



PRINT-OF-THE-MONTH selected by the China Lake Photographic Society, titled "Tee-Hee," was made by Clare Grounds with a 4x5 Graflex camera using a 7 1/2 in. lens. Grounds lighted the baby with three synchronized electronic strobes, exposing Super XX film at f.22. Camera club salon group invites those interested in photo critiques to attend Jan. 13 meeting at 361 McIntire St. Session starts at 7:30 p.m.

### CPO Wives Induct Two New Members

Two new members were installed and plans for the first meeting of 1965 were included in the final meeting of the year for the CPO Wives Club held last week at the home of Mrs. George Fallin. Mrs. Edward Dubrovsky and Mrs. Vincent Brennan were accepted as new members in the club. It was announced that the next meeting, scheduled for Jan. 4, would include election

of officers. The slate of candidates was submitted by the nominating committee at the meeting last week. The club is providing two Christmas baskets for distribution by the Station Chaplain to area needy families. The annual CPO Wives Christmas party is to be held Friday, Dec. 18, at the home of Mrs. John Kriedel in Inyokern. Members and their husbands are most cordially invited.

## SHOWBOAT

FRIDAY DEC. 18 "FALL OF THE ROMAN EMPIRE" (152 Min.) Sophia Loren, Stephen Boyd, Alec Guinness 7 p.m.

(Adventure in Color) An immensely spectacular story of Rome, its inept Emperor and his decline at the hands of a righteous general. A big story, filled with action of the times and the beauty of Sophia. Don't miss this one! (Adults, Youth, Mature Children.)

SATURDAY DEC. 19 -FREE CHRISTMAS MATINEE- (Santa Claus Will Be There) 1 p.m.

"TOMBOY AND THE CHAMP" (92 Min.) Candy Moore

Shorts: "Suff A Woody" (7 Min.) "Capt. Marvel No. 6" (17 Min.)

-EVENING- "WONDERFUL WORLD OF BROTHERS GRIMM" (129 Min.)

Laurence Harvey, Claire Bloom, Barbara Eden 7 p.m.

(Fantasy in Color) This classical film was made for old and young alike. It tells three fabled tales, "The Dancing Princesses," "Columb and the Elves" and "The Singing Bone." An all star cast makes for thrills and laughs galore. (Adults, Youth, Children.)

SUNDAY-MONDAY DEC. 20-21 "THE UNSINKABLE MOLLY BROWN" (138 Min.)

Debbie Reynolds, Harve Presnell 7 p.m.

(Musical Comedy in Color) Two back-country bumpkins marry and make a fabulous gold strike. Snubbed by Denver society, they go to Europe to get "culture" and return to get even. Debbie is an absolute riot! A "don't miss" film for sure. (Adults, Youth, Children.)

TUESDAY-WEDNESDAY DEC. 22-23 "EAST OF SUDAN" (84 Min.)

Anthony Quale, Sylvia Sims 7 p.m.

(Action Drama in Color) No synopsis available. Short: "Magoo's Young Manhood" (7 Min.) "Sound of Speed" (17 Min.)

THURSDAY DEC. 24 CLOSED CHRISTMAS EVE

FRIDAY DEC. 25 "A SHOT IN THE DARK" (102 Min.)

Peter Sellers, Elke Sommer 7 p.m.

(Comedy in Color) "The Pink Panther's" bumbling police inspector is at it again! This time he refuses to believe in a murderess despite her being tied into TWO murders. All seats will be filled for this—if only to gaze at beautiful Elke. (Adult.)

Short: "Festival of Bulls" (10 Min.)

SATURDAY DEC. 26 -MATINEE- "HAND IN HAND" (75 Min.)

John Gregson 1 p.m.

Shorts: "Christopher Crumpet" (7 Min.) "Capt. Marvel No. 7" (17 Min.)

-EVENING- "CARTOUCHE" (124 Min.)

Jean Paul Belmondo, Claudia Cardinale 7 p.m.

(Action-Comedy in Color) Swashbuckling, tongue-in-cheek version with derring-do, dueling, leaps from milady's balcony, etc. Sort of a French-type Robin Hood steals from the aristocrats and gives to the poor and lets romance come before business. (Adults, Mature Youth.)

SUNDAY-MONDAY DEC. 27-28 "BEHOLD A PALE HORSE" (121 Min.)

Gregory Peck, Anthony Quinn 7 p.m.

(Drama) Exiled loyalist leaves France for Spain to visit his dying mother despite knowledge that his old enemy has set a trap at the hospital. Men of opposing ideals come to final grips in an exciting climax filmed abroad. Exciting action! (Adult.)

TUESDAY-WEDNESDAY DEC. 29-30 "BECKET" (148 Min.)

Richard Burton, Peter O'Toole, Maritza Hunt 7 p.m.

(Adventure in Color) A boon companion of King Henry II becomes an archbishop who defies the crown despite their former friendship. An absorbing story that never dulls in interest, with superb performances by a stellar cast. One of the BEST of the year! (Adults and Youth.)

THURSDAY-FRIDAY DEC. 31, JAN. 1 "THE LIVELY SET" (95 Min.)

