcoholic beverages or medical drugs thay may impair driving capability; and remember to allow plenty of time for the body to eliminate the alcohol from the system

If you become fatigued or drowsy, turn the driving over to someone who is rested and wide awake, or take the time

It is estimated that each year at least 5,000 more people would survive traffic accidents, if they had the good sense to use seatbelts. Why not encourage others to use a seat belt by buckling yours?

Also, it is stressed that trips be planned time-wise to permit driving within speed limits and a trip free of excessive



ecutive Officer of VX-5, has received orders to report to the Naval Air Test Center at Patuxuent River, Maryland. During his three year tour at VX-5, Cdr. Braun has served as Exec to three separate Commanding Officers. Cdr. Braun and his wife, June, were feted recently at a reception given in their honor at Sandquist Spa. The couple were presented with a silver wine cooler as a memento of their stay at China Lake.

CHAPLAIN'S MESSAGE

## Who Wants To Work?



By CHAPLAIN GORDON A. READ

In a day when many people "Work angles" or "pull strings" to subsist without working, and a variety of support programs promise some assistance, the question "Who wants to Work?" becomes all the more frustrating.

Focusing upon the wide spectrum of the Labor economy, one is caused to wonder about the value of working.

On the one hand we remember that hard work and honest labor have promised and produced success. On the other hand thousands of people are layed off from work because they produced too efficiently, and saturated the market.

Then there are some who want to work but are not skilled and therefore not wanted or needed by the business world. And one should not forget those of our society who chose not to work, having decided to let society support them.

Behind the Labor Day Holiday tribute to all who labor, lies a significant dynamic which is often overlooked. I was caused to remember this recently when I was asked not "What are you doing as a Chaplain?" but "What does it mean for you to be a Chaplain?"

This is a question which each person must ask, it seems to me, in conjuction with the question "Who wants to Work?" What does my work mean? Sure it provides food and shelter, and pays some of the bills. But a variety of jobs would

do that. The term "vocation" coming from the Latin vocatio, and meaning "a calling or bidding to a particular business or profession," helps to clarify the difference between doing a job to pay bills on the one hand and being called to a work

which gives meaning for life on the other. In the first case the paying of the bills may be primary; In the second commitment to that which produces meaning and satisfaction is primary.

Who Wants To Work?" — I do, if its more than getting



RECEIVE PROMOTIONS-Capt. J. K. McConeghy, Jr., Executive Officer, is shown congratulating GMG2 Steve Allison, center, and HM3 Peter Slenning, right, upon their recent promotions. The NWC sailors were given certificates in Capt. Etheridge's office August 18. Allison is TAD to Project 65, and Slenning is a Corpsman in the Center Dis-

#### The Rocketeer

Official Weekly Publication U. S. Naval Weapons Center China Lake, California

Capt. M. R. Etheridge, USN **NWC Commande** "J." Bibby

Public Affairs Officer

Joan Raber Associate Public Affairs Officer (Acting)

Director of News Bureau William P. Valenteen, Jr.

Jack C. Lindsey

Lucille Edwards PH1 Gary D. Bird, PH2 Delmar E. Hart. PH2 Michael F. Krause, AN Maurice Dias,

#### Staff Photographers **DEADLINES:**

Tuesday, 4:30 p.m. ... Tuesday, 11:30 a.m. The Rocketeer receives Armed Forces Press Service material. All are official U. S. Navy photos unless otherwise identified. Printed weekly with appropriated funds in compliance with NavExos P-35, revised July 1958. Office at Nimitz and Lauritsen. . 71354, 71655, 72082

Protestant (All-Faith Chapel)-Morning Worship-8:15 and 11 a.m. Sunday School-9:30 a.m., Chapel Annexes 1, 2, 3, 4 (Dorms 5, 6, 7, 8) located opposite Center Restaurant.

DIVINE

Roman Catholic (All-Faith Chapel)-Holy Mass-7, 9:30 a.m., and 12:30 p.m.

Daily Mass-11:30 a.m. in Blessed Sacrament Chapel, Saturday, 8:30 a.m.

Confessions-7 to 8 p.m. Saturday.

NWC Jewish Services (East Wing All-Faith Chapel)-8 p.m. every first and third

Sabbath School-10 a.m. to noon, every first and third Saturday.

King Ave.)-Sundays, 7:30 p.m.

#### **PROMOTIONAL OPPORTUNITIES**

EDITORIAL

ROCKETEER

Employees are encouraged to apply for e positions listed below. Current apcations (SF-171) or Standard Form 58 bringing your work history up-to-date should be forwarded as described below. The fact that positions are advertised here does not preclude the use o ther means to fill these positions. Part f the ranking process of those rated as appraisal form that will be sent t he employees present and most recen rious supervisor. Selection shall be made without discrimination for any nonerit reason and without favoritism based on personal relationship or patrona

from August 29 through September 5, 1969. Engineering Technician, GS-802-7 (3 vacancies), PD No. 735009-5, 6, & 7, Code Ordnance Dept., Aircraft Range Operations Branch. The duties and responsibilities is to independently operate the full range of electronic, optical, and mechanical data gathering instrumentation on the ranges. Minimum Qualification Requirements: (a) 2 years general and 3 years specialized; a lowable in X-118, Series GS-802-7. Job Relevant Criteria: Operate and calibrate radars, Operate and calibrate analog computers. Operate and calibrate cinetheodolite cam-

eras and perform minor maintenance. Test Mechanic (Experimental Aircraft Structures), JD No. 234-1, Code 1873-Position is located in Targets Department, Nava Air Facility. Adapts or makes from raw materials, custom-built, aerodynamically stable experimental equipment for installation in or on target drones. Manufactures brackets, fittings, and fixtures required for the installation of equipment on the target drones, Installs, arms, disarms, and trans ports ordnance items used in the destruct and other systems of the drone. Minimum Qualification Requirements: Ratings will be on the basis of appropriate J-Element Standard in accordance with the CSC Handbook X-118C. Job Relevant Criteria: Perform all ations common to experimental aircraft

Code 657, Bldg. 34, Rm. 32, phone 72032. Clerk-Typist, PD No. 670012 Aml, GS-322-03, Code 7035—This position is located in the Public Works Department, Engineering Division. The incumbent will perform clerical duties and assist personnel in accomolishing assigned tasks. Duties include the preparation of reports, memorandums, letters, and maintaining a central filing system. Minimum Qualification Requirements: A. One year of appropriate experience or, B. education and/or experience as allowable in X-118 Series GS-322-03. Job Relevant Criteria: Experience with the terminology used by Public Works Engineers to describe land parcels, easements, rights-of-way, etc.
Advancement Potential: GS-4 level.

Helper Rigger, JD No. 150, Code 70442less skilled duties. Works with and under the direction of the journeyman rigger. Assists in the moving of heavy plates, targets, and small buildings. Minimum Qualification Requirements: Ratings will be on the basis of the appropriate J-Element Standard in accordance with the CSC Handbook X-118C. Applicants must pass the required physical examination. Job Relevent Criteria: Must be familiar with the use of various hand tools and able to perform manual labor in a safe and productive manner. Advancement Potential: Journeyman level.

Helper (General), JD No. 146, Code 70422 (Maintenance) and other trades as required. work materials and assists journeymen in performing work. Performs simpler elements of the trade alone, including the use of journeymen's tools and machines. Minimum Qualification Requirements: Ratings will be on the basis of the appropriate J-Element Standard in accordance with the CSC Handbook X-118C. Applicants must pass the required physical examination. Job Relevant Criteria: Must be familiar with the use of various hand tools and able to perform manual labor in a safe and productive manner. Advancement Potential: Journey-

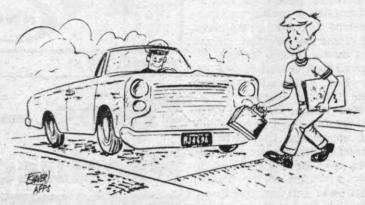
File applications with Dora Childers, Code 657. Room 32, phone 71393. Clinical Nurse, GS-610-5 or 7, Code 88

-Work on an as required basis with possible shift assignments at the station hosnital. May be required to provide general professional nursing care both adult and pediatric patients. Minimum Qualification Requirements: Must have active current reaistration as a professional nurse in a State, District of Columbia, the Commonwealth of Puerto Rico or a territory of the United States. Grade level depends on the experience and/or education of the applicant. Job Relevant Criteria and/or Selective Placement Criteria: (1) Graduation with bachelor's degree or higher in nursing from a school or college of professional nursing (2) experience in an intensive care ward; (Continued on Page 4)

## **Back to School Safety**

This fall approximately 500 boys and girls of the China Lake and Indian Wells Valley School District will attend School for the first time, according to school officials. Many of these children will probably walk to and from school.

The Center's Safety Department offers the following suggestions that parents have found helpful in the past to make this daily trip safer for the child and worry-free for the parent.



Prior to, or on the first day of school, accompany your child on the school route to help establish the most desirable route and to provide you with the time it should take your child to walk to or from school.

Be sure your child understands the importance of going directly to and from school, preferably along a pre-determined route. You may want to explain how risky it may be for him to accept rides, candy, or gum from strangers.

If your child will ride a bicycle to school, instruct him in the proper hand signals; the importance of stopping at all stop signs; and the requirement for riding on the right side of road, with the traffic.

Be sure your child knows his home phone number so he can call home if necessary—(he may take the "scenic" route home or stop off at a friend's house).

You could print his name, address and telephone number on a piece of adhesive taps and attach it to the inside of his shoe. If he is in trouble, lost, injured or picked up by police or ambulance, this is one way he could be identified in the event he is unable to identify himself.



GIRL AND BOY OF MONTH-Marty Denkin, center, Youth Activities Director at NWC, is shown with the Youth Center's Boy and Girl of the Month for August. The youngsters were selected on the basis of their service to the Youth Center and its members. Paul Hape, left, is the son of Mrs. Carol Hape, and Sue Wiruth is the daughter of Mr. and Mrs. A. P. Wiruth. Paul is a 15-year resident at China Lake and will be in the freshman class at Burroughs High School this fall. Sue has been a local resident for 14 years and will also be in the freshman ranks at Burroughs.

### Seats for Holy Days Offered

Jewish servicemen who would like to attend services in Los Angeles or the Long Beach area during the High Holy Days are requested to make arrangements in advance through the Naval Weapons Center Chaplain's Office - Ex. 72787 or 71506. Seats will be provided for servicemen for Rosh Hashonah and Yom Kippur providing the Chaplain's Office is notified five days before each service.

Rosh Hashanah (New Year) will be observed from sunset Friday, 12 September through Sunday, 14 September. Yom Kippur (Day of Atonement) will be observed from

#### Mars Network Aids Communications

### Lt. MacDonald **Builds Own Set**

The Military Affiliate Radio System (MARS) is an organization of licensed amateur radio operators who are interested in military radio communications. MARS is a joint program under the jurisdiction of the Chief of Communications - Electronics, Department of the Army; the Director of Naval Communications, Department of the Navy; and the Director, Command Control and Communications, Department of the Air Force. Policy is determined jointly, but operational control is separate. Some of the principal en-

deavors of MARS are to create interest and further training in military communications; provide an additional radio communication personnel and a system-in-being as an auxiliary means of communication instantly available to military commanders during local or national emergencies, and to handle personal, third party, morale type traffice between military personnel overseas and parents, realtives, and friends at home.

WOUNDED GET PRIORITY MARS is frequently used during times of emergencies such as the Alaskan quake, but its primary use is phone calls from military men and government employees stationed overseas. A wounded Vietnam service man, for instance, is given priority in making a phone call after approximately 72 hours has passed (permitting the military commanders to notify the families of the serviceman's injuries).

November, 1948. On August 17, 1962, the Secretary of the Navy approved a Chief of Naval Operations' request to participate in the MARS Program, which up to that time was found only on Army or Air Force installations. The Navy-Marine Corps commenced a limited operation within the CONUS network on January 2, 1963.

MARS OPERATOR-Lt. R. C. MacDonald, Communications Officer for VX-5, is also the Center's Military Affiliate Radio System (MARS) operator. The lieutenant is seen using a Heathkit SB-101 which he himself built. The 180-watt transmitter and receiving station is part of the world-wide MARS network, which enables persons with relatives in overseas areas to receive calls from them without charge. The MARS system is frequently used in times of emergency

amateur radio license issued by the Federal Communications Commission or other authorized agency outside the jurisdiction of the FCC, and who possesses a station in operation capable of operating, or can be modified to operate, on MARS frequencies as assigned by the appropriate command, may volunteer his services as a MARS oper-

SFILIATE RADIO

MEMBERSHIP VOLUNTARY

Membership in MARS is

purely voluntary. It is not a

substitute for, nor does it im-

pose any obligation for, mili-

MARS has existed since

Since the inception of Navy-Marine Corps MARS, the program has grown to over 7,000 member stations, ten districts and operations extended to Alaska, Hawaii, Western Pac- tary service in the Armed ific, The Far East, Antarctica Forces of the United States. Force MARS for coverage to Donald, Communications Ofareas where Navy-Marine ficer for VX-5. Lt. MacDonald Corps MARS is not operation- built a Heathkit SB-101, a building a 2000 watt ampli-

Any person, above the age erates 180 watts, in his home



for permission to join the MARS network.