James Darren, Pamela Tiffin, Marilyn Maxwell 7 p.m.

(Action-Drama in Color) Discharged G1 goes back to college but can't keep from working on a jet race-car design. He finds there are no short cuts to successful design as he finally completes a super gas turbine car. Pretty girls and dragsters! (Adults, Youth, Mature Children.)

Shorts: "Get Lost Little Doggies" (7 Min.) "Water Color Holiday" (10 Min.)

SATURDAY JAN. 2 -MATINEE- "1001 ARABIAN NIGHTS" (76 Min.)

Mr. Magoo 1 p.m.

Shorts: "Emperor's New Clothes" (7 Min.) "Capt. Marvel No. 8" (17 Min.)

-EVENING- "SEVEN BRIDES FOR SEVEN BROTHERS" (103 Min.)



JEROME HINES as Russian Tsar is shown in death scene from "Boris Godounov" with Charlotte Blackmon playing the part of his 12-year-old son, Feodor, at concert last Tuesday.

### Hines Wins Plaudits in Dual Roles as Singer and Dramatist

Metropolitan Basso Jerome Hines warmed a near-capacity audience on an extremely cold night Tuesday with a concert that left his listeners reluctant to go home.

His lingual versatility provided an international flavor, including favorite opera and concert selections in German, Italian, Russian and English.

Hines, whom the ladies immediately stamped as "un hombre muy simpatico," opened his concert with selections from Mendelssohn, Bach and Handel. But it wasn't until he sang Brahms' "Wie bist Du meine Konigin" (Thou art truly my Queen) that the Hines personality came through, and the audience felt the thrill of hearing a great artist.

Switches to Italian His third group of conventional numbers was sung in Italian, opening with "Vittoria, vittoria mio core," by Giacomo Carissimi, followed by "I Due Tarli" (the two worms) by Riccardo Zandonai, and "La Calunnia," from "The Barber of Seville," by Rossini.

Characterizations Outstanding The second half of the concert, as has been his custom during the past two years, featured arias sung in costume. He did "Madamina" in a characterization of Leporello, servant of the

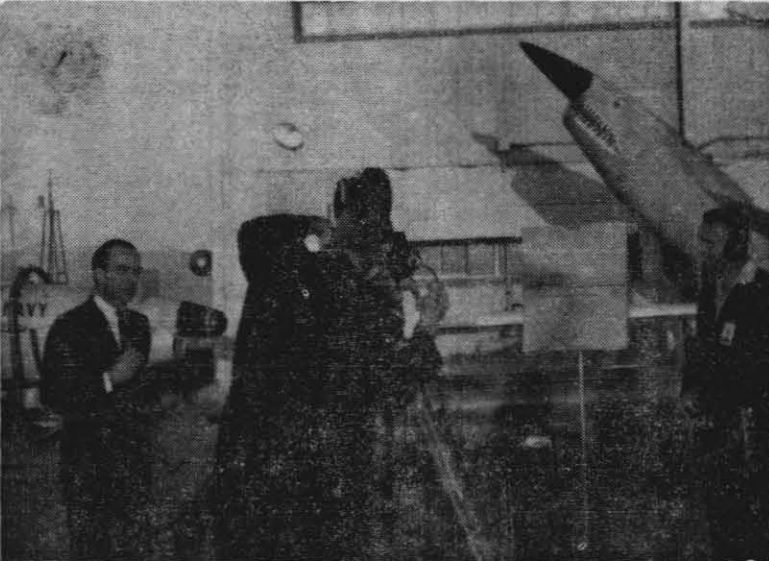
great lover, Don Juan, followed by an on-stage change to the role of Don Giovanni, singing "Deh vieni alla finestra," and "Finch' han dal vino."

In the finale, Hines appeared with superb makeup as the Russian Tsar from Moussorgsky's "Boris Godounov," in which he was assisted by Charlotte Blackmon, Burroughs high school senior, who played the role of Boris' 12-year-old son, Feodor.

James MacInnes substituted for Alexander Alexay as accompanist, and played four Chopin selections, which were received enthusiastically by the audience.

Following the concert, a reception was held in the East Wing of the chapel, attended by about 75 persons. Mrs. William Bewley was reception chairman. Mrs. Roger C. Wickenden was concert manager for the China Lake Civic Concert Association, sponsors of the event. The next concert in the series will take place at the Station Theater Thursday, Feb. 4, when the Vienna Boys Choir will be featured.

—G.S.



DRONE OPERATIONS will be a featured part of Walter Cronkite news show scheduled tentatively for next Tuesday evening, Dec. 22. Here to announce China Lake portion of network broadcast was ace newsmen Bill Stout and crew.

Form for placing a stamp, with fields for 'From', 'TO', and 'PLACE STAMP HERE'.

ROCKETEER FROM UNDER THE SEA TO THE STARS U.S. Naval Ordnance Test Station, China Lake, Calif. Vol XIX, No. 50a Friday, Dec. 18, 1964



"And this shall be a sign to you: you will find an infant wrapped in swaddling clothes and lying in a manger."

(St. Luke 2:12)

### CROSSWORD PUZZLE

Crossword puzzle grid with clues for Across and Down. Includes a small diagram of the grid and a key for Greek letters.

# Christmas Parties



CPO CLUB feted small fry at party that included Santa Claus visit.



PROPULSION DEVELOPMENT Department personnel joined the gaiety with gala dinner-dance at Community Center.



NAVY EXCHANGE Child Care Center's Elaine Darnell (far left) and Lt. Earl Mouton, NX Officer (far right) were hosts during Christmas party at Center to Mrs. Floyd Reck, Mrs. John I. Hardy, Capt. Leon Grabowsky, Station XO, and Senior Chaplain Odell. Gifts came from Navy Relief funds earmarked for "local" use.



PERSONNEL DEPARTMENT'S Yule feast at Community Center included buffet dinner-dance. BELOW: At the CPO Military Ball, Mr. and Mrs. Frank Bronnenkant were feted by some 400 military personnel and guests while dancing Anniversary Waltz in observance of 54th wedding anniversary.



SUPPLY DEPARTMENT small fry were included in Station Christmas parties. Youngsters on Santa's lap are Jimmy Lara and Debbie Stokes.



IWV NAVY LEAGUERS donated gifts to Station military personnel dependents, turning Yule packages over to Chaplain and Mrs. Odell (center). Bill Puckett, president of local council (left) was assisted by Dr. James W. Henry.



WEAPONS DEVELOPMENT CHRISTMAS party helped set stage for holiday social whirl at Naval Ordnance Station.



- |                                      |                      |
|--------------------------------------|----------------------|
| FRUIT COCKTAIL                       | CREAM OF TOMATO SOUP |
|                                      | SALTINES             |
| ROAST YOUNG TURKEY                   | ROAST BEEF AU JUS    |
|                                      | GIBLET GRAVY         |
|                                      | NATURAL GRAVY        |
|                                      | CRANBERRY SAUCE      |
| SCALLOPED SWEET POTATOES WITH APPLES | BUTTERED PEAS        |
| SNOWFLAKE POTATOES                   | MASHED CARROTS       |
| OYSTER DRESSING                      | INDIVIDUAL SALADS    |
| SALAD BAR                            | ASSORTED OLIVES      |
| HOT PARKER HOUSE ROLLS               | ASSORTED BREADS      |
| COFFEE                               | TEA                  |
| MILK                                 |                      |
| HOT MINCE PIE                        | FRUIT CAKE           |
| ICE CREAM                            |                      |
| MIXED CANDIES                        | MIXED NUTS           |



NAVY EXCHANGE personnel turned out en masse for their annual Yule party, held at Community Center Monday.

Rocketeer pictures throughout the year were taken by U.S. Navy Photographers:

- Jerry A. Williams, PH1
- Paul E. Seaton, AC2PH
- Ralph J. Robey, PH2
- David W. Hobbs, PH2
- Robert L. Hancock, PH3
- James T. Forrester, PH3
- Seth I. Rossman, PH3
- Thomas E. Faught, PH3
- Bryce T. Casch, PH3
- Dennis R. Smith, PH3

# Congregations Honor Chaplain Costa at Chapel Receptions



DEPARTING CHAPLAIN COSTA (second from left) gets "best wishes" for new duties from Protestant congregation following Divine Services last Sunday. (From left) Senior Chaplain Robert W. Odell; Chaplain Costa;

The Rev. James Carter, formerly attached to NOTS who was here as a guest pastor; Capt. John I. Hardy, ComNOTS, and Dr. Wm. B. McLean, NOTS Technical Director. Father Costa will report to USS America.

# Desert Natural History Class Starts Jan. 8

A course in Desert Natural History, conducted by UCLA the past seven years, with Lloyd Brubaker as teacher, again will be offered with the desert as a classroom for most of the sessions.

The first class will meet on Friday, Jan. 8, in Room 17 of Murray School. Enrollment is limited to 30, and applicants should call the UCLA office, or Brubaker at 77133.

Emphasizing biological aspects of the desert, the course will include seven field trips, three of them weekend camp outings.

On opening date the class will set dates for subsequent meetings. Class members may bring their families on field trips. Two units of credit are given for successful completion of the course, which is a professional teacher education class. Enrollment fee will be \$30.



FAREWELL GIFT, a gold ciborium, brings expression of amazement to face of Chaplain Costa. Gift was extended by Catholic congregation at reception Sunday afternoon.

# Fond Farewell



—Photo by Jack Broward

SMALL FRY members of Catholic community, Barbara Winters, 5, and Frank Timmes, 5, extended gift to chaplain and got in return this loving hug from their "Father Costa."

# Middleton in U. S. Title Bid...

(Continued from Page 3)

China Lake community at the Bakersfield meeting, in addition to Mrs. Middleton, were Captain Leon Grabowsky, Station Executive Officer, and Jerome L. Zaharias, an associate of Middleton in the Data Computation Branch.

Addressing the audience of officials engaged in employment of the handicapped, who had come from points throughout the state, Capt. Grabowsky pointed to the "inspirational example" Middleton established at China Lake and told of the young man's work at NOTS.