Lt. MacDonald stressed that anyone who has relatives in overseas areas may receive a phone call through the MARS Eugene C. Foust, Rolf O. Gil- er, Joseph A. Jaramillo, Wilnetwork. However, the call must be placed by the person overseas. This is considered morale traffic, and there is ory D. Peterson, Fletcher R. no charge for the call other Phillips, Paul Rainsberger, than from the MARS receiver, in this case the one at 110-C Dibb, and the home of the party called.

Lt. MacDonald is no stranger to ham radio operation. His father operated a home radio station, and young MacDonald received his first private liccense in 1955 when he was 12 years old. The elder Mac-Donald is an employee of Douglas Corp., in Cape Kennedy, and still owns a ham radio set. The two frequently communicate with on another, generally late at night.

While a student at the University of Montana in 1964, Lt. MacDonald helped monitor and relay traffic during the panic following the Alaskan earthquake. Relatives and friends of persons living in loved ones.

MacDonald is currently tansmitter-receiver which gen- fier (MARS maximum) which courses which generally par- Emerson. will extend the range of his of 16, and holding a valid at 110-C Dibb St., and applied transmitter-receiver.

### College Registration . . .

(Continued from Page 10)

ic 22, Music appreciation, and Music 70, Orchestra.

In addition, the Desert Campus of Bakersfield College has recently added courses to the fall curriculum that do not appear on the Desert Campus Fall Schedule of Classes, ac- day from 7 to 8:23 p.m. A cording to Raymond J. Marsh. Administrative Assistant.

Data Processing 50, Introduction To Data Processing, will cess gate will be open for all be offered on Tuesday and registration dates.

Thursday nights from 7 until Tuesday and Thursday from 8:23 p.m. The jewelry class, 5:30 to 6:53 p.m. Other music Art 8AB, is cancelled and course offerings include Mus- will be replaced by ART 6. ic 14, the college choir; Mus- FIGURE DRAWING, at the same time and days as the jewelry class was scheduled. Tentatively, a new course in

computer programming with emphasis on COBAL computer language and will also be offered on Tuesday and Thurs-FORTRAN computer course is also on the schedule again this semester. The Burroughs ac-

### **Outstanding Performance Ratings** For April '68-March '69 Listed

The following China Lake Gary E. Rainwater, Ben A. employees of the Naval Wea- Tidwell, Robert C. Willard, pons Center were given out- Peter C. Young. standing performance ratings for the period of April 1968 through March 1969:

Office of the Commander Mary Jane Driggs, James H. bert. McGlothlin, Donna J. Richey, Richard W. Rusciolellie, Haskell G. Wilson.

Central Staff

Constance E. Crawley, James H. Fath, Donnie D. French, Robert McKenzie, Gale G. Poppen, Monroe B. Sorge. Naval Air Facility

Sondrea G. Clark, Doris A. Cox, James L. Heflin, Natalie E. Hulsey, Joseph L. Chesney. Safety Department Karsten S Skaar.

Supply Department Willian J. Baker, Jesse A. Bell, Beulah B. Glidewell, Llyod L. Rogers, Barbara A. Smith, Bernard A. Steppan, le, Laverne I. Michau, Nelson Charles R. Bridges. George C. L. Petty.

Halsey. Systems Development Dept. Clayton F. Borne, Edward F. Reade, Jr., Harold M. Richey, Willard D Stratton.

Aviation Ordnance Dept. Marc L. Moulton, M. Lee L. Whittier. Oldfield, Jean A. Rollingson. Weapons Development Dept.

James E. Ball, William F. Ball, Clarenace K. Banks, Jr., Dow, William C. Fitzgerald, Mello, Pasqual Mercado, Greg- E. Steinhoff, Walter A. Wick.

Propulsion Development Dept.

Gertrude M. Hamilton, Katherine McPeters, Albert P. Hol-

Engineering Department Gladis June Atkins, Carlos E. Beagle, Peter Bouclin, Daniel Brown, Howard L. Carl, Harold G. Cook, William T. Cooper, Juanita L. DeHam, Joseph A. DiPasquale, Flyod F. Fairchild, Robert A. Galloway, Donald B. Hiles, Lothar G. Janetzko, Clyde L. Jones, Frank L. Lint, Merrell Y. Lloyd, Roger L. McCollouth, Magnus K. Pladson, Eileen T. Ray, Charles A. Read, Erma G. Sturm, Vera E. Taylor, Roland C. Valitchka, Wayne G. Zellmer, Jim R. Carter, Jack L. Herbstreit, Colburn L. Ing-

Research Department Sophia A. Goff, Ruth P. Lytton, Margaret E. Scherer.

Personnel Department Raymond A. Harrison, John

**Public Works Department** Celeste Revnolds, Irwin I Shull, Wilbur J. Beard, Thomas W. Boyd, Bernard R. Caval-Robert W. Campbell, Robert L. liere, Donald D. Dunn, A. R. Guercia, Ronald L. Hunsingbertson, Paul B. Homer, Charliam E. Moory, Marlin C. Murles F. Makarian, Richard J. ray, Leonard A. Peterson, Louis

Command Administration Diana Y. Combs.

#### Corona Lab Honors 14 For Participation in UCR Program

In a special ceremony held allel upper division offerings today at the Naval Weapons of the University of Californ-Center's Corona Laboratories, ia. The program is open to fourteen ambitious employees those who are in or soon will were honored and given become eligible for supervisspecial recognition by the Of- ory positions. ficer in Charge, Commander C. In certian cases, some D. Brown. The fourteen men courses may be applied towere awarded certificates for ward requirements for the their participation in a volun- M.B.A. degree. The hard worktary supplementary education ing employees are reimbursprogram offered by the Uni- ed their tuition fees after they versity of California at River- have completed the series.

Receiving Certificates for a The Certificate Program job well done were: Lester V.

was organized to meet the Craycraft Joseph Johansen, need for middle-management Sam Kopulsky, William P. training of technical person- Olewine, Hans Dieter Pieper, Alaska used MARS and other nel in scientific, industrial, and Dr. Herbert Piller, Kenneth A. and Cuba with crossover net- The MARS Operator at home radio networks to as- public service organizations. Van Orsdel, Barton C. Wood, works to the Army and Air China Lake is Lt. R. C. Mac- certain information of their In order to gain a certificate, Herwill M. Bryant, Herbert A participants must successfully Bulgerin, Kenneth J. Calder complete a series of six up- wood, Roger D. Chaussee, Herbto-date business management ert R. Davis, and Raymond R.



SUPPLEMENT EDUCATION—Roger Chaussee (I) and William Olewine, both employees at NWC Corona, smile their pleasure after receiving certificates for participation in a supplementary education program provided by UCR.

sunset Sunday, 21 September through sunset Monday, 22 Sep-

### **Desert Campus Registration To** Begin Sept. 2

Registration for day and evening classes at the Desert Campus of Bakersfield College, located on the Burroughs High School grounds in Ridgecrest, will be held on Monday September 2, and Thursday, September 4, from 5 to 8 p.m., and Friday, September 5, from 10 a.m. until 3:30 p.m. These are open registration dates for all students who have not yet registered at a counseling appointment. The fall semester will begin Monday, September 8.

Counselors will be available upon request to assist students during the open registration periods. Registration will be held in the Multi-Use Room of Burroughs High School on Monday and Thursday, and in the college buildings on Friday. The Desert Campus is situated temporarily in relocatable buildings on the south end of the Burroughs High School Campus on East French Street in Ridgecrest. The telephone number is 375-1548.

Two full years of course work which will enable a student to transfer to a California University or state college as a junior are offered at the Desert Campus in addition to occupational programs and adult education courses. Its course work is fully accredited, and it is approved for students wishing to draw veterans benefits.

#### NEW OFFERINGS

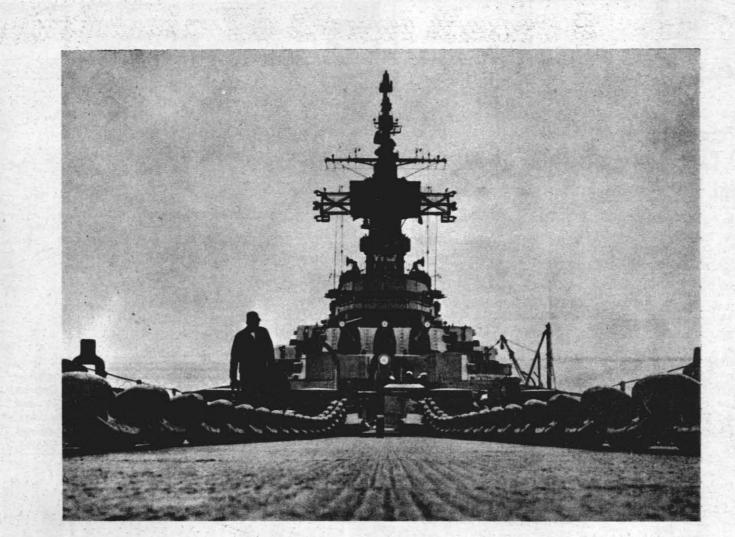
In addition to its full offering of regular courses, the Desert Campus has added this year a number of new classes which should be of particular interest to residents of the area. Among these new courses will be English 34. Introduction to Books and Libraries, which will be taught by Frank Selvera, Director of Library Services at the Desert Campus. Selvera, who is the former Director of Library Services at Porterville College, transferred to the Desert Campus just this year.

The new course in books and libraries is the first in a series of classes which Selvera plans to teach in the development of a library technology program over the next several years. The class is open to any student who is eligible for the standard freshman English 1A course. The class will meet on Tuesday and Thursday evenings from 8:30 until 9:23 p.m. It is a two-unit class.

Introduction to Creative Writing, English 41A, is another new two-unit course being offered by the Desert Campus. It will be taught by Mrs. Carol Ward, Associate Professor of English, on Tuesday and Thursday evenings from 7:00 to 8:23 p.m. Eligibility for English 1A is also a prerequisite for this course.

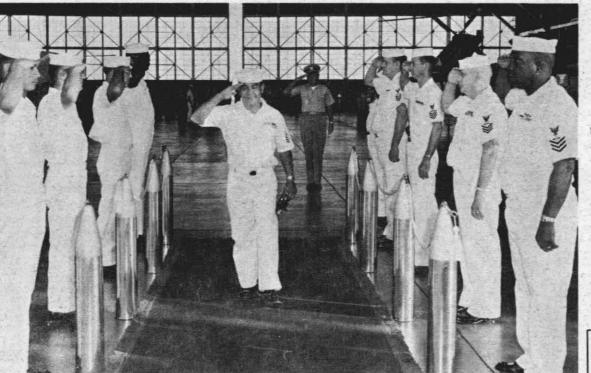
Another area of new course expansion is that of Music. Musicianship, Music 1A, will be taught by Paul Riley, Assistant Professor and Counselor. This is a standard course generally required of all prospective music majors. Its prerequisites are performance and music-reading ability.

Music 1A will be offered on (Continued on Page 11)



#### Enter The 1970 Naval and Maritime Photography Contest

A prize of \$100 will be awarded to the ten winners of the contest and the winning photographs will be published in the May 1970 issue of the U. S. Naval Institute Proceedings. Anyone may submit as many photos to the contest as he wishes. Each photograph must pertain to naval or maritime subjects, and must have been taken in the calendar year 1969. Entries must be black and white prints, color prints, or color transparencies. Minimum print size is 5" x 7"; minimum transparency size is 35mm. (No glass mounted transparencies.) Captions and the photographer's name and address must be printed or typed on a separate sheet of paper and attached to the back of each print, or printed on the transparency mount. Use no staples, please. Entries must arrive at the Naval Institute by 31 December, 1969. Photographs not awarded prizes may be purchased by the U. S. Naval Institute at its usual rates. Those photographs not purchased will be returned to the owners. Naval Personnel note: OpNavNote 3150 regarding photography.



WILL RUN RESTAURANT - AK-1 Jesus Flores Salas is shown being piped over the side during retirement ceremonies held at NAF Morning Quarters, August 22, in Hangar 3. Salas ends 21 years and 8 months

of Naval service which began at his home in Agana, Guam. Salas and his wife, Mary, and their eight children will retire in Berkeley, Calif., where they will operate a restaurant in that area.

### Youth Center To **Sponsor Dance At** Community Center

The China Lake Youth Center will sponsor a dance on 30 August from 8 p.m. to 1 a.m. at the Community Center.

Music will be provided by the "Purple Olive" and the junior high, high school and college students of the Ridgecrest, China Lake area.

Passes may be obtained at the NWC main gate Pass Office for the event and admission will be \$1.50 general and \$1.00 for Junior and Senior Student Union members.



# C. L. Schools To Open Sept. 8

According to Carl Barker. Assistant Superintendent of Instruction and Personnel for the China Lake Elementary School District, school will begin on Monday, September 8, for children residing on the Naval Weapons Center. The following day, September 9, is California State Admission Day, and will be an authorized school holiday.

Friday, August 29, 1969

Children who are new to the District and who have not registered must do so at the District Office, located on the Murray School campus before assignments to school and class can be made. This office is open from 7:30 a.m. to 4:30 p.m. Monday through Friday.

Parents who wish to have children attend school from a day care address are reminded that request for this consideration must be submitted in writing to Mr. Harold Pierce, District Superintendent, as soon as possible. Permission must be renewed each year.