"He's Only Blind" "Those who work with a blind man know Mr. Middleton best do not agree that he is handicapped. They say he's 'only blind,'" Capt. Grabowsky remarked.

Howard Roland, chairman of the Kern County Committee for employment of the handicapped and program chairman for the meeting, added his praise to the "outstanding example of rehabilitation" Ralph Middleton has demonstrated so effectively, noting that he had helped "pioneer a new field of potential employment for the blind in computer programming."

Middleton had twice this year addressed national groups on his experiences in translating standard computer programming texts into braille. His progress

and effectiveness, he believes, can be duplicated by others.

29 in Nation Presently there are 29 blind mathematicians professionally engaged in scientific industries throughout the country.

Reflecting on the significance of his latest award, Middleton this week praised his parents for their "patient love and encouragement during my early youth. To them, I was never anything less than a healthy son, whose future and welfare in society would be a result of a normal home life and education.

"I have also to thank my kind friends and associates who have offered continuing encouragement to me. And, of course, my wife, Donetta."

What Next, If selected by the President's most outstanding handicapped employee, Middleton will receive his award from President Johnson in Washington early next year.

How will it change his life? "If anything, it'll only encourage me to project my convictions that blind persons can serve society as well as their fellow men.

"I want very much to get the simple message across to audiences at all levels of our society, that the blind want to earn their independence... that handicapped people are not

really different after all."

Wants to 'Contribute' Beyond the horizons of next year, Ralph is totally certain of only one thing:

"I love my work here at NOTS, I'm completely fascinated by the function I serve in science today and believe I can make an equal contribution to the future through my work."

# Off-Campus Grad Students Tour UCLA; Hosts Here

Off-campus graduate students and instructors spent an informative and enjoyable day on the UCLA campus on Tuesday, Dec. 15. The program, which was arranged by Prof. Wm. D. Van Vorst, included a campus tour, a luncheon presided over by Dean L. M. K. Boelter and Assistant Dean R. R. O'Neill, a general discussion session with faculty and administrators, and individual appointments.

Today, NOTS instructors and Education Committee for Ordinance Sciences members will return the hospitality when Prof. Van Vorst brings to the station Prof. N. W. Rees, Mrs. Bernice Park, assistant head of Engineering Extension, and Mr. Tom Tugend, UCLA public relations officer.

# Navy May 'Rescue' Gemini Capsules From Under Sea

The Navy may receive an underwater role to play in the National Aeronautics and Space Administration's multi-million dollar Gemini manned spacecraft program, Hydrogram reports.

Minesweepers are under evaluation currently for use as rescue craft when the manned missions abort during boost phase. The Navy believes the astronauts can remain inside the capsule if it dives into relatively shallow water. Minesweepers and frogmen can raise the capsule — and crew — to the surface.

# Astronomical Society To Honor Keith Honey

The China Lake Astronomical Society elected Curt Chaffin president at their December meeting. Carroll Evans was named vice-president; Lynn Belling, secretary, and Jim McMahon, treasurer.

The society's next meeting will be a special dinner honoring Keith Honey, out-going president, who will leave China Lake to work on an advanced degree in astronomy at the State University of Iowa. The meeting will be at the Station Restaurant at 6 p.m., Tuesday, Jan. 5.

# Torpedo MK 46 Mod 0 Facts

Name: Torpedo Mk 46 Mod 0.

Description: Solid rocket propellant driven, high speed, deep running, passive active acoustic homing torpedo.

Purpose: To seek, acquire and destroy modern conventional and nuclear submarines.

Approximate Weapon Dimensions: Length — 101 inches, diameter — 12 3/4 inches.

Weapon Weight: Approximately 570 pounds.

Major Weapon Parts: Guidance and control system, explosive system, propulsion system and accessory system furnishing electrical and hydraulic power.

Method of Operation: Torpedo is launched from a torpedo tube on a surface craft, from ASROC, from helicopters, or fixed wing aircraft based on fire control information from launching craft. Upon water entry, the torpedo propulsion system is activated by means of a sea water battery and the torpedo commences a power dive to a pre-set initial search depth. The torpedo begins searching for the target following a programmed search pattern, either in an active snake mode or passive active circle search mode. Upon locating a target, the torpedo commences attack and pursuit program, until it closes with and destroys the target. If the target should be lost during pursuit, the torpedo commences a re-attack program to relocate the target. The attack search continues until either the target is destroyed or fuel is exhausted.

Developed for BuWeps by: NOTS, Pasadena — Technical Director; Aerojet-General Corporation, Azusa — Prime Contractor.

Principal Subcontractors: Bendix Corporation — guidance and control; Cleveite Corporation — hot gas swash plate engine.

# New ASW Joins U.S. Arsenal

(Continued from Page 3)

ing launched by fixed wing aircraft at speeds up to 400 knots. It can also be delivered to an attack area by helicopters or surface ships. Surface ship delivery may be accomplished by torpedo tube, drone helicopters (DASH), or ASROC (antisubmarine rocket).