Parents of kindergarten children assigned to the enriched kindergarten program have been notified by mail. All other kindergarten children will attend regular classes and school assignments are given below. Parents of children attending enriched and regular kindergarten classes will receive notification before school opens regarding assignment to morning or afternoon session and what time to report the first day of school 8 September. The first day kindergarten schedule will be organized so that a small group of mothers and children may go to school for a one-hour period. On Wednesday classes will be in session for the regular three hour kindergarten day. Parents of children assigned to Junior Primary classes have also been sent written notices relative to assignment for the 1969-70

Children assigned to special classes will be notified prior to the opening of school relative to assignment and bus transportation.

Transportation schedules provided by the District follow the grade level zone descriptions in this article. Minor adjustments to these schedules may be necessary during the first few days. Definite schedule changes will be made for first and second grade children when the extended day reading programs are organized after the first two or three weeks of school. Parents and pupils will be informed of any changes and will receive explanatory information on the extended day program before it begins.

The following philosophy has been taken into account in establishing the zoning areas: all children are zoned to their neighborhood school when possible. If children must be moved out of their natural zone every effort is made to leave the younger children in their neighborhood school and transport the older children. All permanent classrooms are utilized before children are assigned to huts; this may necessitate transporting children in some instances. The District operates a number of special programs; for children to take advantage of these programs it is necessary that they be assigned outside of their neighborhood zone. for those children who must be transported out of their natural zone, every effort is made to arrange the bus stops for the safety and convenience of the children; however, it is necessary to limit the number of stops due to the tight schedule under which the buses must operate.

Elementary School zone lines and transportation schedules were outlined this week by China Lake school officials. They suggest that parents use the map in the NWC telephone directory as an aide in the interpretation of the zone descriptions.

ATTENDANCE AREAS

KINDERGARTEN - RICHMOND SCHOOL kindergarten zone includes all the area north of Halsey and Bowen Avenues. In addition, all kindergarten children living in the 200 block of Dorado, Robalo, Cisco Streets, and those living at 304 and 306 Dorado, 307 and 313 Segundo, and 321 Toro will attend Richmond. Transportation will be provided to Richmond by Bus No. 12 which will load at Wherry Office and Prospect and Toro at 8:15 a.m. The children will be returned at 11:50

Groves School kindergarten zone includes the area encompassed by drawing a line from the corner of Knox and Halsey, east on Halsey to Richmond, south on Richmond to Ranger, west on Ranger to Lauritsen, north on Lauritsen to Langley, west on Langley to Renshaw, west on Renshaw to Knox, north on Knox to Halsey.

Vieweg School kindergarten zone includes all children living in Site B Capeharts, trailer court, and children who have Rowe and Rodman addresses. In addition, children living in the 200 block of Bonita, Toro, Segundo, and children with Carricart and Prospect addresses will attend Vieweg. Transportation will be provided for the Wherry kindergarten children to the Vieweg School by Bus 12 which will load at Wherry Office and Prospect and Toro at 8:15 a.m. They will be returned at 11:50 a.m.

Desert Park School kindergarten zone includes all children living in the 300 block of Robalo and Cisco, and children with Searles and Sandora addresses, and those living in the 400 block of Dorado. In addition, children living at the following addresses will attend the Desert Park School: 328, 334, 340 Bonita, 329, 334, 338 Toro, 327 Segundo, 322 and 323 Dorado.

#### FIRST GRADE

Richmond School first grade zone includes the area north of Halsey and Bowen Avenues.

Groves School first grade zone includes all children in the area encompassed by drawing a line from the corner of Knox and Halsey, east on Halsey to Richmond, south on Richmond, to Ranger, west on Ranger to Lauritsen, north on Lauritsen to Langley, west on Langley to Renshaw, west on Renshaw to

Knox, north on Knox to Halsey.

Vieweg School first grade zone includes all of Site B Capehart, trailer court, and all children with Rowe, Rodman, Randolph, Ringgold and Radford addresses.

Desert Park School first grade zone includes all children living in the Wherry Housing area.

#### SECOND GRADE

Richmond School second grade zone includes all children living north of Halsey and Bowen Avenues.

Groves School second grade zone includes all children living in the area encompassed by drawing a line from the corner of Knox and Halsey, east on Halsey to Richmond, south on Richmond to Ranger, west on Ranger to Lauritsen. north on Lauritsen to Langley, west on Langley to Rowe, south on Rowe to Radford, west on Radford to Rodman, north on Rodman (both sides of Rodman) to Langley, west on Langley to Renshaw, west on Renshaw to Knox, north on Knox

Vieweg School second grade zone includes all children living in Site B Capeharts, trailer court, and those living at 59 A Rowe, 60 A Rodman, 1601 A Radford, 55 B and 57 A Ringgold. In addition, those children living in the Wherry Housing area with addresses in the 100 and 200 blocks of Dorado, Robalo, and Cisco Streets will attend Vieweg. Transportation will be provided for these children to Vieweg by Bus 12 which will load at Wherry Office and Prospect and Dorado at 8:15 a.m. They will be returned at 1:30 p.m.

Desert Park School second grade zone includes all Wherry Housing area except the 100 and 200 blocks of Dorado, Robalo and Cisco.

#### THIRD GRADE

Richmond School third grade zone includes all children living north of Halsey and Bowen Avenues except those children living north of Blandy with Richmond, Mitscher, Dibbs, Kitts, Lauritsen and McIntire addresses. These children will attend the Desert Park School. See transportation schedule under Desert Park third grade zone.

Groves School third grade zone includes all children living in the area encompassed by drawing a line from the corner of Knox and Halsey, east on Halsey to Richmond, south on Richmond to Ranger, west on Ranger to Lauritsen, north on Lauritsen to Langley (both sides of Langley), west on Langley to Rowe, west on Rowe to Knox, north on Knox to Halsey.

Vieweg School third grade zone includes all children living in the trailer court and Site B Capeharts except those children living north of Blandy with Richmond, Mitscher, Dibbs, living at 1806 and 1810 Young Circle, and 63 B Stroop. These children will attend the Desert Park School. See transportation schedule under Desert Park third grade zone.

Desert Park School third grade zone includes all chaildren living in the Wherry Housing area and those third grade children living north of Blandy with Richmond, Mitscher, Dibbs, Kitts, Lauritsen and McIntire addresses. Transportation will be provided for these children to the Desert Park School by Bus 12 which will load at Dibbs and Nimitz at 7:55 a.m. They will be returned at 2:20 p.m. Children living on Withington Road, Burroughs Avenue, at 1806 and 1810 Young Circle, and 63 B Stroop will also attend the Desert Park School. Transportation will be provided for these children to Desert Park by Bus 12 which will load at Withington and Burroughs at 8:05 a.m. They will be returned at 2:15 p.m.

FOURTH GRADE

Richmond School fourth grade zone includes all children living north of Halsey and Bowen and those children living in the area encompassed by drawing a line from the corner of Richmond and Forrestal, west on Forrestal to Noble, south on Noble to Hornet, west on Hornet to Lauritsen, south on Lauritsen to Ranger, east on Ranger to Richmond, north on Richmond to Forrestal. Transportation will be provided for these children by Bus 14 which will load at Langley and Noble and at Thompson and Noble at 8:20 a.m. They will be returned

Groves School fourth grade zone includes all children liver of Knox and Halsey, east on Halsey to Richmond, south on Richmond to Forrestal, west on Forrestal to Noble, south on Noble to Hornet, west on Hornet to Lauritsen, south on Lauritsen to Langley, west on Langley to Rowe, west on Rowe to Knox, north on Knox to Halsey.

Vieweg School fourth grade zone includes all children living in the Site B Capeharts and the trailer court. Desert Park School fourth grade zone includes all child-

ren living in the Wherry Housing area.

#### FIFTH GRADE

Richmond School fifth grade zone includes all children living north of Halsey and Bowen Avenues. In addition, children living in the Wherry Housing area with addresses in the 300 and 400 blocks of Dorado, Robalo, Cisco, the 300 block of Segundo (odd numbers only), and all children living school on Sandora will attend the Richmond School. Transportation schedule is given below.

Groves School fifth grade zone includes all children living in the area encompassed by drawing a line from the school and community in corner of Knox and Halsey, east on Halsey to Richmond, south on Richmond to Ranger, west on Ranger to Lauritsen, serves. north on Lauritsen to Langley, west on Langley to Rowe, west on Rowe to Knox, north on Knox to Halsey. In addition, cepted by the American Sofifth grade children living in the Wherry Housing area with ciety for Public Administraaddresses in the 300 block of Bonita, Toro, Segundo (even tion, China Lake Chapter, Box numbers only), and Searles Street will attend Groves. Trans- 5542, China Lake, toward the

(Continued on Page 4)



LT. WILLIAM L. TEUFEL reported to the Center's Medical Department recently for his first active duty tour with the U. S. Navy. He received his M.D. in 1967 from the University of Cincinnati, College of Medicine. His hometown is Rocky River, Ohio. From July 1967 to July 1968 he served his internship and from July 1968 to July 1969 he served his surgery residency, both at Highland General Hospital, Oakland, Calif. His various hobbies include: music of all types, motorcycling, and politics. Lt. Teufel and his wife, Margaret, reside at 912-A Lauritsen on the

### **VTA Program Sends Teacher** To IWV Schools

Evangelina Tan, a young teacher from the Island of Salu, Philippines, has been assigned to the Indian Wells Valley to teach and work in classrooms under the Volunteers of America (VTA) program. Miss Tan will work with students and teachers in curriculum development in such subjects as social studies, music, art, and homemaking. Her services will be available to all IWV schools.

The Filipino teacher is here as a result of the interest shown by local citizens in the VTA program since the July visit of Sam Dogbe, a VTA teacher from Ghana, and Mrs. Barbara Hodgon, VTA Western Regional Director. Following their visit an application was submitted to VTA for a teacher, and was granted.

Miss Tan is a graduate of the National Teachers College in Manila with a BS in education, and obtained her Masters Degree from the University of Brisith Columbia. She served as a demonstration teacher in the Philippines and as a VTA teacher in the Renton's (Washington) School District.

This past summer Miss Tan worked with disadvantaged youth in Ohio under the VIS-TA program.

She is the eldest child of a large orphaned family, and has put herself and several brothers and sisters through

VTA is financed by the volunteer teacher's home country, the Peace Corps, and the which the volunteer teacher

Contributions are being aclatter's cost.

#### Holograms **Produced**

(Continued from Page 1)

right side and looks through that section of the plate, he can look through the lens and see the magnified picturejust the same as if he were looking through the actual magnifying glass itself!

Leslie T. Long and John A. Parks of the Applied Physics Division of the Laboratory are producing the holograms using a CW helium-neon laser emitting at 6328 Angstroms.

In a holographic picture of rocket exhaust, the pattern of particles is "frozen" in time and space. The picture can be examined at leisure to determine particle dispersion, number, size, and locationall in three dimensions. The collimated laser light produces a surprising depth of focus in the picture.

This laser technique will be a powerful laboratory analytical tool for the Naval Weapons Center's Corona Laboratories, which over the years has designed all of the fuzes used in the Navy's missile family and has furnished much of the missile guidance and countermeasure know-how of the complicated missile system.

(Continued from Page 2)

(3) experience in a variety of separate types

of nursing functions and specialized wards.

Advancement Potential: To journeyman level

Clerk (Typing), GS-301-3 or 4, PD No.

for Operations Staff. Duties include typing

branch files, and performing general cleri-

cal duties as required. Minimum Qualifi-cation Requirements: For GS-3: completion

of high school plus one year general ex-

perience, for GS-4: The above plus on year

Prefer some experience in the budget or

financial area. Advancement Potential: GS-

File application for the above with Sue

Prasolowicz, Bldg 34, Rm 28, ext. 71577. Supervisory General Engineer, GS-801-13,

PD No. 345097, Code 4533-This position

is Head of the Test Management and Pro-

that guided, free-fall, and ballistic ordn-

ance meets fleet specifications. Minimum

ering disciplines or physics or the equiv-

mechanics of ordnance design, develop-

ment, test or evaluation. Job Relevant Cri-

terial, matching it to the appropriate docu-

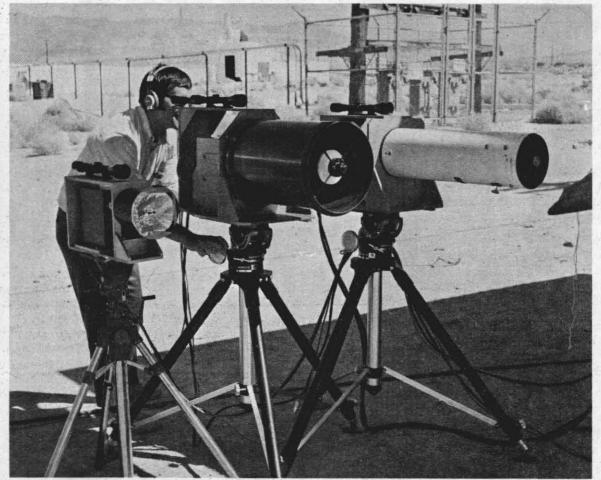
ments in the open order file and moving it

for delivery and payment. Minimum Quali-

3's may advance to GS-4.

teria And Of Selective Placement Criteria: 71577.

## Pyrotechnics Branch Investigates Spectral Output



Richard Maitland, instrumentation technician for Block Engineering, Inc., Cambridge, Mass., is shown above performing tests on

pyrotechnic devices during a recent stop at the Center. Complete spectral data was gathered on seventy-five test items during

#### their week's stay on the Center. China Lake Schools Open

(Continued from Page 3)

Transportation for the Wherry children attending fifth grade at the Groves Richmond and Vieweg Schools will be provided by Bus 14 which will load at Dorado and Sandora, Wherry Office, and Prospect and Toro at 7:55 a.m. They will be returned at 3:20 p.m.

Sixth, Seventh, Eighth Grades All sixth, seventh, and eighth grade pupils will attend the Murray School. Transportation will be provided to and from school for all sixth, seventh, and eighth grade pupils living in Wherry. Buses 12 and 14 will load at Prospect and Toro and at Dorado and Sandora at 7:20 a.m. Bus 12 will again load at the same stops at 7:40 a.m. Sixth grade pupils living in Site B Capeharts will be provided bus transportation in

the mornings and may board Bus 14 at corner of Knox and Rowe at 7:40 a.m.

complex. Personal contacts will be with duct Evaluation Branch and manages scientific and engineering personnel throughweapon qualification programs to ensure out the area. Minimum Qualification Requirements: Four years general experience Qualifications: Basic requirement is the camera and related equipment operation. Bachelor's degree in one of the engineate in isolated areas and at great distance alent plus three years experience in the from supervisor. Must have good technical teria: Projects management experience tial: This position has advancement ponecessary and will establish highest quali- tential to the GS-9 level. fied applicants. Best qualified applicants File applications with Pat Gaunt, Bldg.

have in addition experience in at 34, Rm. 34, phone 71514.

tion, c) thermal and environmental testing, to the Paperwork Management Program. d) non-destructive testing, e) test design and Types NWC instructions notices and other management, f) guided, free-fall and ballis. directives. Minimum Qualification Requiretic ordnance safety. Advancement potent- ments: For GS-3: high school graduation ial: Position has potential to go to the plus one year general clerical experience. For GS-4: The above plus one year special-File applications for the above with Jan ized experience. Must pass typing test. Job Bixler, Personnel Bldg., Rm. 24, phone Relevant Criterian and/or Selective Placement Criteria: Prefer knowledge of Navy Clerk-Typist, GS-322-03, PD. No. 725008, Advance Potential: GS-3 may advance to File applications for the above with Sue



PROMOTIONAL OPPORTUNITIES required the applicant to acquire and apply knowledge of the rules, regulations, procedures, and program requirements of one or ability to perform at the level of the position to be filled; and one year of genof any kind which has demonstrated the ability to perform satisfactorily at the

specialized experience. Job Relevant Cri- Carol Cadle, Bldg. 34, Rm. 26, Ext. 71648/

1060-7, Code 3032, PD No. 830095-1-The incumbent will be required to perform as a still or documentary motion picture photographer in both B&W and color medums. He will be working in the studio, buildings, and all range areas of the NWC and one year specialized experience in

least half of the following: a) dynamic vi-bration testing, b) industrial X-ray inspec-717034, Code 1711—Provide clerical suppor Code 2522-This position is located in the



MUMPS INNOCULATION — Janet Peters, pictured above receiving her mumps innoculation, was just one of many military dependent children who took advantage of the innoculation period at the Center Dispensary. PHCM Ray Peters is shown trying to comfort his daughter, while his son, Edward, left, looks on.

### **Keeps Pace** With Advances

The Pyrotechnics Branch of the Explosives and Pyrotechnics Division of the Propulsion Development Department is continually investigating the spectral output of experimental and operational pyrotechnic items.

In addition, the Branch has been developing infrared and illumination flare instrumentation in support of its mission since the early days of Sidewinder and is continually updating its facilities in order to keep pace with developmental demands and advances that have been made in elctro-optic instrumentation and technology.

In this connection, the branch was able to take advantage of extremely unique instrumentation recently through the use of a Block Engineering, Inc., instrument van from Cambridge, Massachusetts, that was prevailed upon to stop at China Lake on their way home from a four week stint at Edwards AFB.

The Block Engineering Inc., instrumentation provided an opportunity to obtain complete spectral data on a number of statically fired pyrotechnic items, including Mark 24 Illuminating flares, Mark 46 and 47 Decoy Flares, and several experimental flares and chemical systems; and to compare the data with that gathered by instrumentation currently being operated by the Center.

The instruments used were a visible spectrum spectrometer and infrared spectrometers in the 2 to 15 micron and 1 to 5 micron regions. The principle employed is the same as the Michelson Interferometer.

During a test the instruments scan their respective spectral regions at a rate of approximately 12 times a second. The resultant data is recorded for subsequent computer analysis, and an "x-y" specturm plot is also produced for a "qucik lool" at the information that is being recorded.

The techique produces greater resolution for signals of low strength than with other types of spectrometers. The equipment was operated by James Engel and Richard Maitland of Block Engineer-

#### Social Security Rep. At Community Center Wednesday, Sept. 3

All employees with questions about Social Security provisions may contact a representative from the Administration here next Wednesday, September 3.

He will be at the Community Center from 8:30 to 11 a.m.. and is available for consulta-





### **NWC Club Championship, Eighth** Annual Invitational On Agenda

take place in October.

Entry fee for this tourney

will be \$30, upgraded from \$20

last year. However, golf carts

will be provided to all golfers,

as well as a practice round on

Friday before the tournament,

and a banquet to be held at

the Community Center on the

Golfers desiring more infor-

mation regarding the Invita-

tional Tournament, contact Ray

Saturday of the tourney.

Thurm at 446-3379.

Paul Someson, golf pro at all golfers that the 8th annual the China Lake Golf Course, Invitational Tournament will reminds all Club members of the change in green fees and golf cart rentals that will be effective September 1. Anyone desiring more information regarding these changes are instructed to contact Paul at the Pro Shop.

Friday, August 29, 1969

All golfers are reminded of the annual China Lake Golf Club Championship Tournament to be held September 6 and 7, and September 13 and 14. The tournament will be a match-play tourney with all competitors playing in flights.

For further information regarding the 1969 Club Championship, contact Ray Thurm, or Denny Kline.

Capt. L. A. Dewing, Golf Club President, has reminded

### Fat Albert Swan Song At Sandquist Spa

Fat Albert will hold his last revival for the summer season at Sanquist Spa, September 3, from 7 to 11:30 p.m. Persons 18 years of age and above, single or married, are invited to bring their own mug and join in the festivities. Events will include night volleyball, psychedelic lights, psychedelic dancing to the "Rubber Band," psychedelic beer-n-pop. Also featured will be a "Graffiti-Board" where anyone can express themselves with paint.

Donations are \$1. For further information contact Linda Hughes, Ext. 71616, or Don Scofield, Ext. 71340.

### **Burros Boosters** Pancake B'fast Saturday, Sept. 6

Burros Boosters, Inc., has announced that their annual Pancake Breakfast will be held in the Burroughs High School Multi-Use room, Saturday, Sept. 6, from 7 a.m. to 12 noon.

Admission will be \$1 which will entitle the bearer to a pancake breakfast and a chance to win a Honda Trail 90 motorcycle. All donations will go to the Burros Boost-





manding Officer of NAF, presents letters of appreciation to AE3 Steven A. Rainey (c) and AME3 Michael W. Dobson (r) during recent morning quarters at NAF. Rainey and Dobson received a "well done" from Capt. M. R. Etheridge, Commander NWC, for their participation in the paradrop during the 1969 Armed Forces Day open house at the Center.



AGE WINS — The "Oldtimers" of the China Lake Intramural Softball League proved there is no substitute for age and experience Wednesday night at Reardon Field as they defeated the youngsters of the league, 11-9, behind the fine pitching of Billy Brown and Bobby Kochman. The "youngsters" hit

3 home runs (Al Hyles, Andy Gilpin, and L. Williams) but it wasn't enough, as the "oldtimers" concentrated their efforts into a team victory, with no outstanding stars. Pete Klassen, pitcher for the youngsters, who were ably managed by "Shorty" Pete

## Trap and Skeet **Club Will Show** Films Sept. 2

Ronald Stoutmeyer, President of the IWV Trap and Skeet Club, has a n n o u n c e d that the club will show two films at the Community Center, in the Panamint Room September 2, at 8 p.m.

One of the films, "Chukars in California," is from the Department of Fish and Game. and tells how to find and hunt chukars. The other, "Trapshooting With the Remington Pros," is an instructional film on how to shoot shotguns.

Attendance is free, and the public is cordially invited.

Stoutmeyer also announced that club members will practice at the Clodt Range in Inyokern, Sunday, August 31.

On September 13 and 14 the club will hold the annual Hobbs Memorial Shoot, a two-day event held in honor of General P. Hobbs, former Club Member.

This will be a handicap event, consisting of 100 birds each day. Trophies will be awarded, and high over-all gun in the event will receive a handsome silver belt buckle

### **Summer Season Nearing End, Bowlers Needed**

The Wednesday Night Handicap, with one night remaining to play, reports that the "Twiggies" had high series (2680) and high game (914) on August 20.

Maury Coleman hit a 237 enroute to a nice 625 series to lead the league in both categories. Gary Mitchell hit a staircase, 135-145-155 for a 435 series

Fred Dalpiaz, manager of the China Lake Bowl, announced that all of the league schedules are now set, and bowlers interested in competing this winter, and not already on a team, are requested to contact the various league secretarys.

### **Novelty Match** Held Again By **Desert Gun Club**

The Sierra Desert Gun Club recently held another Family Novelty Match at the NWC Rifle Range. This is a fun match designed to interest the shooter who normally would not participate in a regulation National Match Course and encourages the use of all types of sporting rifles in lieu of the standard target rifle.

Top scorer in the match was Don Herigstad, who posted a 138-4X out of a possible 150-10X.

Rosemary Miller shot 131-3X to place as high Woman Competitor, and David Herigstad was High Junior competitor with 95-0X.

Bill Miller was deer target winner with 27 out of 30, and Rosemary Miller won the balloon target category, with 20 out of 20.

Herigstad used a 1894 Winchester rifle caliber 25-35, and his son used a .22 to win his event, as did Rosemary Miller.



TROPHY WINNERS—Shown above are the first and second place teams in the China Lake Intramural Golf League. From left to right, the men are: Gene Boyts, Bill Tenan,

Lt. J. Kinchloe, and Cdr. C. Wack, members of the champion NAF team, and Paul King, Gary Wydra, Lou Renner and Audie Ball, who represented Code 45, Team No. 2.

performance quantities - current gain, power gain, voltage gain, input and output resistance - are derived. While the mathematics involved in the analysis of the transistor has been held to a minimum, a general knowledge of the mathematical analysis leading to the major design formulas is discussed. Stabilization techniques, cascading of amplifiers, and discussion of transistor noise complete the detailed stu- NO. 115 BASIC WATER & SEWAGE - 36 Hours dy of the transistor in this course.

BASIC TRANSISTORS Dates: October 20-31

Location: Annex 1 behind Training Center Instructors: Frankford Arsenal personne

Scope: This course is conducted at the technician level and is designed to thoroughly acquaint the student with the ansistor from a physical standpoint. Specific attention is ven to atomic structure, semiconductor doping, P-N junc tions and the junction transistor. Also discussed is a comparison of the basic transistor and vacuum tube amplifier circuits, transistor symbols, drawing of a load line and analyzing an amplifier. A portion of the course is devoted to sol dering, handling and replacement techniques for the transistor. Several of the newest types of test equipment for transistors are discussed and are available for student use.

TROUBLESHOOTING TRANSISTORIZED EQUIPMENT -PHASE I

Dates: 3-14 November

Location: Annex I behind Training Center

Instructors: Frankford Arsenal personnel
Scope: This course presents a simple and logical explanation of how to service basic transistorized equipment. The transsistor circuits discussed and serviced are amplifiers, power supplies, oscillators, series and shunt regulators, etc., and are the basis for development into troubleshooting the more advanced transistorized equipment. Troubleshooting transistorized equipment can be quick and simple, or it can be painful and time consuming, depending on the method used. Diagnosis is everything. This is a practical course, with a minimum of time spent on pure theory. Prerequisites for the course are a good basic knowledge of transistor theory, equivalent to Frankford Arsenal's "Basic Transistors" course.

#### PROGRAMMED INSTRUCTION

The Autotutor with its tutorial branching system is one of the world's most sophisticated teaching machines. The student sets his own pace, and because individuals differ greatly in the rate at which they learn and perform, this method of instruction is better able to cope with individual problems.

The branching technique of programming presents the student with instructional material via a "program," which is an organized series of logical study units. These units are rear projected from within the machine onto a 7"x9" viewing screen. Each unit is composed of a small portion of explanatory text together with a multiple choice question. The student selects one of the response buttons to answer the question and his response determines the sequence of units to follow. If he answers correctly he is presented automatically with new material. But if he answers incorrectly, he is presented with a unit containing a more elementary explanation of the original study unit.

Should the need for extra remedial work be indicated, "wash-back" sequences are provided in the program — and conversely, the advancing student may be "washed forward" passing over subject matter which the Autotutor discloses he already knows. This intrinsically programmed material makes it possible to combine the patience and efficiency of a machine with the individual attention of a personal tutor.