Replaceable Sections The Mark 46 consists of four major components and incorporates a modular design making it possible to replace one or more complete sections if required. The four major components are: guidance and control system; explosive system; propulsion system; and the access-

sory system.

The forebody contains the guidance package consisting of a transducer, a transmitter and receiver, a control group with power supply, a computer, and an auto pilot. The electronics packages are separated by the center section contains the solid propellant-actuated gas pressure generator, and the afterbody section contains the propulsion unit.

A fixed-price-incentive contract for nearly \$40 million was awarded to Aerojet General Corporation last August for the Mark 46 and associated equipment.



AN ASW AIRCRAFT launches a Mark 46, the Navy's first solid rocket propellant driven torpedo, during sea operations test program. Some tests were made in Caribbean.

# NOTS-PA Tests MK-46

(Continued from Page 3) in the technical direction of NOTS Pasadena.

Sites of the tests included mountains, desert, and the ocean.

At Morris Dam, in the San Gabriel Mountains, the water entry of the various launching modes was simulated. A giant slingshot and a launching tube built on the side of a steep hill subjected the torpedo to the tremendous pounding it must withstand when entering water at high speeds.

Like a rock in a slingshot pocket, the torpedo was placed in the center of a rubber bungee cord then pulled up until the cord was stretched tight. Release was tripped and the cord hurled the torpedo downward into the deep reservoir, slamming it into the water at high speeds and at entry angles of 50 to 90 degrees. Its delicate components had to function perfectly after this bone-jarring impact.

The hillside tube, called a Variable Angle Launcher, using compressed air, subjected the torpedo to similar punishment at shallower angles — 10 to 35 degrees. The tube shots simulated high speed water entry at flat angles.

On the desert sands at China Lake — headquarters of NOTS — a special car equipped with an ASROC launcher and a dummy torpedo traveled a short track leading to nowhere.

Under full throttle, it rumbled down the track. The wind whipping across the car deck simulated conditions that would be experienced at sea by a destroyer in full pursuit of an enemy submarine.

At top speed, ASROC was fired. Its flight and sand impact were carefully recorded by radar and cameras. These data were then used to compute the trajectory and compile ballistic tables for shipboard use.

Tested in Ocean Farther westward, off the coast of Long Beach, a steel cage tested the torpedo in its natural

# Boy Scouts Sell Prime Yule Trees on Station

Final week of Christmas tree sales behind the Malt Shop on Station begins today. The project is a Boy Scout enterprise, with Troop 41, sponsored by the Community Church, in charge. Prime trees are featured.

Sales hours are 4:30 to 7:30 p.m. on weekdays, and 9 a.m. to 3 p.m. on Saturday.

# Still more Torpedo MK 46 trials took place in an underwater shooting gallery in Puget Sound and off Vancouver Island, Canada.

On a three-dimensional torpedo tracking range, it was tested against synthetic targets. The range was highly instrumented with accurate hydrophone arrays that could quickly locate the torpedo and a moving target by triangulation. This system determined the course, speed, and depth, and presented the various turning maneuvers of the target and torpedo on a plotting board for the test conductor.

Personnel Trained OPTEVFOR (Operation Test and Evaluation Force) personnel have been trained to carry out their task of preparing and launching the torpedo by all modes — rocket assist, aircraft, helicopter, and torpedo tubes against both live submarines and simulated targets.

During the trials off Long Beach, Seal Beach, San Clemente Island, San Nicolas Island, and at China Lake, torpedoes were launched by both high and low speed aircraft, by ASROC, and by shipboard torpedo tubes.

These tests led to the waters off Puerto Rico where the torpedo is receiving final sea trials before graduating into fleet service.

Live runs against submarines were made at a Long Beach sea range. With an exercise head on the torpedo and a nuclear submarine steering an evasive course, this game came closest to being the real thing, before actual fleet trials.



A DRONE HELICOPTER carries the Mark 46 during test operation off Long Beach. The new weapon is capable of hunting, overtaking and killing today's modern conventional and nuclear submarines. NOTS Pasadena program's technical development director.



SUPPLY DEPT.'s new Control Division Officer is LCDR Donald J. Bunker. Prior to assignment here he was BuWeps representative at Lockheed Aircraft Corp. in Burbank. LCDR Bunker, his wife Phyllis and children Kenneth 10; James, 7, and Sharon, 5, reside at 309 Blueridge Road.



### Robert A. Blaise Leaving, To Join Analyses Center



ROBERT A. BLAISE

Robert A. Blaise, here since 1951 and assistant head of the Propulsion Development Department for the past three years, leaves the Station Monday, Dec. 28.

He has accepted a position with the Center for Naval Analyses of the Franklin Institute in Arlington, Va.

Blaise will join the Center's Research Group. He will be associated with Dr. Frank Bothwell, a former NOTS employee, now technical director of the Center.

Blaise has worked on the Propulsion Planning Group here from 1954 to 1958.

The Center furnishes SecNav, CNO, and the Marine Corps with vital information for high level decisions.

#### To Continue Analyses

At the Center, Blaise said he would continue the studies and analyses that he has been pursuing the past two years here on future Navy sea-based deterrent systems as well as Naval space applications.

For the past three years, the veteran Station employee has been the NOTS coordinator of the Polaris Ad Hoc Group for Long Range Research and Development (PLRRDO, a \$10 to \$15 million annual program of ballistic missile research in Navy Labs.)

He received a superior accomplishment award last year for his work in this area.

Blaise has served on three of the Ad Hoc Group's four subpanels. He chaired the Missile Panel and was a member of Systems Panel and the Anti-ASW Panel.

In addition, he was also the NOTS representative to the Navy Advanced Ballistic Re-Entry Systems (ABRES) Panel.

Prior to being named assistant head of PDD, Blaise was technical assistant to the Station's Associate Technical Director, H. G. Wilson, for two and one-half years.

A University of New Mexico engineering graduate, Blaise came to the Test Department in 1951 following five years as a field engineer for the Electro-Motive Division of the General Motors Corp.

Highlight of his association with the Sidewinder program came when the new-born missile sent an F6F drone down in flames over the G-Ranges on Sept. 11, 1953.

# Rain, Fog, Lightning Control Topics of Weather Meet Here

## Researchers at NOTS Witness 'Cloud Missile'

There's an old saying that "Everybody talks about the weather — but no one does anything about it."

You can throw that one out with "It'll never replace the horse," and "It'll never get off the ground."

Over at Dr. Pierre St. Amand's Earth and Planetary Sciences building — and more than a dozen other installations and industrial plants in the west — they're doing something about it.

#### Group Meets at NOTS

With permission from COM-NOTS Capt. John I. Hardy, the Weather Control Research Association held its semi-annual meeting at China Lake last week. The two-day sessions were coordinated by Commander Paul T. Jorgensen. Twenty-four visitors were on station for the meetings.

#### And just what's being done about the weather?

NOTS scientists told of previously reported experiments in neutralizing hurricanes, and a NOTS - originated method of seeding clouds to bring rain.

Airlines' representatives told of dispersing fog over airports. This has been accomplished with a measure of success by using dry ice.

The Forestry Service told of working for years on lightning suppression — highly desirable in the elimination of forest fires.

#### Study Cloud Physics

Hail suppression came in for its share of discussion. Means and methods of measuring various elements significant to the physics of clouds were described by Dr. Paul B. McCready, Jr., of Meteorology Research, Inc., Altadena, who told of experiments being conducted at Flagstaff, Ariz.

Edward A. Morris, president of Bronson, Bronson & McKinnon, San Francisco, dealt with legal aspects of weather control.

Since the whole program still is in its infancy, little or no legislation governing weather control has been enacted.

It is not hard to envision Far-



SCIENTIFIC RAINMAKER—Ground to cloud silver iodide seeding is demonstrated by Edwin X. Berry, of University of Nevada, who triggered modified submarine signal rocket, provided for experiment by NOTS, in which silver iodide capsule replaced signal flare.

mer John firing a silver iodide cartridge into the friendly cloud over the back forty — and the irate building contractor on the adjoining tract construction suing him for costly work interruption.

Consensus at the meeting was that legislation — when it comes — should be on a federal level, transcending local jurisdictions, providing protection for operators and citizens alike, without being unduly restrictive or punitive.

#### Signal Rocket Used

In an experimental demonstration, NOTS provided a ground-to-cloud "missile" — using a modification of a submarine signal rocket, with a silver iodide replacement for the flare. Edwin X. Berry, of the University of Nevada, at Reno, fired the capsule for the assembled researchers.

Basically a pyrotechnic device, the signal rocket lofted the capsule into the air and sprayed it over a hypothetical cloud.

NOTS scientists explained that local experiments differed from the conventional silver iodide seeding procedure in that NOTS produces iodide by burning silver iodide.

Although researchers found

this approach interesting, some thought its merits over the conventional method of simply dispensing silver iodide "subject to argument."

CDR. Jorgensen pointed out that the effectiveness of seeding clouds with the iodide depended largely on temperature. "Cold clouds" — with temperatures at or below freezing, but moisture still in a liquid stage, brought desirable results. The silver iodide is not effective in "warm clouds." Hydroscopic materials are being tested under "warm cloud" conditions.

#### Several Reports Heard

Reports also were heard from Thomas J. Henderson of Atmospherics, Inc., of Fresno; Dr. Wendell A. Mordy, of the University of Nevada, and Robert D. Elliott, of North American Weather Consultants, of Goleta, working at the Santa Barbara Municipal Airport.

Also present at the meetings were: Charles J. Dommes, and Elridge B. Lowry, Los Angeles Department of Water and Power; Merlin C. Williams, Natural Resources Research Institute, Laramie, Wyo.; Dr. Arnold Court, San Fernando Valley State College, Northridge; Dr. John Chisholm, and C. K. Stidd,

University of Nevada.