**ENROLLMENT PROCEDURE:** Submit a completed NWC Course Enrollment Form 12410/28 to Code 654. Autotors are located in the Training Center and several departments. Employees are scheduled on an individual basis.

Phone 71451 or 71480 if you have any questions on these programs.

Below are listed the general areas in which autotutor courses are available: Basic Electricity, Practical Electronics, Chemistry, Physics, Reading Comprehen- UC EXTENSION COURSES: sion, Basic Communication Skills, Management Development Courses, Map & Blueprint Reading, Business Education, Shop Math, Algebra, Math & Slide Rule Fundamentals, Career Arithmetic, English Cour- X 418B Introduction to Operations Research II — Mr. Reed ses encompassing writing, grammar, punctuation, S&E DAY CLASS PROGRAM:

Computer Courses (programming), Fundamentals of

#### HOME STUDY COURSES

Transistors, and How to Write Effective Reports

Enrollment in the following courses starts immedi- UC EXTENSION COURSES: ately. Submit a NOTS Enrollment Form 12410/28 to Code 654. For further information call extension 72648 or 72686.

NO. 100 BASIC ARITHEMETIC-30 Hours

Course includes positive whole numbers, common fractions. USC PROGRAM IN ENGINEERING: decimals and percentages.

NO. 103 BASIC DRAFTING-54 Hours

Course includes use of tools and materials, geometry of drawing, lettering, orthorgraphic projections, pictorial and perspec-

NO. 105 BASIC CRAFT TOOLS-40 Hours Course includes instruction in the use of common hand and power tools, fastening devices, measuring, laying-out, testing,

grinding, metal cutting, and safety precautions. NO. 110 FUNDAMENTALS OF MACHINERY

This course is intended to impart a basic knowledge of the ap- S&E DAY CLASS PROGRAM: plied use of physics in the mechanical field from the simple to the complex machines. A knowledge of the Fundamentals of Machinery should be a requirement for any person entering the Mechanical field. Review of mathematics, levers, block and tackle, wheel and axle, inclined plane and wedge, the screw the gear, work power force and pressure, hydrostatic and hydraulic machines, machine elements and basic mechanisms, internal combustion engine, and, basic computer mechanisms.

NO. 111 BASIC PRINCIPLES OF ELECTRICITY-25 Hours Course includes an introduction to electricity, voltage, current, resistance, magnetism and electromagnetism, sources of elec-

triciy, energy and capacitators.

NO. 112 BASIC CONTROL THEORY-CONTROL CIRCUITS-40 Hours Course includes a study of basic control theory, electronic con-

ROCKETEER

trol circuits, pneumatic control circuits, electric control circuits, and introduction to instrumentation

Course includes sources of water and impurities, elementary arithmetic, elementary hydraulics, fundamentals of water and sewage chemistry, personnel safety, records and reports. NO. 116 BASIC BOILER FEEDWATER MANUAL

This course is designed to provide the Boiler Operators, Boiler Inspectors, and Maintenance Personnel with a working knowledge of the basic rudiments of boiler-feedwater. It presents a guide for the proper day-to-day controlled care and treatment of boilers and their related equipment. NO. 117A and 117B BASIC AUTOMOTIVE MAINTENANCE AND

Included are handtools, measuring tools, portable power tools,

shop equipment and automotive hardware. Information on proper procedures for soldering wires and connections is also NO. 130 BASIC HEATING AND MAINTENANCE

Course is designed to give practical information and problems about the installation, operation, and maintenance of heating

facilities and systems. NO. 140A and 140B PLUMBING

Planning and lay out; plumbing tools; sewer systems and waste disposal; structural openings, building drains and main vents: routing-in vents and waste lines, cutting, calking and threading pipe; and testing and repairing waste systems. NO. 185 SUPERVISION AND MANAGEMENT FOR NAVY CIVIL-

IAN PERSONNEL An updated version of the course "Fundamentals of Supervision for Navy Civilians" - Home Study Course. NO. 211 INTERMEDIATE ELECTRICITY (ALTERNATING CUR

RENT) Series and parallel alternating current circuits, inductance, capacitance, motors, generators, transformers and instruments are discussed in this course. A knowledge of mathematics to the level of trigonometry and completion of course 212.

NO. 212 INTERMEDIATE ELECTRICITY (DIRECT CURRENT) Beginning with the fundamentals concepts of electricity, this course includes simple series and parallel DC circuits, compound and bridge circuits, conductors, and wiring techniques, notors, generators, and indicating instruments. Knowledge of basic algebra is a prerequisite to this course. NO. 215 INTERMEDIATE COURSE-WATER - 40 Hours

This course contains information on water supply and water works, development and water sources, pumps and metering. A prerequisite to this course is No. 115 Basic Water & Sewage. NO. 216 INTERMEDIATE COURSE-SEWAGE-40 Hours

oduction, sanitary sewage, collection system, sewage pumps and metering are included in this course. Prerequisite to this course is No. 115, Basic Water and Sewage. NO. 217A and 217B INTERMEDIATE AUTOMOTIVE MAINTEN-

ANCE AND REPAIR Gasoline and diesel engine fuel systems, cooling systems, lubrication systems, ignition systems, starter and generator systems, and, auxiliary electrical systems and other accessories NO. 230 INTERMEDIATE HEATING AND MAINTENANCE

This course contains information on warm-air heating, domestic hot-water heating, high-temperature hot water heating, feedwater, condensate and pump systems, steam plants and steam

NO. 315 ADVANCED COURSE WATER-72 Hours This course is a general introduction to preventative mainten-

ance, laboratory control methods, water treatments, distribuion systems, slaves and storage. Prerequisites are No. 115 Basic Water & Sewage Course and No. 216 Intermediate Course Sewage Course.

NO. 316 ADVANCED COURSE SEWAGE-72 Hours

This course includes a study in preventative maintenance for sipment, preventative maintenance practices, sampling methods, laboratory tests and procedures, sewage and industrial waste principles, sewage and industrial waste equipment and reatment and refuse disposal. Prerequisites for this course are No. 115 Basic Water and Sewage Course and No. 216 Intermediate Course Sewage.

NOL 317A and 317B ADVANCED AUTOMOTIVE MAINTENANCE Brake, wheel and chassis test equipment, scope motor tester, other diagnostic test equipment, maintaining gasoline and diesel engines, maintaining fuel, cooling and lubrication systems, and maintaining electrical systems.

### **SCIENCE & ENGINEERING**

WINTER TERM

XL 127B Introduction to the Theory of Information-Dr. Ross XL 140B Dielectric, Magnetic, and Conductive Properties-Dr.

XL 150A Intermediate Fluid Mechanics - Dr. Thielbahr X 400 Infrared Technology I - Dr. Roberts

9A Applied Mathematics for Ordnance

24 Problems of Design Unique to Weapons - Mr. Van Aken

#### SPRING TERM

XL 147A Introduction to Metallurgy - Dr. Hayes

X 400 Structural Design - Mr. Werback X 418C Introduction to Operations Research III - Mr. Reed X 400 Infrared Technology II - Dr. Roberts X 400 Hybrid Computing Technology - Mr. Fojt

EE 581 Linear Control System Design-Semester III of Program EE 562 Random Processes in Engineering-Semester III of

Program ME 515 Conduction Heat Transfer-Semester III of Program ME 513a Combustion Gas Dynamics-Semester III of Program EE 470 Electromagnetics II - Semester I of Program

mester I of Program ME 525a Engineering Analysis I - Semester I of Program ME 420 Engineering Vibrations I - Semester I of Program

5 Instrumentation and Test Techniques - Mr. McClung 6B Terminal Ballistics - Mr. Backman

#### 9B Applied Mathematics for Ordnance -10 Technical Report Writing - Mr. Van Hagan

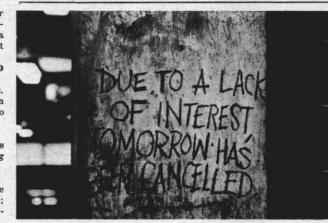
**LECTURE SERIES** OPERATIONS RESEARCH LECTURE SERIES Group V - "Human Factors in Design"

Research, Naval Postgraduate School, Monterey, California sistant Management and Control Officer.

Time/Place: Early December for a period of two weeks, 080 to 1000 daily, Room 211, Training Center

Scope: Examination of the role of the human element in man-machine systems; the capabilities and limitations of the human being in performing particular tasks in particular environments; and the machine design requirements which must be met to insure compatability between the man and the equipment to be used by him. To be followed, per present plans, by additional fectures on

other aspects of Operations Research in March and June.



Sounds ridiculous, doesn't it? But what if everybody in this country were to throw their hands up in despair and say they don't give a hoot.

Indeed, there would be no But fortunately, Americans have a way of solving their

And that's just what's going to happen in these troubled times. Simply because it's always been an American tradition.

Now, how can you, as one little ole citizen in this big, wide country of ours, be of any Well, take a minute and

think about a U.S. Savings Bond. That's right, a U.S. Savings Bond.

No, it isn't an immediate remedy for all our ills. But it helps If everybody were to buy just one \$25.00 Savings Bond (cost \$18.75), your country would be stronger economically to wipe out some of those scars

we've been sporting.
Of course, everybody would be helping themselves, too. If you were to sign up on a Bond purchase plan where you work or bank, you'd have quite a nice nest egg for yourself one of these days. You'd have a lot more dollars in

the kitty for things like college educations, that new home, or a secure retirement. So think about a U.S. Savings Bond today. And then go out and

buy one.

#### lake stock in America Buy U.S. Savings Bonds & Freedom Shares





Math 475 Introduction to Theory of Complex Variables—Se- VX-5 WAVES PROMOTED—Another "first" for VX-5 Squadron occurred recently when the first two women officers to be assigned to VX-5 were promoted to lieutenant junior grade. In photo above, Capt. C. W. Fritz, Commanding Officer of VX-5, is assisted by LCdr. Elton C. Parker, VX-5 Projects Director, in pinning on the silver bars for Lt(jg). Patricia C. Bauman. LCdr. Richard C. Gibson, Reports Management and Control Officer, assists Capt. Fritz in pinning on the silver bars for Lt(jg). Cynthia Saunders in the photo below. Mrs. Bauman is Administrative Assistant to Lecturer: Dr. Gordon Poock, Associate Professor of Operations the Projects Director and Miss Saunders is the As-

## **COURSE SCHEDULE - FALL 1969**

 University of Southern California Graduate Program in Public Administra-

Graduate Program in Engineering University of California, Santa Barbara Extension Courses in Science and

Engineering **Extension Courses in Procurement** Lecture Series in Contemporary Science and Engineering for Senior Professionals

Bakersfield Junior College, Desert Campus

On-Center Short Courses

• S & E Day Classes

 Journeyman & Technician Development Classes

Programmed Instruction

Home Study Courses & Career Programs

#### PREFACE

This Course Schedule provides detailed information about programs and individual courses open to Center employees during the Fall 1969. The Schedule covers all courses that have been formally scheduled to date. It includes accredited university and junior college courses; on-Center short courses in a variety of areas; programmed instruction (Autotutor) and home-study courses.

These courses were developed largely in response to needs identified by the various departments of the Center in their annual call for training estimates for FY 1970. Departments are encouraged to continue working with their Personnel Management Advisers in the identification of training needs and to discuss development plans and courses.

> WILLIAM R. RILEY Acting Head, Personnel Department

#### USC SCHEDULE OF CLASSES

COURSES IN PUBLIC ADMINISTRATION

Three graduate courses in Public Administration will be offered at China Lake by the University of Southern California during the fall semester 1969. An undergraduate major in engineering, business, or physical, biological or social sciences is acceptable as preprofessional background for Public Administration courses. Single courses can be taken for information purposes, if an employee so desires.

PA 513 Problems in the Administration of Financial Resource (4 Units)

Instructor: Professor Neeley Gardner, USC. Content: Alternative sources of public revenue; public credit; administrative aspects of budgetary planning and control; financial organization; intergovernmental financial relationships. This course will be conducted on the intensive semester basis. The class will meet during the day for one weel in late October or early November and again for a day in January 1970. In the interim students will be required to write a term paper. At the time of registration the syllabus will be available and will list all the reading assignments to

be completed before the first class meeting PA 516 Problems in the Administration of Personnel Resources

Instructor: Mr. Lloyd Nigro, USC Dates: Class will meet on Thursday evenings beginning September 18 at 1800 hours. Content: Evaluation of government personnel systems; classification, compensation, recruitment, examination, training, working conditions, incentives, performance ratings, and em-

ployee organizations in public service. PA 577 Problems in Research and Development Administration (4 Units)

Instructor: Dr. Robert Kistler Dates: Class will meet on Tuesday evenings beginning September 23 at 1800 hours.

Content: Research and Development laboratories as unique organizational environments. Organizational and managerial problems associated with laboratory administration. Analytical methods useful in problem solving activities of Research

REGISTRATION: Mr. Philip Hutchins, USC Extension Division, will hold registration in Room 205, Training Center, on Friday, September 12, 1969 at 1 p.m. Mr. Ross Clayton will hold consultation in Room 200 of the Training Center on Thursday, September 11, from 1 p.m. to 4:30 p.m.; on Friday, September 12 from 8 a.m. to 11:30 a.m.