#### Visitors Listed

Dr. Thomas M. Hoffer, Lockheed, Burbank; Thomas R. Bacon, San Bernardino Valley Municipal Water District; John Walser and Keith Brown, North American Weather Consultants, Goleta; Clement J. Todd, Dr. Harner Selvidge, Tom Mee and Allen Weinstein, Meteorology Research, Inc., Altadena; William A. Lang, Southern California Edison Co., Los Angeles; George Kalstrom, U.S. Weather Bureau, Los Angeles; Donald Eberly, Pacific Gas and Electric Co., San Francisco; and R. C. James, Bureau of Reclamation, Department of Interior, Denver, Colo.

## Promotions To LCdr. and Lt. For Three Here

Just in time for Christmas came promotions for a trio of locally attached Supply Corps officers whose selections were approved this week by the President.

To Lieutenant Commander, according to the list published this week, moved up Lieutenant Joseph F. LeBlanc, Jr., Commissary Store Officer.

Included in those promoted to LCdr rank were two former NOTS officers, Robert H. Doll-off and Wayne B. McFarland.

Lieutenants (jg) Harry L. Lara, Aviation Material Officer, and James D. Conway, Commissary Division Officer, were named for Lieutenant ranks. Formerly assigned here and now on temporary duties in Washington, LTjg Joseph F. Gomez, was included in the list of those named for promotion to lieutenant.

## Coachmen To Play For Teen Dance Tuesday, Dec. 29

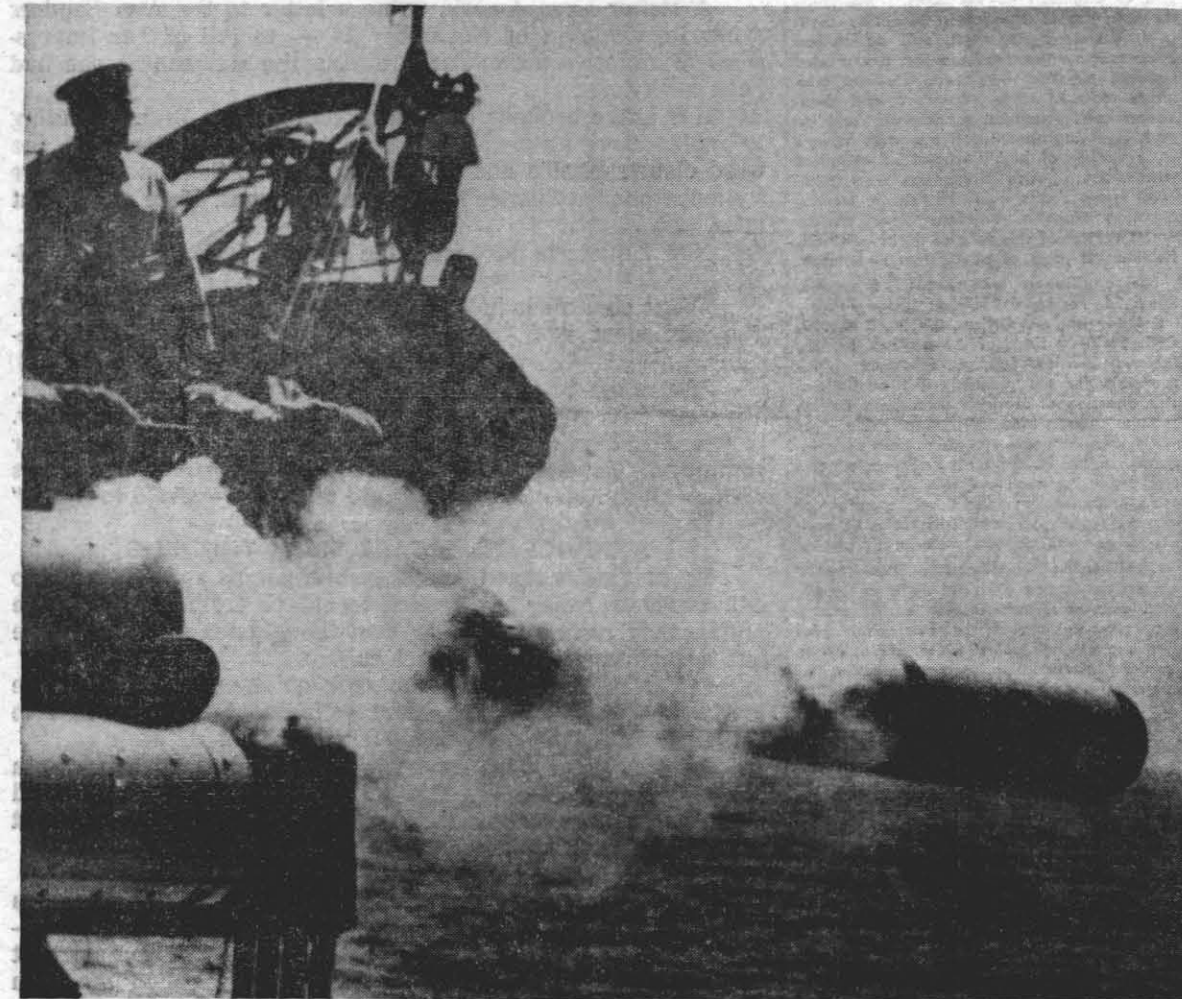
Music by the Coachmen will be featured for the Teen Dance in the Mojave Room of the Commissioned Officers' Mess, Tuesday, Dec. 29, from 8 p.m. to midnight.

Dependent members and their guests will be welcome to the semi-formal affair.



VX-5 PERSONNEL INSPECTION climaxed last week's annual check by VX-4 and Com-FairSDiego. Capt. E. B. Salig, conducted final phase of inspection. He's followed by Lt. J. C. Breast and Cdr. Jack M. Manherz, CO, VX-5. VX-5 Drill Team also performed.

# REVEAL FULL STORY OF NOTS' MARK 46 TORPEDO



THE NEW MARK 46 TORPEDO may be launched by a variety of means, including the standard delivery via torpedo tube aboard ship, as in this recent open sea test shot.



ANOTHER WAY to launch the Mark 46 torpedo is with ASROC, another NOTS "first." Here's a shot from destroyer.

## Middleton Wins State Nomination For 'Handicapped American of the Year'



WORDS OF ENCOURAGEMENT from nation's most famous handicapped employee, Harold Russell (right) followed nomination of Ralph W. Middleton by California last Friday as state's candidate for "Handicapped American of the Year" award to be made early next year in Washington. Mrs. Middleton and seeing-eye dog, Lena, shared spotlight of honors bestowed on local man at Bakersfield luncheon meeting.

## Step Closer To National Award By President

China Lake's Ralph W. Middleton added another distinction to his growing list of achievements last week in winning the nomination as California's candidate for the "Handicapped American of the Year" title to be awarded in Washington early next year by President Johnson.

The blind mathematician was selected by Kern County officials last October as the county's "most exemplary" handicapped employee.

Attached locally to Data Computation Branch, Test Department, the 24-year-old Oregon native was guest of honor at a meeting of the Governor's Committee for employment of the handicapped last Friday at Bakersfield.

Present for the meeting and principal speaker was Harold Russell, star of the motion picture, "The Best Years of Our Lives," and chairman of the President's Committee on handicapped employment.

A multiple amputee whose hands were shattered during WW II, Russell praised Middle-ell over the fact that a "24-year-old man can advance himself as far as Ralph has... even without his eyesight!"

Russell expressed deep hopes that Middleton, the father of a 19-month-old son, Shawn, would "be in Washington early next year to receive the President's Trophy from Mr. Johnson."

NOTS Delegation Representing NOTS and the (Continued on Page 8)

## NOTS Pasadena Acted as Program Tech Director

NOTS PASADENA (Dec. 18)—The Navy announced another success story today — the development of the MK 46-0 Torpedo, the Navy's "first" solid rocket propellant, deep diving, high speed, anti-submarine weapon.

The success of this new ASW is built around the Navy concept of industrial partnership.

In this instance, the U.S. Naval Ordnance Test Station, Pasadena, acted as technical director with Aerojet-General Corporation of Azusa, Calif., as the prime development contractor. Together they worked as a team for the successful conclusion of the program.

Also engaged in this program were two principal subcontractors, Bendix Corporation of North Hollywood, Calif., and Clevite Corporation, of Cleveland, O., who developed the guidance and control and propulsion systems, respectively.

The Bureau of Naval Weapons lauded the Navy-Industrial team who worked diligently on this project for several years to perfect the system and furnish this country with another powerful deterrent to enemy submarines.

The MK 46-0 torpedo has recently completed an extensive fleet evaluation conducted by the Navy in the Caribbean.

Varied Tests Used A Goliath slingshot in the mountains, a specially-equipped train rumbling across the desert, and a steel cage hanging deep in the ocean all have one thing in common. They were part of the facilities the Navy used to develop and test the Mark 46.

Tests were carried out by torpedo experts in the Navy and Aerojet - General, under the

(Continued on Page 5)

## SecNav Tells New Concept in ASW Program

WASHINGTON, D.C., Dec. 18 — The Secretary of the Navy announced today the successful completion of a program to develop an advanced antisubmarine torpedo that represents a major stride in the nation's efforts to counter any enemy submarine.

The new torpedo, designated the Mark 46, is now in production and will later become operational in the Fleet.

The Mark 46 incorporates several new concepts in design that represent an advance in speed, depth performance, and maneuverability of torpedoes. It is the Navy's first ASW torpedo to utilize a solid rocket-fueled hot gas propulsion system as its source of power.

#### Activated in Half-Second

Upon water entry, the propulsion system is activated within one-half of a second by means of a sea water battery, and the torpedo commences a power dive to a preset initial search depth. The engine produces approximately four horsepower per pound of engine weight making the torpedo capable of overtaking the most elusive submarine targets known.

Upon reaching search depth, the torpedo begins its search for the target following a programmed search pattern. This is done by an active echolocation method or a passive listening mode. Upon locating the target, the torpedo commences the pursuit and attack program, until it closes and destroys the target. If the target should be lost during the pursuit, the torpedo recommences a search program to relocate the target.

The weapon may be launched by a variety of means. It is the first ASW torpedo capable of be-

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