BOOKS for these courses will be on sale at time of registration. For further information contact Cathy de Wolfe

GRADUATE PROGRAM IN ENGINEERING

#### This program is designed to serve two main pur-

(Code 654) at Extension 71480 or 71451.

poses: (a) enable NWC employees to complete at China Lake six of the ten courses required by USC for a Master of Science degree in either Electrical or Mechanical Engineering, and (b) enable those who want simply to advance their training by taking only certain courses to do so. The curriculum as presently laid out spreads the six courses over three semesters. The courses to be offered this coming fall semester comprise the second set. Courses to be offered during the spring or second semester of this year will consist of the third or final set, plus a repeat of the first set which was offered initially during the 1969 Spring Semester.

Students who are not NWC employees may also enroll in these courses, but subject to availability of space and payment of tuition which is \$60 per unit NWC employees, whether enrolled in the cours-

es offered last semester or not, must submit at the time of registration Enrollment Authorization form 11ND NWC 12410/41 (1-69), bearing the required signatures. This form authorizes the individual to take the specified course or courses on government time and exempts him from payment of tuition.

Attention is called to the fact that a person must take the Graduate Record Examination before he

School of Engineering. The next time the examina- 109 of the Training Center. tion will be given is October 25, and applications must REGISTRATION: Formal registration for 1969 Fall be submitted at least one month in advance. Anyone wanting to take the examination at that time should notify Eva Bien, Code 656. Application forms and a ing Center. The registration fee is \$20 per unit of brochure describing the examination may be ob- credit. Individuals who are not attached to the Naval tained from the following codes: 656, 654, or 015.

Students enrolling in the program should confer with the USC professors who serve as advisors and coordinators of the program. The one for the Electrical Engineering option is Dr. Nasser Nahi, an associate professor in the EE Department. The one for the Mechanical Engineering option is Dr. Melvin Gerstein, the chairman of the ME Department and the recently appointed Assistant Dean for Graduate Programs and Research. Both will be coming to China Lake to confer with students on the first day of registration. Those desiring appointments with either of these professors or having questions about the courses or any aspect of the program should contact the Education Director on extensions 72934 or 72926. REGISTRATION: Thursday and Friday, September 11 and 12, 8 a.m. to 12 noon and 1 to 4 p.m., Room 107, Training Center. Textbooks will be available for

purchase at the time of registration. CLASSES BEGIN: ME Courses - Monday, September 15; EE Courses - Tuesday, September 16.

#### COURSE SCHEDULE

EE 464 Probability Theory for Engineers (3 Units)

Axiomatic foundations; Probability models; Random variables; Linear estimation; Random sequences and processes. Text: Papoulis: Probability, Random Variables and Stochastic Processes

Instructor: Edward A. Fay, Ph.D., Mathematician, Mathematics Division, Research Department Time/Place: 0800-0930, Tues. and Thurs., Room 107, Training

EE 541 Analytical Methods in Engineering (3 Units)

The fundamentals of finite dimensional vector spaces. Introduction to the calculus of variation. Texts: Moore: Elements of Linear Algebra and Matrix Theory Gelfond and Fomin: Calculus of Variations Instructor: Fletcher B. Phillips, Ph.D., General Engineer, Wea-

pons Analysis Branch, Weapons Development Department Time/Place 0945-1115, Tues. and Thurs., Room 107, Training ME 525b Engineering Analysis II (3 Units) Text: Wylie: Advanced Engineering Mathematics

Instructor: Arthur R. Maddox, Ph.D., Aeromechanics Division. Weapons Development Department Time/Place: 0800-0930, Mon. and Wed., Room 107, Training

tions, Fourier Series and Integrals, Laplace transformations, Bessel Functions, Calculus of Variations. ME 510 Mechanics of Continuous Media (3 Units)

Text: Eringen: Mechanics of Continuum Instructor: William J. Stronge, Ph.D., Mechanical Engineer, De- MINIMUM ENROLLMENT: To justify the cost of pretonation Physics Division, Research Department Time/Place: 0945-1115, Mon. and Wed., Room 107, Training

Mechanics of solids and fluids using vectors and tensors; each course offered. conservation equations and stress-strain, strain rate rela- CREDIT: Students desiring credit toward a Master's tions. Prerequisite: ME 525a

#### UCSB Fall Quarter 1969

Beginning this fall, University of California extension courses at China Lake will be under the jurisdiction of the Extension Division of the University of California at Santa Barbara. The switch from UCLA to UCSB results from the fact that Kern Coun- ENGINEERING XL 100C Systems, Signals, and Noise (4 Units) ty, and consequently NWC, are now in the extension territory allocated to the Santa Barbara campus.

Another change was the closing, at the end of June, of the Education Office in the Michelson Laboratory and the absorption of the functions of that office by the Education Director's office (Code 015) and by the Employee Development Division (Code 654). Under this new arrangement, Code 654 will be responsible for taking care of registration details and for maintaining enrollment records. Individuals desiring to register for specific UCSB extension courses can be admitted to graduate status in the USC should contact Joan MacIntosh of Code 654 in Room of instructor

Quarter UCSB extension courses will commence on Monday, September 29 at 8 a.m. in Room 109, Train-Weapons Center as civil service employees or as military personnel will be required to pay the fee in full at the time of registration. Payment can be made either in cash or by check payable to the

Naval Weapons Center. NWC civil service employees and military personnel may enroll without payment of the registration fee provided they submit, at the time of registration, NOTS Course Enrollment Certificate (11ND NOTS 12410/28 ((rev 3-67)) certifying that the course comprises training needed in the performance of official duties. This form must be signed by the student's supervisor and his department head or designate. In lieu of paying the registration fee at registration, NWC civil service and military personnel will sign an agreement (NAVEXOS 12410/12 ((rev 8-62)) committing themselves to reimburse the Naval Weapons Center for the registration fee if they fail to complete the course or fail to obtain a

final grade of C or better. WITHDRAWALS: Students who pay the registration fee at the time of registration will receive full reimbursement of the fee if withdrawal from the course occurs before the second class meeting. The reimbursement allowed after the second and before the fourth class meeting will be the fee less a \$10 service charge. No refund is allowed after the fourth

class meeting NWC employees withdrawing from a course prior to the second class meeting may do so without penalty of paying the tuition provided they submit a written statement to Code 015, with copy to Code 654, initialed and dated by the instructor, giving the reason for the withdrawal. Withdrawal after the second class meeting without payment of the tuition requires submission of a NOTS Course Enrollment Certificate (11ND NOTS 12410/28 ((rev 3-67)) to Code 654 bearing the signature of the employee's department head or designate and the following statement inscribed "Authorization to withdraw with-

out payment of tuition granted." TEXTBOOKS: Textbooks will be on hand and available for purchase in Room 109 in the Training Center Set-up and solution of problems by means of the following at the time of registration.

mathematical tools: Ordinary and partial differential equa- ADMISSION TO THE CENTER: Students lacking passes for admission to the Center should make the fact known at the time of registration so that clearance may be arranged.

senting the herein listed extension courses, a minimum enrollment of 10 students will be required in

degree for classes taken through UCSB extension should before enrollment in such courses contact the university in which they plan to enroll to ascertain whether credit will be granted and under what con-

#### COURSES

Texts: Javid and Brenner-Analysis, Transmission and Filter-

ing of Signals (McGraw-Hill 1963) Papoulis-The Fourier Integral and its Applications (Mc-Graw-Hill 1962)

Instructor: William F. Ball, M.S., Head, Analysis Branch, Guidance and Control Systems Division, Weapons Develop-

Time/Place: 4:30-6:30 P.M., Mondays and Wednesdays, starting October 6. Room 107, Training Center. (20 meetings) Review of circuit analysis; elements of Fourier Analysis and its applications; response of linear systems-introduction to filtering; introduction to signal processing-modulation; signal detection-noise. Prerequisites: Differential and Integral Calculus, Circuit Analysis (such as UCLA 100A), or consent

the first from explosion and and who represented Cede to, lead No. Z. event, as did Rosemary Miller.

Text: Timothy and Bona-State Space Analysis; An Introduction (McGraw-Hill 1968) DeRusso, Roy and Close-State Variables for Engineers

(Wiley 1965) Instructor: Neville W. Rees, Ph.D., Applied Cybernetics Branch, Assessment Division, Systems Development Department

Time/Place: 4:30-6:30 P.M., Mondays and Wednesdays, starting October 6. Room 205, Training Center. (20 meetings). Development of state space description of dynamic systems. Stability analysis and control system design using state space theory. Controllability and observability of systems. Reachable and recoverable regions of systems. Optimal control problems and Pontryagin Maximum Principle. Final value controllers. Prerequisite Course No. 122A (Introduction to Linear Control and Systems) or consent of instructor.

ENGINEERING XL 127A Introduction to Theory of Filtering and Text: Yaglom-Introduction to Theory of Stationary Random

Functions (Prentice-Hall 1960) Davenport and Root-Introduction to Theory of Random

Signals and Noise (McGraw-Hill 1958) Instructor: Merle E. Ross, Ph.D., Missile Guidance and Control Branch, Development Division No. 4, Aviation Ordnance

Time/Place: 6:30-8:30 P.M., Tuesdays and Thursdays, starting October 7. Room 107, Training Center. (20 meetings). An introduction to the modern theory of prediction and filtering of random signals, and some elements of the theory of detection of random signals in noise; applications to communication, radar, and data processing. Prerequisite: Course

No. 120A (Introduction to the Theory of Random Signals)

or consent of instructor ENGINEERING XL 140A Solid State Fundamentals (4 units) Text: McKelzey-Solid State Semiconductor Physics (Harper and Row 1966)

Instructor: George A. Hayes, Ph.D., Materials Technology Branch, Liquid Propulsion Division, Propulsion Development

Time/Place: 4:30-6:30 P.M., Mondays and Wednesdays, starting October 6, Room 201, Training Center. (20 meetings). Introductory atomic concepts, quantum mechanical principles, energy levels in complex atoms, quantum statistics, crystal structure, energy levels in solids, band theory, transport phenomena.

XSB 418A Introduction to Operations Research I (4 Units) Text: Hillier and Lieberman-Introduction to Operations Re-

Instructor: Frank C. Reed, M.S., Mathematics Division, Re search Department

Time/Place: 4:30-6:30 P.M. on Tuesdays and Thursdays, starting October 7. Room 107, Training Center. (20 meetings). Introduction to Linear Programming Theory; formulation and methods of solution of special types of problems, including transportation, transhipment and assignment problems. Network Analysis: Application of theory of graphs; the maximal flow problem, etc. Advanced topics in Linear Programming; Duality and Postoptimality Analysis: Special Linear Programming Techniques, revised simplex algorithm and primal-dual algorithm. Prerequisite: Linear Algebra and Differential and Integral Calculus or consent of instructor. XSB 806 Review of Engineering Fundamentals (4 Units)

Texts: Faires and Richardson-Review for EIT Examination Boyer and Beer-Review for EIT Examination Instructor: Ray W. Van Aken, M.S., Head, Aeromechanics Di-

vision, Weapons Development Department Time/Place: 6:00-10:00 P.M., on Wednesdays, starting Septem-

ber 10. Room 107, Training Center (9 meetings). Review of fundamental mathematics, applied mechanics (statics, kinematics, dynamics), strength of materials, thermodynamics, fluid mechanics, electromagnetics, and engineering

Schedule of Procurement Classes

NATURE OF THE PROGRAM: These courses are taught by personnel from NPOLA. The subject matter is directly related to Government Contract Administration at NWC. If participants wish, they may apply for a certificate in Government Contract Administration after successfully completing eight of the arded. Students are required to take examinations. REGISTRATION: Submit a completed Course Enrollment Form 11ND/NOTS 12410/28 to Code 654. For English Classification further information contact Code 654

Government Contract and Subcontract Writing X408.06 (4 units) Dates: September 12, 13, 19, 20, 26, 27 Location: Room 107, Training Center

Scope: Writing techniques for defense and aerospace contracts and subcontracts. Elements of contract law. Procurement rules. Use and misuse of language. Pre-contract documentation, requests for proposals, negotiation memoranda. Statement of work and specifications. Rules of interpretation. Terms and conditions under varying contract pricing mechanisms. Standard ASPR clauses and deviations - mandatory and optional. Special clauses and special conditions. Documentation during administration of contracts and subcontracts. Claims preparation and presentation, notices, correspondence. Change orders and amendments. Clauses for the buyers, for the seller, and compromises

Economics of National Security X400.08 (4 Units) Dates: October 3, 4, 10, 11, 17, 18, 24, 25 Times: 1900-2300 Fridays; 0800-1300 Saturdays

Location: Room 107, Training Center Scope: Economic implications of national security. Economproblems of defense. Impact of government policies on the defense industry. Weapons development. Resource limitations and allocations. Economic capability. Economic stability. Comparative defense budgets. Economic analysis for military decisions. Structure of military market (private and governmental). Military logistics. International aspects of national security. Economic warfare and disarmament. Weap-

ons control. National preparedness. Policies for deterrence.

Contracts Management Seminar X408.09 (4 units) Dates: Oct. 31; November 1, 7, 8, 14, 15, 21, 22 Times: 1900-2300 Fridays: 0800-1300 Saturdays

Location: Room 107, Training Center Scope: Interests of the group govern an intensive consideration of the role of the contracts manager, generally within the following: Precontract coverage. Proposal preparation and coordination. Financial planning as a background for pricing. Scope of current pricing and audit practices. Negotiation of contracts. Profit negotiation. Multiple incentive contracts. Structuring delivery and performance incentives. Role of contracts administration. Problems of performance and overruns. Change and configuration control. Proprietary rights. Subcontract management. Relaxation of government controls. Disputes, claims, and appeals. Participants make class presentations and prepare a paper on one or more aspects of defense contracts management

Pre-requisite: At least 4 courses completed in the area. Government Subcontracts: Types, Legal Aspects and Administrative Control X408.051 (4 Units) Dates: December 5, 6, 12, 13, 19, 20

ROCKETEER

Times: 1900-2300 Fridays; 0800-1300 Saturdays.

Location: Room 107, Training Center Scope: For persons without legal training, especially procurement personnel of smaller companies. A critical study of the subcontractor's performance, administrative control, and legal problems, and successful methods of solution. Fixedprice subcontracts and purchase orders: A.S.P.R. clauses, changes, inspection default, specifications and proprietary data; patent applications, rights, and indemnity; research and development, special tooling, government furnished property, quality control terminations. Cost type contracts: modifications, design responsibility, government property, liability of subcontractor, insurance, etc. Legal rights and remedies: privity of contract; suits against prime contractor, Severin and Blair rules, disputes with prime contractor, G. A. O., etc.

R&D and the Government Procurement Cycle X445.9 (4 Units) Dates: October 20-24

Location: Room 211, Training Center Scope: This course is designed to cover strictly procurement problems generally encountered by R&D personnel. Topics will include: How to write a PR; estimating funding; appropriations, allotments, and allocations; Patents and Technical Data, when we need it, what it costs; Types of contracts; how to draft a subcontract; how to analyze technical problems; ECP's; Terminations, at end of contract, for convenience, for default, no cost; and inspection and warranties. Nominations: Limited to 30

Contemporary Science & Engineering for Senior Professionals Dates: September 12-December 5

Time: 1300-1600 Fridays Location: Room 107, Training Center

Scope: Phase I of this three part program will deal with a mathematical review and computer technology. The mathematical review starts with algebra, with particular emphasis on sets and matrices. This is followed by a review of calculus, especially infinite series, La Place transforms, and ordinary and partial differential equations. The review closes with a brief discussion of probability and statistics, which depends in part on the prior material. This review provides the foundation, not only for the computer technology material, but the remaining phases as well. The computer technology program starts with an introduction to digital computers, discusses the organization and logical design of a computer, and includes a presentation of Boolean Algebra. The emphasis then shifts to the software world, from both a systems programming and applications viewpoint, and includes a discussion of computer languages and their role in applications programming. This is followed by a discussion of analog and hybrid computation and its application to the simulation of engineering phenomena. The first phase concludes with a discussion of on-line computation, with emphasis on interactive input devices and displays.

Enrollment: Participation is limited to 30 Senior Professionals at GS-13 and above who graduated from college prior to 1960. Submit NWC Enrollment Form 12410/28 to Code 654 through proper departmental channels. Departments must indicate their priorities. Deadline: Enrollments must reach Code 654 no later than

## SCHEDULE OF CLASSES REGISTRATION **DESERT CAMPUS**

**Bakersfield College** 

CALENDAR planned courses. University extension credit is aw- (Bakersfield College Desert Campus reserves the right to make any calendar or schedule changes and to cancel any class.) August 5-College Aptitude and Placement Tests School and College Ability Test..... ...... 6 p.m. . 7:30 p.m. August 6-College Aptitude and Placement Tests Reading Placement ... .... 6 p.m. Mathematics Placement Test (Calculus) . . 6:45 p.m. August 11 - 28 Counseling and Registration by appointment ..... 8 a.m. to 5 p.m. August 16-College Aptitude and Placement Tests School and College Ability Test ... Reading Placement English Classification Advanced Mathematics Placement (Calculus) 11:30 a.m. September 5 Open Registration September 5 Bookstore to open in College Room 1 ...... 10:00 a.m. to 3:30 p.m. September 8-Instruction Begins September 8 - 24 Bookstore open Monday through Thursday...... 4:30 to 7:30 p.m.

Late registration in College Office for classes not closed. September 19 Last day to change audit to credit or credit to audit

in adult education courses. FOR ADDITIONAL INFORMATION - SEE THE DESERT CAMPUS BULLETIN 1969-70

selected courses directly related to occupations of

Naval Weapons Center personnel. Business 51-BUSINESS MATHEMATICS Tues. and Thurs., 5:30-6:53 Room L30, 3 units Mrs. GRECU Business Ad. 1A-PRINCIPLES OF ACCOUNTING Mon. and Wed., 5:30-6:53

Room D25, 3 units (Prerequisite: Sophomore standing, 1A prerequisite to 1B.) Chemistry 1A-GENERAL INORGANIC CHEMISTRY Mon. and Wed., Lab 7:00-9:53 (Room 4) Tues. and Thurs., Lecture 5:30-6:53 Room D29B. 5 units

Data Proc. 60A-DATA PROCESSING SYSTEMS Tues. and Thurs., 700-8:53 Room B02, 3 units (Prerequisite: Data Processing 50 or approval of the instruc-

Tues. and Thurs., 5:00-6:23 Training Building, 3 units Metal 55-METAL TECHNOLOGY Tues., 5:00-8:53 Training Annex 2, 2 units Physics 6A-GENERAL PHYSICS Mon. and Wed., 5:00-6:53 Room D29A, 4 units

Data Processing 56-CARD PUNCH OPERATION Mon. and Wed., 7:30-10:00 (Sept. 8-Oct. 17)

Administration Building, 1 unit ..... (Prerequisite: Data Processing 50 or approval of the instructor and ability to type 25 words per minute.) Data Processing 56-CARD PUNCH OPERATION

Mon. and Wed., 7:30-10:00 (Oct. 17-Jan. 28) (Prerequisite: Data Processing 50 or approval of the instructor and ability to type 25 words per minute.)

Data Processing 61A-COMPUTER PROGRAMMING Mon. and Wed., 7:00-9:53 Room L34, 3 units .....

(Prerequisite: Permission of instructor; Math D minimum.) Economics 1A-PRINCIPLES OF ECONOMICS

Tues. and Thurs., 5:30-6:53 Room D25, 3 units ..... Electrical Tech. 54A-FUNDAMENTALS OF ELECTRICITY Mon. and Wed., Lecture, 5:00-6:23

Monday Lab., 6:30-9:23 Training Annex 2, 4 units . . Mr. Wood (Prerequisite 54A or 55 prerequisite to 54B. Mathematics

53A must be taken concurrently.) Electrical Tech. 59A-TRANSISTOR CIRCUIT ANALYSIS Mon. and Wed., Lecture, 5:30-6:23 Tues., Lab. 6:30-9:53

Training Annex 2, 3 units . Mr. Hughes (Prerequisites Math 53A-53B, Electrical Tech. 54B and 57A or equivalent.)

Electrical Tech. 66B-VACUUM TUBE CIRCUITS Mon. and Wed., 6:30-9:30 Training Annex 2, 3 units Mr. Rieger

(Prerequisite: Math 53AB, Electrical Tech. 54AB and 57A or equivalent.) Electrical Tech. 57A-TRANSISTOR CIRCUITS Mon., Lecture, 5:00-6:00; Wed., Lecture, 5:00-6:23; Wed., Lab. 6:30-8:53

Training Annex 2, 3 units ... . Mr. Denson (Prerequisites Math 53A-53B and Electrical Tech. 54AB or Electrical Tech. 69A-BASIC ELECTRONIC TEST EQUIPMENT

Training Annex 2, 2 units . (Prerequisite: Permission of the instructor.) English 1A-EXPOSITORY COMPOSITION

Thurs., 6:30-9:30

Tues, and Thurs., 5:30-6:53 Room M43, 3 units ... Mrs. Ward (Prerequisite: Level 1 classification or a grade of C in Eng-

English 52-READING IMPROVEMENT Tues. and Thurs., 8:30-9:23 Room B03, 1 unit ... . Mr. Butler (Prerequisite: Level 2 classification or permission of the instructor.) English 60-BASIC USAGE AND GRAMMAR

Tues. and Thurs., 5:30-6:53 . Mr. Selvera (Prerequisite: Level 3 classification or a grade of C in English 080.) English S-SPELLING IMPROVEMENT

Tues. and Thurs., 5:00-6:53 Room M43, 1/2 unit Mrs. Ward (14 weeks beginning Sept. 22.)

Industrial Drawing 30A-INDUSTRIAL DRAWING Mon. and Wed., 7:00-9:53 Room M48, 3 units Industrial Drawing 30C-ADVANCED INDUSTRIAL DRAWING

Tues. and Thurs., 7:00-9:53 Room M48, 3 units ..... Mr. Ingle (Prerequisite: Industrial Drawing 30B or equivalent.) Journalism 11A-PRINCIPLES OF EDITING Mon. and Wed., 7:00-9:23 Room 3, 2 units ....

Journalism 11B-EDITING PRACTICES Mon. and Wed., 7:00-9:23 Room 3, 2 units Mr. Silva (Prerequisite: Journalism 11A or permission of instructor.) Journalism 11C-EDITING PRACTICES Mon. and Wed., 7:00-9:23

Room 3, 2 units ..... Mr. Silva (Prerequisite: Journalism 11B or permission of instructor.) Journalism 11D-EDITING PRACTICES Mon. and Wed., 7:00-9:23 Room 3, 2 units

(Prerequisite: Journalism 11C or permission of instructor.) Machine Shop 53A-ELEMENTARY MACHINE SHOP Mon., 5:00-9:53 Training Annex 2, 3 units .. Mr. Ladda

Machine Shop 53C-ADVANCED MACHINE SHOP Training Annex 2, 3 units .... Mr. Ladda

(Prerequisite: Machine Shop 53B or permission of the instructor.) Math. A-ELEMENTARY ALGEBRA

Tues. and Thurs., 5:00-7:23 Room D22, 3 units .... . Mr. Matulef Math. C-PLANE TRIGONOMETRY Mon. and Wed., 5:30-6:53

Dr. Cleaves (Prerequisites: Plane Geometry and grade of C or higher in either advanced high school Algebra or Mathematics D.)

. 10:00 a m to 3:30 p.m. Math. D-INTERMEDIATE ALGEBRA Mon. and Wed., 5:30-6:53 Room D22, 3 units ... Mrs. Compton

(Prerequisite: Grade of C or higher in either one year of high school Algebra or Mathematics A.) Math. 6A-ANALYTIC GEOMETRY AND CALCULUS I

Tues. and Thurs., 5:30-6:53 Room 3, 4 units (Prerequisites: Mathematics B, C and D or equivalents. A qualifying test in the prerequisite math for this course will be given. Students who fail the test must enroll in Mathematics 1. Students who do not take the qualifying test must earn a C or higher in Mathematics 1 prior to enrolling in 6A.)

Math. 6C-ANALYTIC GEOMETRY AND CALCULUS III Mon. and Wed., 5:00-6:53 Room M46, 4 units (Prerequisite: Mathematics 6B.)

Math. 080-BASIC ARITHMETIC Tues. and Thurs., 6:30-7:53 Room M46, 3 units Math. 53A-BEGINNING MATHEMATICS FOR ELECTRONICS Tues. and Thurs., 6:30-7:53 Training Building, 3 units

Math. 53A-BEGINNING MATHEMATICS FOR ELECTRONICS Mr. Patterson

Staff (Prerequisite: Open to engineering and technical majors.)

Mr. Matulef

(Prerequisites: High School physics or chemistry and trigonometry, may be taken concurrently.) Physics 6AL—GENERAL PHYSICS LABORATORY Tues., 7:30-10:15

Room D29A, 0 unit Mr. Matulef Secretarial Training 50A—ELEMENTARY GREGG SHORTHAND Tues. and Thurs., 7:00-9:23 Mrs. Grecu Business Skills Center, 4 units (Prerequisite: Completion of Office Skills 50A with a grade

of C or higher or concurrent enrollment in a typing class.) Office Skills 50A-BEGINNING TYPING

Mon. and Wed., 5:00-7:23 Business Skills Center, 3 units (Prerequisite: Open to anyone who has not completed a year of high school typing with a C or higher.)

Office Skills 60A-ADVANCED TYPING Mon. and Wed., 7:30-9:53 Business Skills Center, 3 units

(Prerequisite: Office Skills 50B with a C or higher or two years of high school typing with a B or higher or recommen dation of the Office Skills 54 instructor.)

#### ON CENTER **SHORT COURSES**

Due to enrollment limitations, nomination by a department does not necessarily guarantee admission to a course. Final selection will be determined by the Employee Development Division in cooperation with the cognizant training facility. Employees accepted for a course will be notified by their depart-

TECHNIQUES OF LISTENING

Dates: September 7, 9, 14 2nd Class: December 2, 4, 9 Location: Room 205, Training Center

Instructor: Dr. Bertram Barer, San Fernando Valley State Scope: This 3-day workshop examines how we retain and comprehend information by our ability to listen. Special emphasis is placed on how effective listening influences the productivity and performance of technical and non-technical personnel. Participants will become aware of the techniques of effective listening and how to use these tools. Lecture material will investigate the major factors affecting our attention span, such as: Peripheral and Central Attention. Visual Elements of Communication, Verbal Elements of Communication, Listening Environment, Emotional Barriers, Appropriate Organization of Material. The Workshop will be two-pronged in its approach: Investigate how information is organized to induce listening, Investigate how to discipline our attention to receive information aurally.

MEMORY TRAINING FOR SUPERVISORS Dates: October 13

Location: Room 205, Training Center Instructor: David Lewis, General Dynamics, Forth Worth, Tex-

as, representing Management Center of Cambridge Scope: Defining a good memory, an approach to difficult memory areas (names, faces, disconnected facts and figures, key word alphabet), psychological foundation of memory (interest and attitude, laws of association); visualization and sensory powers; powers of concentration and observa-

tion; maturation, repetition, techniques for remembering (appointments, data, telephone numbers, assignments), CONFERENCE LEADERSHIP

Location: Room 101, Training Center

Instructor: Dr. George Lehner, UCLA Scope: This is a specialized course designed for employees who conduct meetings, conferences, or orientation courses. It will provide knowledges and techniques of conference leadership with lecture, demonstration, and practice sessions

COMMUNICATION WORKSHOP Dates: October 16, 17

Location: Room 205, Training Center Instructor: US Civil Service Commission personnel

Scope: Features how-to sessions, case studies, and workshops. Possible solutions will be presented for face-to-face and telephone communication problems. Participants will study the psychological aspects of the communication pro-

NWC CLERICAL TRAINING

Dates: Late October or early November 1969 - to be announced. Course will consist of eight one-half day sessions. Location: Training Center, to be announced. Instructors: Various representatives of Center support and

Scope: Clerical occupations and responsibilities; organizational structure at NWC; office behavior, attitudes and traits,

procedures and policies in the office, personality and appearance, image building, security regulations, office safety, supply procedures, Navy Directives, Navy Correspondence, files improvement, message preparation, timekeeping, travel procedures, disbursing procedures, oral communications, mail file and records, forms management, telephone procedures, personnel and the secretary, records disposal.

ORAL COMMUNICATIONS Dates: November 4, 6, 13 Location: Room 203, Training Center

Instructor: Dr. Bertram Barer, San Fernando Valley State Scope: This is a small-group workshop designed to stimulate

and increase the effectiveness of individual oral presentation. Particular emphasis will be placed on techniques of individual expression, organization of ideas, effective listening and the presentation of informative and persuasive material. This workshop will involve extensive group participation. The workshop is of particular value to mid-level and upper-level personnel who are involved in presentation to either NWC personnel or off-Center activities.

CLEAR WRITING

Dates: November 7 (Friday) ocation: Conference Room A, Michelson Laboratory Instructor: Robert Gunning, author of Clear Writing and the

Fog Index Scope: Clear Writing is designed to develop, motivate, and strengthen the skills of people who write. The course will cover: the Science of Clear Writing; How to Measure Reading Difficulty: Ten Ways to Improve Individual Writing Style; How to Organize Informational Material; How to Improve Dictation; Building a Fog-Free Vocabulary.

INTRODUCTION TO SUPERVISION Dates: 1st Class, November 17-21; 2nd Class December 1-5. Location: Room 205, Training Center

Instructor: US Civil Service Commission personnel Scope: A 5-day course designed to meet the needs of new or inexperienced first-line supervisors as well as those designated to assume supervisory positions. Introduces participants to the basic legal requirements affecting the management of Federal employees and to selected managerial techniques and concepts which may be studied in greater depth

in subsequent courses developed for experienced supervisors. Topics included are: Expectations of the Federal Supervisor, the Sociology of Work, Leadership, Principles and Practices of Supervision, Employee-Management Cooperation, Improving Communications, Processes for Solving Problems, Equal Employment Opportunity Program, Safety and Acci-

ROCKETEER

CONFERENCE LEADERSHIP Dates: December 10, 11, 12

Location: Room 101, Training Center

Instructor: US Civil Service Commission personnel Scope: Designed to provide participants with the skills, knowledges, and techniques necessary for successful conference leadership. Emphasis will be on learning by doing and cri-

THE MANAGER'S ROLE IN PERFORMANCE EVALUATION Dates: November 18-20

Location: Room 211, Training Center Instructor: US Civil Service Commission personnel

Scope: Treats performance evaluation as a continuing man-

BOOLEAN ALGEBRA AND LOGIC CIRCUITS—COURSE 102 Dates: October 6-14 Time: 0730-1130

Location: Room 212, Training Center

cuits used in digital systems.

have had The Introduction to Digital Systems-Course 101

or equivalent training. DIGITAL COMMUNICATIONS Dates: To be announced

Location: Room 211, Training Center application of information theory; types of distortion inher- course is recorded in the employee's personnel jacket. ent in digitizing an analog signal; modulation techniques and information theory, and the practical design criteria of S&E 8A WEAPON SYSTEM PLANNING digital hardware. Some topics are: introduction to digital Examines the evolution of a weapon system from the plancommunications; miltiplex transmission; sampling theory; analog/digital conversion; quiet and noisy channels; signals; coding; modulation; and the Entropy Table. Nominations: 35 personnel with engineering degrees or equi-

valent experience. INTRODUCTION TO DIGITAL SYSTEMS-COURSE 101

Dates: September 22-October 1

Time: 0730-1130 (8 sessions) Location: Room 205, Training Center

Scope: This is the second offering of a series of courses designed to familiarize the participants with a working knowledge of digital circuits and equipment. The overall program is divided into 8 sub-courses to allow flexibility of scheduling to meet the needs of the individual's background, experience, and desired objectives. Course 101 introduces the student to the history and applications of computers, describes digital systems, and aids the student in gaining a working knowledge of number systems which are funda-

mental to digital systems. Class limited to 30. INTEGRATED CIRCUITS

Dates: To be announced (5 days)

Location: Room 211, Training Center

Course Objective: To provide practical training in the fundamental concepts and state-of-the-art techniques required to select, test, evaluate, and apply integrated circuit devices. Scope: Training includes integrated circuit processing; integrated circuit fabrication and packaging; thin-film integrated circuits; breadboarding techniques; large scale integration; linear integrated circuits; operational amplifiers; integrated logic circuit selection; specification sheets; mathematics for digital systems; MiL-Std 806B; and logic building

blocks. Nominees: 15 experienced engineers or technicians who are directly involved in the design, evaluation, and testing of electronic systems which employ integrated circuit devices. Prospective participants should have a BS in engineering or

LOGIC CIRCUIT APPLICATIONS—COURSE 103 Date: October 20-November 4

Time: 0730-1130

Dates: Octobr 27-November 7

Time: 0730-1630 Location: Room 211, Training Center

Scope: Principles and Applications of Value Engineering topics include: scope of VE, criteria for application, problem tion of this bulletin offers many courses that should solving and creativity, fundamentals of VE, job plan, infor- prove helpful to Journeymen and Technicians. to apply good value principles to the design of entire sys- ment status prior to the beginning of classes. tems, as well as to individual components.

should practice the principles of VE. Enrollees chosen should have experience in one or more of the following specialties: Research & Development, Design Engineering, Product Engineering Cost Analysis, Quality and Reliability, Mate-

VIBRATION AND SHOCK TESTIN G Dates: November 17-21

Times: 0800-1630

Time: 0730-1130

Location: Room 211, Training Center Scope: This course is designed to develop an improved awareness of the potentials of Vibration and Shock Testing. Topics to be covered include: types of vibration tests; calibration of instruments and measurement systems; limitations; equalization equipment; analysis of random vibrations; sig-

Nominations: Limited to 35 participants with a BS in Enginering or equivalent experie COMPUTER MAINTENANCE PROGAMMING-Course 104 Dates: December 1-19

Location: Room 212, Training Center

Scope: This is the 4th of an 8 course series dealing with digital systems. Course 104 introduces the participant to computer maintenance programming and teaches him how to successfully write machine language programs. The course material is organized to make the student familiar with various types of computer programs; to be able to document and flowchart programs; understand and apply considerations for both variable and fixed word length computing systems, and to write machine programs. Nominations: Participation will be limited to 16 personnel

#### **SCIENCE & ENGINEERING** DAY CLASS PROGRAM

Courses offered under this program provide speagement responsibility. Covers applying behavioral research cialized instruction and training in subjects closely findings to performance evaluation, increasing interview- related to the Center's mission wherein the mateing skills, establishing performance standards, motivating rial presented and discussed may need to be of a tion in promotion, career development and other programs. classified nature. The courses deal with the special problems of weapons research, design, development, test, evaluation, production, and use.

Admission is restricted to NWC employees and Scope: This is the second of a series of 8 sub-courses deal- naval personnel and requires advance submission of ing with digital systems. It is designed for technical person- the standard Course Enrollment form 11ND NOTS nel who have a knowledge of basic algebra, basic electron- 12410/28 (rev 3-67) bearing the signa ure of the ics, and digital computer fundamentals. This course is designed to give the student a working knowledge of Boolean employee's immediate supervisor, and such addition-Algebra and to introduce the student to the electronic cir- al signatures as the employee's department may require. Departments shall be prepared to list their Nomination: The class will be limited to 30 participants who nominees for enrollment in priority order in the event the number of requests for enrollment exceeds the

The courses consist of 16 hours of instruction, scheduled normally as one two-hour session per Scope: The objective of this course is to develop an under- week during normal working hours throughout an standing as to extracting signals, optimum coding; practical eight-week period. Successful completion of a given

ning stage to development in the light of assessments of future enemy capabilities, development costs, and the system's design effectiveness. Procedures predicated by the Navy planning structure and the Center's method of operation are reviewed. (Secret Clearance required.)

Instructor-in-charge: Carl L. Schaniel, Head, Weapons Planning Group, Code 12 Time/Place: 0800-1000 Mondays, October 6 to November 24,

Room 203, Training Center Enrollment Deadline: September 24. Enrollment limit: 25 S&E 10 TECHNICAL REPORT WRITING Designed to aid engineers and scientists document the results of their work in a form that can be readily understood by the

of material, techniques for presenting illustrations and graphs, the NWC printing, publishing, and distribution process, and related requirements. Instructor-in-charge: C. A. Creider, Jr., Head, Editorial

intended reader audience. Topics covered include organization

Branch Code 7571, Publishing Division, Technical Information Time/Place: 0800-1000 Wednesdays, October 1 to Noven

ber 19. Room 201, Training Center Enrollment Deadline: September 19. Enrollment limit: 25 S&E 25 TRANSITION FROM DEVELOPMENT TO FLEET IN-TRODUCTION Deals with problems encountered in advancing a new weapon

from its feasibility and early development state to full production and subsequent introduction into Service use. Emphasis is placed on requirements which must be met and on the importance of proper advance planning. (Secret Clearance 'required.)

Instructor-in-charge: H. T. Lotee, Head, Fleet Engineering Division, Code 556, Engineering Department Time/Place: 1430-1630 Wednesdays, October 1 to Novem-

ber 19, Room 201, Training Center

Enrollment Deadline: September 19. Enrollment limit: 25 **JOURNEYMAN & TECHNICIAN** 

**DEVELOPMENT CLASSES** Scope: This is the 3rd of an 8 course series dealing with dig- NATURE OF THE PROGRAM - These courses are al networks using basic digital circuits and teaches the student to become familiar with the timing considerations in tunities available to artisans and technicians in a range of skill areas. The NWC courses listed contain Nominations: 16 participants who have had Course 102 or a suggestion for suitable participants. These suggestions do not arbitrarily limit the kind of participal accepted. Each supervisor should determine, with his employee, the courses most needed for each individual's development. The Programmed Instruction sec-

mation systems, cost analysis, cost estimating, total systems REGISTRATION: Registration for this semester bemanagement, any contracting for VE program management. gins immediately. To enroll, send your completed Group projects give the participants an opportunity to perform a value study by analyzing, completing, and presenting Course Enrollment Form 11ND/NOTS 12410/28 to the results of the value study. Emphasis is placed on how Code 654. Enrollees will be notified of their enroll-

Nominations: 35 Engineers and technical specialists who Troubleshooting Transistorized Equipment—PHASE II

Dates: September 22-October 2(0800-1630) Location: Annex 1 behind Training Center Instructors: Cyril Bowman, William Jones, Frankford Arsenal

Scope: This course is designed to provide knowledge in servicing transistorized equipment, employing the more advanced circuits. The transistor circuits discussed and serviced are: switching circuits, astable multi-vibrators, logic circuits, ramp generators, staircase generators, curve tracer and dynamic measuring techniques. It is the purpose of this course to have technicians acquire a completely rounded background in troubleshooting. This is a practical course with a minimum of time spent on pure theory.

ADVANCED TRANSITORS Dates: 1st Class: 6-17 October, 2nd Class December 1-12 Location: Annex 1 behind Training Center nal sources; test fixtures; test practices; set up, test, and analysis of sinusoidal vibrations; and maintenance programs.

Instructors: Frankford Arsenal personnel Scope The Advanced Transistor Course deals with basic four terminal analysis in general, and the specific application of four-terminal network analysis to the transitor. The important characteristics of the transistor are discussed and

hybrid parameter analysis is applied to the transistor. The